PLANS AND SPECIFICATIONS
FOR

VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

SPECIFICATION NO. CP23-02

PROJECT NO. P6T18021

PUBLIC WORKS
VENTURA COUNTY

county of ventura
ENGINEERING SERVICES

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

NOTICE INVITING BIDS, PROPOSAL FORM, & SPECIFICATIONS

FOR

PROJECT NAME: **VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS**

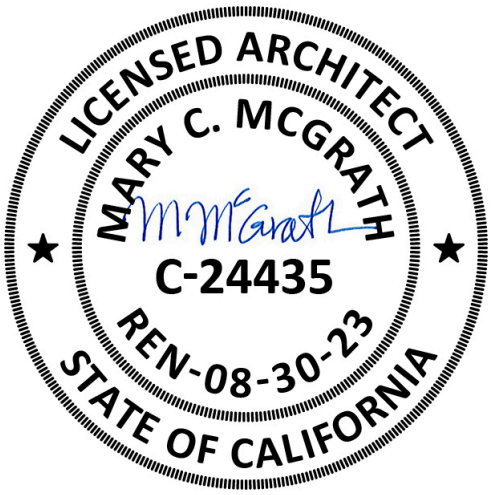
LOCATION: **165 DURLEY AVENUE, CAMARILLO, CA 93010**

SPEC. NO.: **CP23-02** **COST ACCOUNTING PROJECT NO.:** **P6T18021**

DESIGNED BY: **MARY MCGRATH ARCHITECTS & MWS** **CHECKED BY:** **MARY MCGRATH**

REVIEWED BY: **JON JACOBSON**

PROJECT MANAGER: **JON JACOBSON**



RECOMMENDED BY:

Fire Dept. Business Services Manager

APPROVED BY:

Deputy Director of Public Works Agency

APPROVED BY:

Acting

Director of Public Works Agency

Construction bidding documents, including plans, specifications, addenda and any supplementary documents are only available on the Ventura County Public Works Agency Web Site.

NOTICE TO BIDDERS, SUBCONTRACTORS AND SUPPLIERS SOURCES OF INFORMATION

DURING BIDDING PERIOD

PROJECT DOCUMENTS, PLAN HOLDERS LIST, & OTHER INFORMATION IS AVAILABLE ON THE INTERNET AT THE BONFIRE WEBSITE AT:

https://ventura.bonfirehub.com/portal/?tab=openOpportunities#department=Public%20Works%20Agency

All questions concerning the plans, specifications, requirements, terms, schedule, addenda, and any other matters related to the solicitations shall be submitted using the Bonfire web site using the "Opportunity Q&A" tab.

Submit any questions early in the bidding period as an addendum may be required.

All addenda will be issued using the Bonfire web site.

Please do not call other staff members or consultant.

Note that our consultants are directed to refer all calls to the Project Managers.

AFTER BID OPENING

BID RESULTS are available on https://www.vcpublicworks.org/es/bidsandsubs/,

AFTER AWARD OF CONTRACT

ALL QUESTIONS concerning project AFTER AWARD should be directed to the Project Manager named in the Notice of Award

---

Any other information can be requested at (805) 654-2039

TABLE OF CONTENTS

COUNTY OF VENTURA

VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

SPECIFICATION NO.: CP23-02 PROJECT NO: P6T18021

COUNTY OF VENTURA
NOTICE INVITING FORMAL BIDS

Bids will be received, electronically, until **2:00 p.m**. on **10/4/2023**, for **VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS**, Specification No. **CP23-02**, which consists of construction of a **4**.2 acre site involving development of a realistic roadway system and supporting infrastructure to accommodate fire and search & rescue training. There will be construction of a 5,431 GSF Class A Burn Building to simulate live fires in a residential setting; construction of a 12,346 GSF Class B Multi-Purpose building utilizing propane fired props to simulate training in apartment, commercial, and storefront type settings; and modifications to an existing structure to support ladder training. Construction for these buildings shall consist of conventional masonry and concrete with special mixtures designed to mitigate water infiltration and resist heat. The Class A burn building includes: Multiple "Class A" Burn Rooms; Adjustable Mazes; Residential Garage Fire; Multi-Pitch Roof Ventilation; Ability to Control Light & Smoke; and Forced Entry. The Class B Building includes: Center Hallways, Garden Style Apartment Circulation; Interior & Exterior Stairways; Small & Large Search & Rescue Rooms; Balconies; Forced Entry; Flat Roof; Pitched Roof; Simulated Power Poles; Curb Lines; Sprinkler System Props/Lab; Fire Alarm Simulation and Parapet Walls. The building is equipped with an integrated sound system capable of producing controlled sound effects in various spaces.

Bids must be submitted on-line through Bonfire at:

https://ventura.bonfirehub.com/portal/?tab=openOpportunities#department=Public%20Works%20Agency

After the deadline for receiving bids, the bids will be opened, and the results made public.

The estimated cost of construction is $**16,300,000.00.**

All bidding documents, including plans, specifications, addenda, and any supplementary documents are available on the Bonfire website shown above.

A list of Plan Holders is available on the Bonfire website shown above.

An abstract of bids received will be available at https://www.vcpublicworks.org/es/bidsandsubs/

When projects are awarded, the award notification to the State will be posted at https://www.vcpublicworks.org/es/awardedcontracts/

Bids must be submitted electronically, using the forms provided, on the Bonfire Website.

Subcontractor list must include a valid Contractor's License Number. Contractor and any subcontractors must be registered with the Department of Industrial Relations prior to bid time.

Each bid must be accompanied by a bid guarantee in the amount of not less than 10% of the amount bid, **PAYABLE TO THE COUNTY OF VENTURA** and guaranteeing that the bidder will enter into a contract in accordance with the terms of the bidding documents, if award is made. The bid guarantee shall be in one of the following forms: a bid bond written by an admitted surety insurer on the form included with the Proposal form, a cashier's check drawn by a national bank, a check certified by a national bank or cash. Bid bonds must be submitted in hard copy with the original signatures of the principal and surety. Copies of the completed bond will not be accepted.

Bidders must have a Class **A** California Contractors license. Upon award, the Contractor will be required to furnish a Performance Bond and a Payment Bond, each in the amount of 100% of the contract price.

In accordance with Section 22300 of the Public Contract Code, securities may be substituted for funds withheld.

Bidders, contractors, and other interested parties can obtain wage rates pertaining to Ventura County projects at the link provided below.

California general prevailing wage rates for construction can be obtained from the following Web site: http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm.

The awarded contractor must post copies of the prevailing wage determinations at each job site.

PROJECT INFORMATION

FOR

VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

LOCATED IN
VENTURA COUNTY, CALIFORNIA

MAKE BID GUARANTEE TO **COUNTY OF VENTURA**
USE FORM PROVIDED (SEE PARAGRAPH 9, INSTRUCTION TO BIDDERS).

SPECIFICATION NO. **CP23-02** INCLUDING **138** SHEETS OF PLANS

BIDS WILL BE RECEIVED ELECTRONICALLY UNTIL **10/4/2023** AT **2:00 P.M.**

AGENCY IS ALLOWED **60** DAYS TO AWARD A CONTRACT (SEE SECTION 2-1.1).

THE STARTING DATE OF CONTRACT WILL BE **28** CALENDAR DAYS AFTER AWARD OF CONTRACT (SEE SECTION 6-7.4).

COMPLETION TIME IS **260** WORKING DAYS (SEE SECTION 6-7).

LIQUIDATED DAMAGES ARE **$ 2,200.00** PER CALENDAR DAY (SEE SECTION 6-9).

CONTRACTOR'S LICENSE CLASSIFICATION REQUIRED IS **CLASS B.**

LIABILITY INSURANCE CLASS REQUIRED PER SECTION 7-4 IS **L-C.**

FEDERAL-AID CONTRACT PROVISIONS ARE **NOT** INCLUDED IN THESE SPECIFICATIONS.

NON-MANDATORY PREBID MEETING: 10am on 9/20/2023 at 165 Durley Ave, Camarillo, CA 93010

INSTRUCTION TO BIDDERS

1. **LICENSING OF BIDDER**. Before submitting bids(Non-Fed), bidders shall be licensed in accordance with the provisions of Sections 7000 through 7145 of the Business and Professions Code of the State of California in the classification required for the work bid on. The bidder's license number, classification, and expiration date shall be inserted on Signature Sheet. The bidder's name shall correspond in all respects with the name shown on the license. License numbers and names are checked with the State.

2. **SITE INSPECTION**. Personally visit the worksite before submitting your bid to ascertain the existence of any surface or subsurface conditions affecting the cost of the work.

3. **INTERPRETATION AND QUESTIONS**. Carefully review the plans and specifications for any errors, omissions, or ambiguities. If you discover any or have specific questions, notify the Agency far enough in advance of the bid opening to allow time for the issuance of appropriate written addenda, if necessary. All questions concerning the plans, specifications, requirements, terms, schedule, addenda, and any other matters related to the solicitation shall be submitted through the Bonfire website using the “Opportunity Q&A” tab.

Written addenda shall be the sole means for modifying the plans and/or specifications prior to the bid opening. The Agency shall not be bound by oral communications purportedly modifying or interpreting the plans and/or specifications regardless of when or by whom such oral communications are made and you should not rely upon such oral communications in preparing your bid. Addenda will be posted on the Bonfire web site.

4. **BID ITEMS**. State in figures the unit prices, lump sum prices and extensions as indicated which shall be the prices for which you propose to supply all materials and services and perform all work required by the plans and specifications. All items described are to be construed as complete and in place. Include in the bid amount for items listed in the Bid Table the cost of performing all work shown on the plans or required by the specifications for which a specific bid item is not provided. Bid on all items listed under Schedule of Work and Prices unless otherwise indicated in the Bid Table.

5. **SIGNING OF BID**. Fill in all indicated blanks on the various forms provided. Bids will only be accepted if submitted electronically using the Bonfire website. Bids signed by an agent other than an owner, partner or corporate officer shal be accompanied by a power-of-attorney.

6. **NON-COLLUSION AFFIDAVIT**. The non-collusion affidavit required by Public Contract Code 7106 is included as a required document on the Bonfire website.

7. **BID FORM NOT TO BE ALTERED**. Do not change the wording of the Bid documents. Any additions, deletions, conditions, limitations or provisions by the bidder will render the Bid irregular and may cause its rejection.

8. **CORRECTING BID**. Corrections or adjustments to bids must be done using the Bonfire website and must be completed prior to the Bid Closure date and time.

9. **BID GUARANTEE**. A Bid Guarantee in the amount of not less than 10% of the amount bid and guaranteeing that the bidder will enter into a contract in accordance with the terms of the bidding documents if award is made to him must be submitted. The bid guarantee shall be in one of the following forms: A bid bond written by an admitted surety insurer on the form provided, a cashier's check drawn by a national bank, a check certified by a national bank or cash.

Original hard copies of the Bid Guarantee must be submitted and received by the County prior to the Time of Bid Closure. Bid Guarantee shall be mailed or delivered to:

Public Works Agency, County of Ventura
County Surveyor's Public Counter - 3rd Floor
Hall of Administration
800 South Victoria Ave.
Ventura, California 93009-1670.

For proper handling, mark the envelope as “BID GUARANTEE – SEALED BID” and show the specification number, project title, and the Bidder’s name and address.

The bid bond must have the original wet signatures of the principal and surety.

Note: Performance and Payment Bonds are required from the bidder to whom a contract is awarded. See specifications Subsection 2-4 for contract bond requirements including limitations on the sureties that may issue the bonds.

10. **SUBMITTING BID**. Submit your bid using the Bonfire website at:

www.ventura.bonfirehub.com

Only bids submitted via the Bonfire website will be considered. All documentation listed as required on that website must be completed and submitted.

11. **TIME OF BID CLOSURE**. The time and date of the Bid closure is indicated on the Bonfire website solicitation as “Close Date”. No bids will be accepted after that time.

12. **REVISION OR WITHDRAWAL OF BID**. Bids submitted using the Bonfire website can only be revised or withdrawn using the website. Once submitted, a bid that requires revisions or withdrawal must be accessed via the “Completed” tab under the “Your Submissions” section and action taken to revise or “unsubmit” (withdraw).

13. **ERRORS**. Bidder will not be released on account of errors. Bids submitted using the Bonfire website will be considered final. Bidders shall be careful to ensure all information that is submitted is complete and accurate.

14. **SUBCONTRACTOR LICENSE NUMBERS.** License numbers for subcontractors must be provided at the time the bid is received using the forms provided.

15. **PUBLIC WORKS CONTRACTOR REGISTRATION PROGRAM.** No contractor or subcontractor may be listed on a bid for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]

No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5

16. **LABOR COMPLIANCE MONITORING.** This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The Prime Contractor shall post job site notices prescribed by regulation.

(See Chapter 8, California Code Regulation section 16451(d) for notice that previously was required for projects monitored by the Compliance Monitoring Unit.)

NONCOLLUSION DECLARATION

NONCOLLUSION DECLARATION

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, at _____, _____.

Date

City State

Signature of Officer: _____

Printed Name of Officer:_____

LIST OF SUBCONTRACTORS

CONTRACTOR NAME:_____

Listing shall comply with the provisions of California Public Contract Code, Section 4104.

Name of Subcontractor	Contractor's License Number	Contractor's DIR Registration Number	Business Address	Items of Work

If more space is needed, add additional pages.

Public Contract Code Section 4104 provides that bidders must list:

(a)(1) The name, the location of the place of business, and the California contractor license number of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime contractor's total bid or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars ($10,000), whichever is greater.

(b) The portion of the work that will be done by each subcontractor under this act. The prime contractor shall list only one subcontractor for each portion as is defined by the prime contractor in his or her bid.

BID TABLE

Schedule of work and prices for:
VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

Item No.	Units	Approx Quantity	Item Description	Payment Reference	Unit-Prices (In Figures)	Item Total (In Figures)
1	LS	1	All Work (Excluding Items 2 and 3 Below) Completed Per Plans and Specifications	9-2		
2	LS	1	Excavation Safety	7-10.4.2		
3	LS	1	All Work Associated with Ladder Training Prop Plans (Permit C22-000727)	9-2		
			Total Amount Bid			

Bid Table is shown here for informational purposes.

Bid Table shall be filled out by Bidders using the Bonfire website. Bidders will access the Schedule of Work and Prices on the Bonfire website and input their Unit Prices.

SIGNATURE SHEET

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone Number: (_____)_____-_____

Email Address: _____

I make this proposal and certify or declare under penalty of perjury under the laws of the State of California that:

- The statements and attestations made and associated with this Proposal, and below my signature, are true and correct.
- The bidder has read the Bid documents and has abided by and agrees to the conditions herein and has carefully examined the project plans and read the specifications and does hereby propose to furnish all materials and do all the work required to complete the work in accordance with the plans and specifications for the unit prices or lump sums named in the Bid Table.
- The bidder, as Principal, acknowledges himself as being bound by the attached bond or other acceptable bid guarantee.

Dated: _____ At: _____
(City and State)

Signature: _____

Printed Name: _____

Position: _____
(Sole Owner, Partner, President, etc.)

Company Name: _____ Type of Organization: _____
(Individual, Partnership, Corp.)

License No.:_____ License Classification: _____

License Expiration Date: _____

DIR Registration Number: _____

BID BOND

Enter }
Name & }
Address }
of Bonding }
Company }

KNOW ALL MEN BY THESE PRESENTS: That we _____

_____, Principal,

and_____

_____, Surety, are held and firmly bound unto

COUNTY OF VENTURA Obligee,

in the sum of Ten Percent of the total amount of the Bid for the payment of which we bind ourselves, our legal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has submitted or is about to submit a bid or proposal to Obligee on a contract for

VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

NOW, THEREFORE, if that contract be awarded to principal and principal shall, within such time as specified, duly execute the contract in the prescribed form and deliver the same to obligee with all required bonds/performance securities, certificates of insurance and such other items as required in the bidding or contract documents then this obligation shall be null and void; otherwise to remain in full force and effect, and if the contract is awarded to principal and principal fails, within the time specified, to duly execute the contract in the prescribed form and deliver the same to obligee with all said required items, then surety shall pay obligee the full sum of this bond.

Surety, for value received, hereby agrees that no extension of time, change, alteration, modification, or addition to the bidding or contract documents, or of the work required thereunder, shall release or exonerate surety on this bond or in any way affect the obligation of this bond; and surety does hereby waive notice of same.

Signed, sealed and dated

_____
(Principal)

by_____(Seal)

_____
(Surety)

by_____
Attorney-in-Fact

INDICATE COMPLETE ADDRESS OF SURETY TO WHICH CORRESPONDENCE CONCERNING THIS BOND SHOULD BE DIRECTED.

Telephone No._____

CONTRACTOR QUESTIONNAIRE

CONTRACTOR NAME:_____

It is the policy of the County of Ventura to conduct business only with responsible contractors who possess the trustworthiness, quality and fitness to satisfactorily perform County contracts. County of Ventura officials will investigate with reasonable diligence the responsibility of contractors submitting proposals before awarding, or recommending the award, of contracts.

To assist officials with this effort, please respond to the following questions:

1. Are any owners, CSLB qualifier, or officers of a sub-contractors, included in the bid package, affiliated with the bidder?

   YES☐ NO☐

   If answered yes, please give the names and license numbers of sub-contractor owners, CSLB qualifiers, and officers:

2. Has any owner, CSLB qualifier, or officer employed by bidder operated as contractor under any other name or license within the last 5 years?

   YES☐ NO☐

   If yes, please give the names and license number for all firms and provide details below:

3. Is the bidder a subsidiary, parent company, holding company, or affiliate of any other construction firm?

   YES☐ NO☐

   If yes, please give names and details below:

4. Has the bidder changed names or license numbers in the past five years?

   YES☐ NO☐

   If yes, please provide details:

5. At any time in the last five years has bidder, or any of its owners or officers, been convicted of a crime involving the award of a contract of a government construction project, or bidding or performance of, a government contract?

   YES☐ NO☐

   If yes, please provide details below:

6. Is bidder currently a debtor in a bankruptcy case?

   YES☐ NO☐

   If yes, please provide details below:

7. Was bidder in bankruptcy at any time in the last five years?

   YES☐ NO☐

8. At any time in the last five years has bidder been assessed liquidated damages after completion of a project under a construction contract with either a public or private owner?

   YES☐ NO☐

   If yes, please provide details below:

9. In the last five years has bidder, or any other firm with which bidder's owners, officers, or partners was associated with, been disbarred, disqualified, removed, terminated for convenience, or otherwise prevented from, bidding on or completing any government agency or public works project for any reason?

   YES☐ NO☐

   If yes, please provide details below:

10. In the last five years, has bidder been denied an award of a public works contract based on a finding by a public agency that bidder was not a responsible bidder?

    YES☐ NO☐

    If answered yes, please provide details below:

11. In the last five years, has bidder been denied an award of a public works contract based on a finding by a public agency that bidder was not a responsive bidder?

    YES☐ NO☐

If answered yes, please provide details below:

12. At any time in the past five years has any surety company made any payments on bidder's behalf to satisfy any claims made against a performance or payment bond issued on bidder's behalf, in connection with a construction project public or private?

YES☐ NO☐

If answered yes, please provide details below:

13. In the past five years, has any insurance carrier, for any form of insurance, refused to renew the insurance policy for your firm?

YES☐ NO☐

If answered yes, please provide details below:

14. Has bidder performed similar work (constructing a new fire training center) in the last 10 years?

YES☐ NO☐

If answered yes, please provide details below (Project Names, Locations, Cost, Client):

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

PREVAILING RATES OF WAGES

As provided in Subsection 7-2.2 of these specifications, and in accordance with Section 1770 *(Amended by Stats. 2017, Ch. 28, Sec. 17. (SB 96) Effective June 27, 2017),* et. seq. of the California Labor Code, determinations of the generally prevailing wages for various classes of workers in Ventura County have been made by the California Director of Industrial Relations as required by the California Labor Code.

As required by California Labor Code Section 1777.5, properly indentured apprentices shall be employed on the work in the minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification. Travel and subsistence shall be paid in accordance with California Labor Code Section 1773.8.
The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

The determinations made by the State are available on the Internet at
http://www.dir.ca.gov/DLSR/PWD/Index.htm
and are on file in the office of the Public Works Agency
The rate fixed for each craft, classification, or type of work shall be not less than the prevailing rate paid in the craft, classification, or type of work.

The Contractor shall post a copy of the wage rates at each jobsite at a location readily available to the workers.

Excerpts from the
California Labor Code

These excerpts from the Labor Code include the sections listed in specification Section 7.2.2.2 that are required by Labor Code 1775(b)(1) to be included in all subcontracts. These excerpts also include sections recommended by the CA Department of Industrial Relations that contain information on the contractor registration requirements. These sections are furnished for the convenience of the contractor and in no way limit the required compliance with all laws.

1725.5. A contractor shall be registered pursuant to this section to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code or engage in the performance of any public work contract that is subject to the requirements of this chapter. For the purposes of this section, "contractor" includes a subcontractor as defined by Section 1722.1.

(a) To qualify for registration under this section, a contractor shall do all of the following:
(1) (A) Register with the Department of Industrial Relations in the manner prescribed by the department and pay an initial nonrefundable application fee of four hundred dollars ($400) to qualify for registration under this section and an annual renewal fee on or before July 1 of each year thereafter. The annual renewal fee shall be in a uniform amount set by the Director of Industrial Relations, and the initial registration and renewal fees may be adjusted no more than annually by the director to support the costs specified in Section 1771.3.

(B) Beginning June 1, 2019, a contractor may register or renew according to this subdivision in annual increments up to three years from the date of registration. Contractors who wish to do so will be required to prepay the applicable nonrefundable application or renewal fees to qualify for the number of years for which they wish to preregister.

(2) Provide evidence, disclosures, or releases as are necessary to establish all of the following:

(A) Workers' compensation coverage that meets the requirements of Division 4 (commencing with Section 3200) and includes sufficient coverage for any worker whom the contractor employs to perform work that is subject to prevailing wage requirements other than a contractor who is separately registered under this section. Coverage may be evidenced by a current and valid certificate of workers' compensation insurance or certification of self-insurance required under Section 7125 of the Business and Professions Code.

(B) If applicable, the contractor is licensed in accordance with Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

(C) The contractor does not have any delinquent liability to an employee or the state for any assessment of back wages or related damages, interest, fines, or penalties pursuant to any final judgment, order, or determination by a court or any federal, state, or local administrative agency, including a confirmed arbitration award. However, for purposes of this paragraph, the contractor shall not be disqualified for any judgment, order, or determination that is under appeal, provided that the contractor has secured the payment of any amount eventually found due through a bond or other appropriate means.

(D) The contractor is not currently debarred under Section 1777.1 or under any other federal or state law providing for the debarment of contractors from public works.

(E) The contractor has not bid on a public works contract, been listed in a bid proposal, or engaged in the performance of a contract for public works without being lawfully registered in accordance with this section, within the preceding 12 months or since the effective date of the requirements set forth in subdivision (e), whichever is earlier. If a contractor is found to be in violation of the requirements of this paragraph, the period of disqualification shall be waived if both of the following are true:

(i) The contractor has not previously been found to be in violation of the requirements of this paragraph within the preceding 12 months.

(ii) The contractor pays an additional nonrefundable penalty registration fee of two thousand dollars ($2,000).

(b) Fees received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(c) A contractor who fails to pay the renewal fee required under paragraph (1) of subdivision (a) on or before the expiration of any prior period of registration shall be prohibited from bidding on or engaging in the performance of any contract for public work until once again registered pursuant to this section. If the failure to pay the renewal fee was inadvertent, the contractor may renew its registration retroactively by paying an additional nonrefundable penalty renewal fee equal to the amount of the renewal fee within 90 days of the due date of the renewal fee.

(d) If, after a body awarding a contract accepts the contractor's bid or awards the contract, the work covered by the bid or contract is determined to be a public work to which Section 1771 applies, either as the result of a determination by the director pursuant to Section 1773.5 or a court decision, the requirements of this section shall not apply, subject to the following requirements:

(1) The body that awarded the contract failed, in the bid specification or in the contract documents, to identify as a public work that portion of the work that the determination or decision subsequently classifies as a public work.

(2) Within 20 days following service of notice on the awarding body of a determination by the Director of Industrial Relations pursuant to Section 1773.5 or a decision by a court that the contract was for public work as defined in this chapter, the contractor and any subcontractors are registered under this section or are replaced by a contractor or subcontractors who are registered under this section.

(3) The requirements of this section shall apply prospectively only to any subsequent bid, bid proposal, contract, or work performed after the awarding body is served with notice of the determination or decision referred to in paragraph (2).

(e) The requirements of this section shall apply to any bid proposal submitted on or after March 1, 2015, to any contract for public work, as defined in this chapter, executed on or after April 1, 2015, and to any work performed under a contract for public work on or after January 1, 2018, regardless of when the contract for public work was executed.

(f) This section does not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.
(Amended by Stats. 2017, Ch. 28, Sec. 15. (SB 96) Effective June 27, 2017.)

1771. Except for public works projects of one thousand dollars ($1,000) or less, not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter, shall be paid to all workers employed on public works.
This section is applicable only to work performed under contract, and is not applicable to work carried out by a public agency with its own forces. This section is applicable to contracts let for maintenance work.

(Amended by Stats. 1981, Ch. 449, Sec. 1.)

1771.1. (a) A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

(b) Notice of the requirement described in subdivision (a) shall be included in all bid invitations and public works contracts, and a bid shall not be accepted nor any contract or subcontract entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Section 1725.5.

(c) An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that any of the following apply:

(1) The subcontractor is registered prior to the bid opening.

(2) Within 24 hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(3) The subcontractor is replaced by another registered subcontractor pursuant to Section 4107 of the Public Contract Code.

(d) Failure by a subcontractor to be registered to perform public work as required by subdivision

(a) shall be grounds under Section 4107 of the Public Contract Code for the contractor, with the consent of the awarding authority, to substitute a subcontractor who is registered to perform public work pursuant to Section 1725.5 in place of the unregistered subcontractor.

(e) The department shall maintain on its Internet Web site a list of contractors who are currently registered to perform public work pursuant to Section 1725.5.

(f) A contract entered into with any contractor or subcontractor in violation of subdivision (a) shall be subject to cancellation, provided that a contract for public work shall not be unlawful, void, or voidable solely due to the failure of the awarding body, contractor, or any subcontractor to comply with the requirements of Section 1725.5 or this section.

(g) If the Labor Commissioner or his or her designee determines that a contractor or subcontractor engaged in the performance of any public work contract without having been registered in accordance with this section, the contractor or subcontractor shall forfeit, as a civil penalty to the state, one hundred dollars ($100) for each day of work performed in violation of the registration requirement, not to exceed an aggregate penalty of eight thousand dollars ($8,000) in addition to any penalty registration fee assessed pursuant to clause (ii) of subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(h) (1) In addition to, or in lieu of, any other penalty or sanction authorized pursuant to this chapter, a higher tiered public works contractor or subcontractor who is found to have entered into a subcontract with an unregistered lower tier subcontractor to perform any public work in violation of the requirements of Section 1725.5 or this section shall be subject to forfeiture, as a civil penalty to the state, of one hundred dollars ($100) for each day the unregistered lower tier subcontractor performs work in violation of the registration requirement, not to exceed an aggregate penalty of ten thousand dollars ($10,000).

(2) The Labor Commissioner shall use the same standards specified in subparagraph (A) of paragraph (2) of subdivision (a) of Section 1775 when determining the severity of the violation and what penalty to assess, and may waive the penalty for a first time violation that was unintentional and did not hinder the Labor Commissioner's ability to monitor and enforce compliance with the requirements of this chapter.

(3) A higher tiered public works contractor or subcontractor shall not be liable for penalties assessed pursuant to paragraph (1) if the lower tier subcontractor's performance is in violation of the requirements of Section 1725.5 due to the revocation of a previously approved registration.

(4) A subcontractor shall not be liable for any penalties assessed against a higher tiered public works contractor or subcontractor pursuant to paragraph (1). A higher tiered public works contractor or subcontractor may not require a lower tiered subcontractor to indemnify or otherwise be liable for any penalties pursuant to paragraph (1).

(i) The Labor Commissioner or his or her designee shall issue a civil wage and penalty assessment, in accordance with the provisions of Section 1741, upon determination of penalties pursuant to subdivision (g) and subparagraph (B) of paragraph (1) of subdivision (h). Review of a civil wage and penalty assessment issued under this subdivision may be requested in accordance with the provisions of Section 1742. The regulations of the Director of Industrial Relations, which govern proceedings for review of civil wage and penalty assessments and the withholding of contract payments under Article 1 (commencing with Section 1720) and Article 2 (commencing with Section 1770), shall apply.

(j) (1) Where a contractor or subcontractor engages in the performance of any public work contract without having been registered in violation of the requirements of Section 1725.5 or this section, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractor or the unregistered subcontractor on all public works until the unregistered contractor or unregistered subcontractor is registered. The stop order shall not apply to work by registered contractors or subcontractors on the public work.

(2) A stop order may be personally served upon the contractor or subcontractor by either of the following methods:

(A) Manual delivery of the order to the contractor or subcontractor personally.

(B) Leaving signed copies of the order with the person who is apparently in charge at the site of the public work and by thereafter mailing copies of the order by first class mail, postage prepaid to the contractor or subcontractor at the address on file with either of the following:

(i) The Contractors' State License Board.

(ii) The Secretary of State.

(3) The stop order shall be effective immediately upon service and shall be subject to appeal by the party contracting with the unregistered contractor or subcontractor, by the unregistered contractor or subcontractor, or both. The appeal, hearing, and any further review of the hearing decision shall be governed by the procedures, time limits, and other requirements specified in subdivision (a) of Section 238.1.

(k) Failure of a contractor or subcontractor, owner, director, officer, or managing agent of the contractor or subcontractor to observe a stop order issued and served upon him or her pursuant to subdivision (j) is guilty of a misdemeanor punishable by imprisonment in county jail not exceeding 60 days or by a fine not exceeding ten thousand dollars ($10,000), or both.

(l) This section shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work entered into on or after April 1, 2015. This section shall also apply to the performance of any public work, as defined in this chapter, on or after January 1, 2018, regardless of when the contract for public work was entered.

(m) Penalties received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(n) This section shall not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.
(Amended by Stats. 2018, Ch. 455, Sec. 2. (SB 877) Effective September 17, 2018.)

1775. (a) (1) The contractor and any subcontractor under the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit not more than two hundred dollars ($200) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision (b), by any subcontractor under the contractor.

(2) (A) The amount of the penalty shall be determined by the Labor Commissioner based on consideration of both of the following:

(i) Whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) Whether the contractor or subcontractor has a prior record of failing to meet its prevailing wage obligations.

(B) (i) The penalty may not be less than forty dollars ($40) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, unless the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) The penalty may not be less than eighty dollars ($80) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the contractor or subcontractor has been assessed penalties within the previous three years for failing to meet its prevailing wage obligations on a separate contract, unless those penalties were subsequently withdrawn or overturned.

(iii) The penalty may not be less than one hundred twenty dollars ($120) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Labor Commissioner determines that the violation was willful, as defined in subdivision (c) of Section 1777.1.

(C) If the amount due under this section is collected from the contractor or subcontractor, any outstanding wage claim under Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 against that contractor or subcontractor shall be satisfied before applying that amount to the penalty imposed on that contractor or subcontractor pursuant to this section.

(D) The determination of the Labor Commissioner as to the amount of the penalty shall be reviewable only for abuse of discretion.

(E) The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the contractor or subcontractor, and the body awarding the contract shall cause to be inserted in the contract a stipulation that this section will be complied with.

(b) If a worker employed by a subcontractor on a public works project is not paid the general prevailing rate of per diem wages by the subcontractor, the prime contractor of the project is not liable for any penalties under subdivision (a) unless the prime contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with all of the following requirements:

(1) The contract executed between the contractor and the subcontractor for the performance of work on the public works project shall include a copy of the provisions of this section and Sections **1771, 1776, 1777.5, 1813, and 1815.**

(2) The contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor.

(3) Upon becoming aware of the failure of the subcontractor to pay his or her workers the specified prevailing rate of wages, the contractor shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project.

(4) Prior to making final payment to the subcontractor for work performed on the public works project, the contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on the public works project and any amounts due pursuant to Section 1813.

(c) The Division of Labor Standards Enforcement shall notify the contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages.
(Amended by Stats. 2011, Ch. 677, Sec. 1. (AB 551) Effective January 1, 2012.)

1776 (a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract and the Division of Labor Standards Enforcement of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to the records at the principal office of the contractor.

(C) Unless required to be furnished directly to the Labor Commissioner in accordance with paragraph (3) of subdivision (a) of Section 1771.4, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in subdivision (a).

(d) A contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

(e) Except as provided in subdivision (f), any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a multiemployer Taft-Hartley trust fund (29 U.S.C. Sec. 186(c)(5)) that requests the records for the purposes of allocating contributions to participants shall be marked or obliterated only to prevent disclosure of an individual's full social security number, but shall provide the last four digits of the social security number. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

(f) (1) Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonredacted copies of certified payroll records. Any copies of records or certified payroll made available for inspection and furnished upon request to the public by an agency included in the Joint Enforcement Strike Force on the Underground Economy or to a law enforcement agency investigating a violation of law shall be marked or redacted to prevent disclosure of an individual's name, address, and social security number.

(2) An employer shall not be liable for damages in a civil action for any reasonable act or omission taken in good faith in compliance with this subdivision.

(g) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city, and county, and shall, within five working days, provide a notice of a change of location and address.

(h) The contractor or subcontractor has 10 days in which to comply, subsequent to receipt of a written notice requesting the records enumerated in subdivision (a). In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit one hundred dollars ($100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

(i) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section.

(j) The director shall adopt rules consistent with the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code) and the Information Practices Act of 1977 (Title 1.8 (commencing with Section 1798) of Part 4 of Division 3 of the Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.
(Amended by Stats. 2014, Ch. 28, Sec. 71. (SB 854) Effective June 20, 2014.)

1777.5. (a) (1) This chapter does not prevent the employment upon public works of properly registered apprentices who are active participants in an approved apprenticeship program.

(2) For purposes of this chapter, “apprenticeship program” means a program under the jurisdiction of the California Apprenticeship Council established pursuant to Section 3070.

(b) (1) Every apprentice employed upon public works shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

(2) Unless otherwise provided by a collective bargaining agreement, when a contractor requests the dispatch of an apprentice pursuant to this section to perform work on a public works project and requires the apprentice to fill out an application or undergo testing, training, an examination, or other preemployment process as a condition of employment, the apprentice shall be paid for the time spent on the required preemployment activity, including travel time to and from the required activity, if any, at the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered. Unless otherwise provided by a collective bargaining agreement, a contractor is not required to compensate an apprentice for the time spent on preemployment activities if the apprentice is required to take a preemployment drug or alcohol test and he or she fails to pass that test.

(c) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3 are eligible to be employed at the apprentice wage rate on public works. The employment and training of each apprentice shall be in accordance with either of the following:

(1) The apprenticeship standards and apprentice agreements under which he or she is training.

(2) The rules and regulations of the California Apprenticeship Council.

(d) If the contractor to whom the contract is awarded by the state or any political subdivision, in performing any of the work under the contract, employs workers in any apprenticeable craft or trade, the contractor shall employ apprentices in at least the ratio set forth in this section and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the site of the public work for a certificate approving the contractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the contractor, shall arrange for the dispatch of apprentices to the contractor. A contractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade," as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the California Apprenticeship Council. As used in this section, "contractor" includes any subcontractor under a contractor who performs any public works not excluded by subdivision (o).

(e) Before commencing work on a contract for public works, every contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the site of the public work. The information submitted shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the awarding body, if requested by the awarding body. Within 60 days after concluding work on the contract, each contractor and subcontractor shall submit to the awarding body, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the contract. The information under this subdivision shall be public. The apprenticeship programs shall retain this information for 12 months.

(f) The apprenticeship program supplying apprentices to the area of the site of the public work shall ensure equal employment and affirmative action in apprenticeship for women and minorities.

(g) The ratio of work performed by apprentices to journeymen employed in a particular craft or trade on the public work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates if the contractor agrees to be bound by those stndards. However, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentice work for every five hours of journeyman work.

(h) This ratio of apprentice work to journeyman work shall apply during any day or portion of a day when any journeyman is employed at the jobsite and shall be computed on the basis of the hours worked during the day by journeymen so employed. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the ratio. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract or, in the case of a subcontractor, before the end of the subcontract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the jobsite. When an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Administrator of Apprenticeship, upon application of an apprenticeship program, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

(i) A contractor covered by this section who has agreed to be covered by an apprenticeship program's standards upon the issuance of the approval certificate, or who has been previously approved for an apprenticeship program in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the applicable apprenticeship standards, but in no event less than the 1-to-5 ratio required by subdivision (g).

(j) Upon proper showing by a contractor that he or she employs apprentices in a particular craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by journeymen, the Administrator of Apprenticeship may grant a certificate exempting the contractor from the 1-to-5 hourly ratio, as set forth in this section for that craft or trade.

(k) An apprenticeship program has the discretion to grant to a participating contractor or contractor association a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(1) Unemployment for the previous three-month period in the area exceeds an average of 15 percent.

(2) The number of apprentices in training in the area exceeds a ratio of 1 to 5.

(3) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis.

(4) Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

(l) If an exemption is granted pursuant to subdivision (k) to an organization that represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member contractors shall not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

(m) (1) A contractor to whom a contract is awarded, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the director determines is the prevailing amount of apprenticeship training contributions in the area of the public works site. A contractor may take as a credit for payments to the council any amounts paid by the contractor to an approved apprenticeship program that can supply apprentices to the site of the public works project. The contractor may add the amount of the contributions in computing his or her bid for the contract.

(2) (A) At the conclusion of the 2002–03 fiscal year, and each fiscal year thereafter, the California Apprenticeship Council shall distribute training contributions received by the council under this subdivision, less the expenses of the Department of Industrial Relations for administering this subdivision, by making grants to approved apprenticeship programs for the purpose of training apprentices. The grant funds shall be distributed as follows:

(i) If there is an approved multiemployer apprenticeship program serving the same craft or trade and geographic area for which the training contributions were made to the council, a grant to that program shall be made.

(ii) If there are two or more approved multiemployer apprenticeship programs serving the same craft or trade and county for which the training contributions were made to the council, the grant shall be divided among those programs based on the number of apprentices from that county registered in each program.

(iii) All training contributions not distributed under clauses (i) and (ii) shall be used to defray the future expenses of the Department of Industrial Relations for the administration and enforcement of apprenticeship standards and requirements under this code.

(B) An apprenticeship program shall only be eligible to receive grant funds pursuant to this subdivision if the apprenticeship program agrees, prior to the receipt of any grant funds, to keep adequate records that document the expenditure of grant funds and to make all records available to the Department of Industrial Relations so that the Department of Industrial Relations is able to verify that grant funds were used solely for training apprentices. For purposes of this subparagraph, adequate records include, but are not limited to, invoices, receipts, and canceled checks that account for the expenditure of grant funds. This subparagraph shall not be deemed to require an apprenticeship program to provide the Department of Industrial Relations with more documentation than is necessary to verify the appropriate expenditure of grant funds made pursuant to this subdivision.

(C) The Department of Industrial Relations shall verify that grants made pursuant to this subdivision are used solely to fund training apprentices. If an apprenticeship program is unable to demonstrate how grant funds are expended or if an apprenticeship program is found to be using grant funds for purposes other than training apprentices, then the apprenticeship program shall not be eligible to receive any future grant pursuant to this subdivision and the Department of Industrial Relations may initiate the process to rescind the registration of the apprenticeship program.

(3) All training contributions received pursuant to this subdivision shall be deposited in the Apprenticeship Training Contribution Fund, which is hereby created in the State Treasury. Upon appropriation by the Legislature, all moneys in the Apprenticeship Training Contribution Fund shall be used for the purpose of carrying out this subdivision and to pay the expenses of the Department of Industrial Relations.

(n) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

(o) This section does not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars ($30,000).

(p) An awarding body that implements an approved labor compliance program in accordance with subdivision (b) of Section 1771.5 may, with the approval of the director, assist in the enforcement of this section under the terms and conditions prescribed by the director. *(Amended by Stats. 2018, Ch. 704, Sec. 17. (AB 235) Effective September 22, 2018.)*

1813. The contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars ($25) for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.
(Amended (as added by Stats. 1997, Ch. 757, Sec. 6) by Stats. 2002, Ch. 28, Sec. 3. Effective January 1, 2003.)

1815. Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of this code, and notwithstanding any stipulation inserted in any contract pursuant to the requirements of said sections, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than $1^1/_2$ times the basic rate of pay.
(Amended by Stats. 1963, Ch. 964.)

EXCERPTS FROM PUBLIC CONTRACT CODE 9204

EFFECTIVE DATE JANUARY 1, 2017

Please note section 9204 of the Public Contract Code, set forth in full below. Contractor must follow the contractual dispute resolution process specified in the Ventura County Standard Specifications, which is consistent with section 9204.

* * *

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3)(A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High–Speed Rail Authority.

(4) “Public works project” means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) “Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)(1)(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45–day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public

entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a

public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute that is enacted before January 1, 2027, deletes or extends that date.

VCSS

VENTURA COUNTY STANDARD SPECIFICATIONS - TABLE OF CONTENTS

PART 1 - GENERAL PROVISION

SECTION 0 - SSPWC ADOPTION AND MODIFICATION

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE AND SYMBOL

SECTION 2 - SCOPE AND CONTROL OF WORK

SECTION 3 - CHANGES IN WORK

SECTION 4 - CONTROL OF MATERIALS

SECTION 5 - UTILITIES

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

SECTION 9 - MEASUREMENT AND PAYMENT

SECTION 10 - DIVERSION, CONTROL AND REMOVAL OF WATER

PART 2 CONSTRUCTION MATERIALS

SECTION 200 - ROCK MATERIALS

SECTION 206 - MISCELLANEOUS METAL ITEMS

SECTION 210 - PAINT AND PROTECTIVE COATINGS

SECTION 211 - SOIL AND AGGREGATE TESTS

VENTURA COUNTY STANDARD SPECIFICATIONS - TABLE OF CONTENTS

PART 3 CONSTRUCTION METHODS

SECTION 301 - TREATED SOILS, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

SECTION 302 - ROADWAY SURFACING

SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION

SECTION 306 - UNDERGROUND CONDUIT CONSTRUCTION

SECTION 310 - PAINTING

VENTURA COUNTY STANDARD SPECIFICATIONS - TABLE OF CONTENTS

PART 4

SECTION 400 - ALTERNATE ROCK PRODUCTS, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND UNTREATED BASE MATERIAL

APPENDICES

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
STANDARD SPECIFICATIONS
PART 1 - GENERAL PROVISIONS

SECTION 0 - SSPWC ADOPTION AND MODIFICATIONS

0-1 STANDARD SPECIFICATIONS

Except as hereinafter provided or as modified by the Special Provisions, the provisions of Parts 2 through 5 of the 2015 edition of the Standard Specifications for Public Works Construction (referred to as SSPWC), published by BNi Building News, Los Angeles, are part of these Standard Specifications.

0-2 DELETIONS

The following portions of SSPWC are hereby deleted: Part 1 and Sections 200-1.6.2, and 301-1.4.

0-3 NUMBERING OF SECTIONS

The numbering in these modifications is compatible with the numbering in SSPWC. References to whole sections of SSPWC and these modifications are preceded by the word "Section", references to parts of sections show numbers only, such as "211-5", except at the beginning of a sentence, the word "Section" precedes the number. Standard Special Provisions, if included, are numbered as Sections 901 through 999. The Special Provisions are numbered starting with Section 1000 or higher.

Cross-references contained in SSPWC to sections deleted by 0-2 hereof shall be references to the sections of like number contained herein.

0-4 ADDITIONS

The sections that follow, either, replace sections of like number in SSPWC which were deleted in 0-2 above, modify sections of SSPWC, or add material not in SSPWC.

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE AND SYMBOLS

1-1 GENERAL Unless otherwise stated, the words directed, required, permitted, ordered, instructed, designated, considered necessary, prescribed, approved, acceptable, satisfactory, or words of like meaning, refer to actions, expressions, and prerogatives of the Engineer.

1-2 TERMS AND DEFINITIONS

Acceptance--The formal written acceptance by the Agency of the Work which has been completed in all respects in accordance with the Plans and Specifications and any Modifications thereof.

Addendum--Written or graphic instrument issued prior to the opening of Bids which clarifies, corrects or changes the bidding or Contract Documents. The term "Addendum" shall include bulletins and all other types of written notices issued to potential bidders prior to opening of Bids.

Agency--The legal entity for which the Work is being performed.

Agreement--See Contract.

Base--A layer of specified material of planned thickness placed immediately below the pavement or surfacing.

Bid--The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work.

Bidder--Any individual, firm, partnership, corporation, or combination thereof, submitting a Bid for the Work, acting directly or through a duly authorized representative.

Board--The officer or body constituting the awarding authority of the Agency.

Bond--Bid, performance and payment bond or other instrument of security.

Cash Contract--A contract financed by means other than special assessments.

Certificate of Compliance—A written document signed and submitted by a supplier or manufacturer that certifies that the material or assembled material supplied to the Work site conforms to the requirements of the Contract Documents.

Change Order--A written order to the Contractor signed by the Agency directing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract time issued after the effective date of the Contract. A Change Order may or may not also be signed by the Contractor.

Code--The terms Government Code, Labor Code, etc. refer to codes of the State of California.

Consultant--A professional engineer, architect, landscape architect or other professional who designed the project or performed other services for the Agency on the project.

Contract--The written agreement between the Agency and the Contractor covering the Work.

Contract Documents--The Contract, Addenda, notice inviting bids, instruction to bidders; Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Contract, the Bonds, permits from jurisdictional regulatory agencies, Special Provisions, Plans, Standard Plans, Standard Specifications, Reference Specifications, Change Orders and Supplemental Agreements.

Contractor--The individual, partnership, corporation, joint venture, or other legal entity having a Contract with the Agency to perform the Work. In the case of work being done under permit issued by the Agency, the Permittee shall be construed to be the Contractor. The term "prime contractor" shall mean Contractor.

Contract Price--The total amount of money for which the Contract is awarded.

Contract Unit Price--The amount shown in the Bid for a single unit of an item of work.

County Sealer--The Sealer of Weights and Measures of the county in which the Contract is let.

Days--Days shall mean consecutive calendar days unless otherwise specified.

Daily Extra Work Reports--Reports on Agency furnished forms as required by 3-3.

Disputed Work--Work in which Agency and Contractor are in disagreement.

Due Notice--A written notification, given in due time, of a proposed action where such notification is required by the Contract to be given a specified interval of time (usually 48 hours or two Working Days) prior to the commencement of the contemplated action. Notification may be from Engineer to Contractor or from Contractor to Engineer.

Electrolier--Street light assembly complete, including foundation, standard, luminaire arm, luminaire, etc.

Engineer--The Director of Public Works Agency acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

Field Directive--A written communication from the Engineer to the Contractor that does not make any Modification to the Contract Documents. It is used only to answer Contractor's questions and to provide decisions as specified in the Contract Documents.

Geotextile--Synthetic fiber used in civil engineering applications, serving the primary function of separation and filtration.

House Connection Sewer--A sewer, within a public street or right of way, proposed to connect any parcel, lot, or part of a lot with a main line sewer.

House Sewer--A sewer, wholly within private property, proposed to connect any building to a house connection sewer.

Luminaire--The lamp housing including the optical and socket assemblies (and ballast if so specified).

Major Bid Item--A single Contract item constituting 10% or more of the original Contract Price.

Mast Arm--The structural member or bracket, which, when mounted on a Standard, supports the luminaire.

Modification--Includes Change Orders and Supplemental Agreements. A Modification may only be issued after the effective date of the Contract.

Notice of Award--The written notice by the Agency to the successful Bidder stating that upon compliance by it with the required conditions, the Agency will execute the Contract.

Notice to Proceed--A written notice given by the Agency to the Contractor fixing the date on which the Contract time will start.

Owner--Same meaning as Agency.

Person--Any individual, firm, association, partnership, corporation, trust, joint venture, or other legal entity.

Plans--The drawings, profiles, cross sections, Standard Plans, working drawings, shop drawings, and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions, or details of the Work.

Private Contract--Work subject to Agency inspection, control, and approval, involving private funds, not administered by the Agency.

Prompt--The briefest interval of time required for a considered reply, including time required for approval by a governing body.

Proposal--See Bid.

Reference Specifications--Those bulletins, standards, rules, methods of analysis or testing, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents. These refer to the latest edition, including amendments in effect and published at the time of advertising the project or issuing the permit, unless specifically referred to by edition, volume, or date.

Roadway--The portion of a street reserved for vehicular use.

Service Connection-All or any portion of the conduit cable or duct including meter, between a utility distribution line and an individual consumer

Service Lateral Connection-The interface of the House Connection Sewer with the host pipe.

Sewer--Any conduit intended for the reception and transfer of sewage and fluid industrial waste.

Shop Drawings—Drawings showing details of manufactured or assembled products proposed to be incorporated in the Work.

Special Provisions--Any provisions which supplement or modify the Standard Specifications.

Specifications--Standard Specifications, Reference Specifications, Standard Special Provisions, Special Provisions, and specifications in Change Orders or Supplemental Agreements between the Contractor and the Board.

Standard—The shaft or pole used to support street lighting luminaire, traffic signal heads, mast arms, etc.

Standard Plans--Details of standard structures, devices, or instructions referred to on the Plans or in the Specifications by title or number.

Standard Special Provisions-- Special Provisions prepared in standardized form numbered in the series 401 through 499.

1-2 DEFINITIONS (Continued)

Standard Specifications--Parts 1 through 6 of this document. See Section 0. References to whole sections will be preceded by the word "Section", references to parts of sections will show numbers only, such as "3-2", except at the beginning of a sentence, the word "Section" precedes the number.

State--The State of California.

State Standard Plans--Standard Plans prepared by State of California, Business and Transportation Agency, Department of Transportation.

Stipulated Unit Price--Unit prices established by Agency in the Contract Documents.

Storm Drain--Any conduit and appurtenances intended for the reception and transfer of storm water.

Street--Any road, highway, parkway, freeway, alley, walk or way.

Subbase--A layer of specified material of planned thickness between a base and the subgrade.

Subcontractor--An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work.

Subgrade--For roadways, that portion of the roadbed on which pavement, surfacing, base, subbase, or a layer of other material is placed. For structures, the soil prepared to support a structure.

Supervision--Supervision, where used to indicate supervision by the Engineer, shall mean the performance of obligations, and the exercise of rights, specifically imposed upon and granted to the Agency in becoming a party to the Contract. Except as specifically stated herein, supervision by the Agency shall not mean active and direct superintendence of details of the Work.

Supplemental Agreement--A written amendment of the Contract Documents signed by both parties.

Surety--See 2-4.

Utility--Tracks, overhead or underground wires, pipelines, conduits, ducts, or structures, sewers or storm drains owned, operated or maintained in or across a public right of way or private easement.

Work--That which is proposed to be constructed or done under the Contract or permit, including the furnishing of all labor, materials, equipment, and services.

Working Day--See 6-7.2 and 6.7.2.1.

Working Drawings—Drawings showing details not shown on the Plans which are required to designed by the Contractor

1-3 ABBREVIATIONS

1-3.1 General. The abbreviations herein, together with others in general use, are applicable to these Standard Specifications and to all other Contract Documents.

All abbreviations and symbols used on Plans for structural steel construction shall conform to those given by the "Manual of Steel Construction" published by the American Institute of Steel Construction, Inc.

1-3.2 Common Usage

Abbreviation	Word or Words	Abbreviation	Word or Words
Aban	Abandon	l	Liters
Aband	Abandoned	Lab	Laboratory
ABS	Acrylonitrile-butadiene-styrene	Lat	Lateral
AC	Asphalt Concrete	LD	Local depression
ACP	Asbestos cement pipe	LED	Light Emitting Diode
ADA	Americans with Disabilities Act of 1990 (Public Law 101-336, 104 Sat. 1990,42 USC 12101-12213 (as amended))	LH	Lamp hole
Alt	Alternate	LL	Live load
AmerStd	American Standard	LOL	Layout line
APC	Air Placed Concrete	Long	Longitudinal
ARAM	Asphalt Rubber Aggregate Membrane	LP	Lamp post
ARHM	Asphalt Rubber Hot Mix	LPS	Low pressure sodium (Light)
AWG	American Wire Gage (non-ferrous wire)	LS	Lump sum
B/W	Back of wall	LTS	Lime treated soil
BC	Beginning of curve	m	Meters
BCR	Beginning of curb return	Maint	Maintenance
Bdry	Boundary	Max	Maximum
BF	Bottom of footing	MC	Medium curing
BM	Bench mark	MCR	Middle of curb return
BMPs	Best Management Practices	Meas	Measure
BVC	Beginning of vertical curve	MH	Manhole, maintenance hole
C&G	Curb & Gutter	Mil Spec	Military specification
C&G	Curb and gutter	Min	Minimum
CAB	Crushed aggregate base	Misc	Miscellaneous

Abbreviation	Word or Words
CALOSHA	California Occupational Safety and Health Administration
CALTRANS	California Department of Transportation
CAP	Corrugated aluminum pipe
CB	Catch Basin
Cb	Curb
CBP	Catch Basin Connection Pipe
CBR	California Bearing Ratio
C-C	Center to center
CCFRPM	Centrifugally Cast Fiberglass Reinforced Plastic Mortar
CCR	California Code of Regulations
CCTV	Closed Circuit TV
CF	Cubic foot
CF	Curb face
CFR	Code of Federal Regulations
CFS	Cubic feet per second
CHDPE	Corrugated High Density Polyethylene
CIP	Cast iron pipe
CIPP	Cast-in-place pipe
CIPPC	Cast-in-place Concrete Pipe
CL	Clearance, center line
CLF	Chain link fence
CLSM	Controlled Low Strength Material
CMB	Crushed miscellaneous base
CMC	Cement mortar-coated
CML	Cement mortar-lined
cms	Cubic meters per second
CO	Cleanout (Sewer)
Col	Column
Conc	Concrete
Conn	Connection
Const	Construct, Construction
Coord	Coordinate
CQS	Cationic Quick-Setting
CRM	Crumb Rubber Modifier
CRS	Cationic Rapid-Setting
CSEP	Confined Space Entry Plan
CSP	Corrugated steel pipe
CSPA	Corrugated steel pipe arch
CSS	Cationic Slow-Setting
CT	California Test
CTB	Cement treated base
CV	Check valve
CY	Cubic yard
D	Depth, Load of pipe
db	Decibels
Dbl	Double
DF	Douglas Fir
Dia	Diameter
DIP	Ductile iron pipe
DL	Dead load
DT	Drain tile
Dwg	Drawing
Dwy Appr	Driveway approach
Dwy	Driveway
Ea	Each
EC	End of curve
ECR	End of curb return
EF	Each face
EG	Edge of gutter
EGL	Energy grade line
El	Elevation
ELC	Electrolier lighting conduit
ELT	Extra long ton of slurry
Eng	Engineer, Engineering
EP	Edge of pavement
Esmt	Easement
ETB	Emulsion treated base

Abbreviation	Word or Words
Mon	Monument
MSDS	Material Safety Data Sheet
Mult	Multiple
MUTCD	Manual on Uniform Traffic Control Devices
MVL	Mercury vapor light
N/A	No applicable
NRCP	Nonreinforced concrete pipe
Obs	Obsolete
oc	On center
OD	Outside diameter
OE	Outer edge
Opp	Opposite
Orig	Original
PAV	Pressure Aging Vessel
PB	Pull box
PC	Point of curvature
PCC	Point of compound curvature
PCC	Portland cement concrete
PCVC	Point of compound vertical curve
PE	Polyethylene
PG	Performance Graded
PI	Point of intersection
PL	Property line
PLI	Pounds per linear inch
PMB	Processed miscellaneous base
POC	Point on curve
POT	Point on tangent
PP	Power pole
PRC	Point of reverse curve
PRCB	Precast Reinforced Concrete Box
PRVC	Point of reverse vertical curve
PSI	Pounds per square inch
PT	Point of tangency
PVC	Polyvinyl chloride
Pvmt	Pavement
Pvt R/W	Private right of way
Q	Rate of flow in cms (CFS)
Quad	Quadrangle, Quadrant
R	Radius or Resistance value
R&O	Rock and Oil
R/W	Right of way
RA	Reclaimed Asphalt or Recycling agent
RAC	Recycled asphalt concrete
RAP	Reclaimed asphalt pavement
RBAC	Rubberized asphalt concrete
RC	Reinforced concrete or Rapid Curing
RCB	Reinforced concrete box
RCE	Registered civil engineer
RCP	Reinforced concrete pipe
RCV	Remote control valve
Ref	Reference
Reinf	Reinforced or reinforcement
Res	Reservoir
RGE	Registered geotechnical engineer
RPPCC	Reclaimed Plastic Portland Cement Concrete
RR	Railroad
RSE	Registered structural engineer
RTE	Registered traffic engineer
RTFO	Rolling Thin Film Oven
RW	Reclaimed Water
S	Slope
S/W	Sidewalk
SC	Slow curing
SCCP	Steel cylinder concrete pipe
SCNs	Supplementary Cementitious Materials
SD	Storm drain
SDR	Standard dimension ratio

Abbreviation	Word or Words
EVC	End of vertical curve
Exc	Excavation
Exist or Ex	Existing
Exp Jt	Expansion joint
F & C	Frame and cover
F & I	Furnish and install
F/W	Face of wall
Fab	Fabricate
FAS	Flashing arrow sign
FD	Floor drain
Fdn	Foundation
Fed Spec	Federal Specification
FG	Finished grade
FL	Flow line
FS	Finished surface
ft - lb	foot – pound
Ftg	footing
FW	Face of wall
Ga	Gauge
Galv	Galvanized
GG	Gap graded
GIP	Galvanized iron pipe
GL	Ground line or grade line
GM	Gas meter
GP	Guy pole
Gr	Grade
Grtg	Grating
GSP	Galvanized steel pipe
H	High or height
HB	Hose bib
HC	House connection
HDPE	High density Polyethylene
HDWL	Headwall
HGL	Hydraulic grade line
Hor, Horiz	Horizontal
Hp	Horsepower
HPG	High pressure gas
HPS	High pressure sodium (Light)
HRWRA	High Range Water Reducing Admixture
Hyd, Hydr	Hydraulic
ID	Inside diameter
Incl	Include, Including
Insp	Inspection
Inv	Invert
IP	Iron pipe
J	Joules
JC	Junction chamber
Jct	Junction
JS	Junction structure
Jt	Joint
kg	Kilograms
kPa	KiloPascals
L	Length

Abbreviation	Word or Words
SE	Sand Equivalent
Sec	Section
SF	Square foot
SG	Specific gravity
SI	International System of Units (Metric)
SLC	Service Lateral Connection
Spec	Specifications
SR	Standard ratio
SS	Sanitary sewer
SSB	Select sub-base
SSP	Structural steel plate pipe
SSPA	Structural steel plate pipe arch
St Hwy	State highway
Sta	Station
Std	Standard
Str Gr	Straight grade
Str	Straight
Struc	Structural/Structure
SW	Sidewalk
SWD	Sidewalk drain
SWPPP	Storm Water Pollution Prevention Plan
SY	Square Yard
T/W	Top of wall
Tan	Tangent
TC	Top of curb
TCP	Traffic control plan
Tel	Telephone
TF	Top of footing
Topo	Topography
Tr	Tract
Trans	Transition
TRMAC	Tire rubber modified asphalt concrete
TS	Traffic signal or transition structure
TSC	Traffic signal conduit
TSS	Traffic signal standard
TTC	Temporary traffic control
TW	Top of wall
Typ	Typical
U.S.	United States
U.S.C.	United States Code
USA	Underground Service Alert
Var	Varies, Variable
VB	Valve box
VC	Vertical curve
VCP	Vitrified clay pipe
Vert	Vertical
Vol	Volume
VTCSH	Vehicle Traffic Controls Signal Heads
W	Width or Wider
WATCH	Work Area Traffic Control Handbook
WI	Wrought iron
WM	Water meter
WPJ	Weakened plane joint
WTAT	Wet Track Abrasion Test
X Conn	Cross connection
x (as in 2x4)	by
X-Sec	Cross section

1-3.3 Institutions.

Abbreviation	Word or Words
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserver's Association
AWS	American Welding Society
AWWA	American Water Works Association
CBSC	California Building Standards Commission
CRSI	Concrete Reinforcing Steel Institute
EIA	Electronic Industries Association
EPA	Environmental Protection Agency
ETL	Electrical Testing Laboratories
FCC	Federal Communications Commission
IAPMO	International Association of Plumbing and Mechanical Officials
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
IMSA	International Municipal Signal Association
ITE	Institute of Traffic Engineers
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration (Department of Commerce)
RUS	Rural Utility Service
UL	Underwriters' Laboratories, Inc.
USGS	United State Geological Survey
WFCA	Western Fire Chiefs Association

1-3.4 Building Codes. The Ventura County Building Code (VCBC) and Ventura County Fire Code (VCFC) are applicable to the Work. VCBC and VCFC adopt by reference a number of uniform and national codes. Where such codes are referenced directly in the Specifications, such references shall be to the VCBC or VCFC which adopt and modify certain provisions in the referenced codes.

Abbreviation	Code	Publisher
CBC	California Building Code	CBSC
DBC	Uniform Code for Abatement of Dangerous Building	ICC
UBC	Uniform Building Code	ICC
UFC	Uniform Fire Code	ICC and WFCA
UHC	Uniform Housing Code	ICC
UMC	Uniform Mechanical Code	IAPMO
UPC	Uniform Plumbing Code	IAPMO
NEC	National Electrical Code	NFPA

1-3.5 Reference Documents.

Abbreviation	Document
HDM	Highway Design Manual, State of California, Department of Transportation, Latest Edition
MUTCD	Manual on Uniform Traffic Control Devices
SSP	Standard Plans, State of California, Department of Transportation, latest edition
SPPWC	Standard Plans for Public Works Construction, Latest edition, published by BNi Building News, Los Angeles,
SSPWC	Standard Specifications for Public Works Construction, (See Section 0-1)
SSS	Standard Specifications, State of California, Department of Transportation, latest edition
VCSS	Ventura County Standard Specifications (Division 1, Sections 0 through 10, of which this section is a part)

1-4 UNITS OF MEASURE

1-4.1 General. The International System of Units, also referred to as SI or the metric system, is the principal measurement system in these Specifications and shall be used for construction, unless otherwise stated in the Contract Documents. U. S. Standard Measure, also called U. S. Customary System, are included in parenthesis. SI units and U. S. Standard Measure in parenthesis may or may not be exactly equivalent. If U. S. Standard Measures are specified for use in the Contract Documents, then all values used for construction shall be U. S. Standard Measures shown in parentheses. However, certain material Specifications and test requirements contained herein use SI units specifically and conversions to U. S. Measures have not been included in these circumstances. When U. S. Standard Measures are not included in parentheses, the SI units shall control.

Reference is also made to ASTM E 380 for definitions of various units of the SI system and a more extensive set of conversion factors.

1-4.1.1 Units for Work. Where U. S. Standard Measure units are shown on the Plans or are specified, U. S. Standard Measure shall be used for the Work.

1-4.2 Units of Measure, Equivalents and Abbreviations

One U.S. Customary Unit	(abbreviation)	Is Equal To	#	SI Unit
mil (=0.001 in)		25.4	micrometers	(µm)
inch	(in)	25.4	millimeter	(mm)
inch	(in)	2.54	centimeter	(cm)
foot	(ft)	0.3048	meter	(m)
yard	(yd)	0.9144	meter	(m)
mile		1.6093	kilometer	(km)
square foot	(ft^2)	0.0929	square meter	(m^2)
square yard	(yd^2)	0.8361	square meter	(m^2)
cubic foot	(ft^3)	0.0283	cubic meter	(m^3)
cubic yard	(yd^3)	0.7646	cubic meter	(m^3)
acre (=43,560 ft^2)		0.4047	hectare (1ha=10,000m^2)	(ha)
gallon	(gal)	3.7854	Liter	(L)
fluid ounce	(fl. oz.)	29.5735	milliliter	(mL)
pound mass (avoirdupois)	(lbs)	0.4536	kilogram	(kg)
ounce mass	(oz)	0.02835	kilogram	(kg)
ounce mass	(oz)	28.35	grams	(g)
Ton (=2000 lb avoirdupois)		0.9072	Tonne (1 Tonne = 1000 kg)	
Poise		0.10	Pascal-second	(Pa-s)
centistoke	(cs)	1.00	square millimeter/sec.	(mm^2/s)
pound force	(lbf)	4.4482	Newton	(N)
pound per square inch	(psi)	6.8948	Kilopascal	(kPa)
pound force per foot	(lbf/ft)	14.594	Newton per meter	(N/M)
foot-pound force	(ft-lbf)	1.3558	Joules	(J)
foot-pound force per second	([ft-lbf]/s)	1.3558	Watt	(W)
part per million	(ppm)	1.00	milligram/liter	(mg/L)
Degree Fahrenheit	(°F)	0.5555	Degree Celsius	(°C)

Temperature: Celsius to Fahrenheit	Temperature: Fahrenheit to Celsius
Temperature °F = (1.8 x °C) + 32	Temperature °C = (°F - 32) / 1.8

SI Units Used in Both Systems		
Ampere (A)	second (s)	Candela (cd)
Volt (V)	decibel (db)	Lumen (lm)

Common Metric Prefixes					
kilo (k)	10^3	milli (m)	10^{-3}	nano (n)	10^{-9}
centi (c)	10^{-2}	micro (µ)	10^{-6}	pico (p)	10^{-12}

1-5 SYMBOLS

°	Degree	PL	Property line	%	Percent
'	Feet or minutes	SL	Survey line or station line	#	Number
"	Inches or seconds	CL	Center line	/	per or of (between words)
Δ	Delta, the central angle or angle between tangents			∠	Angle

SECTION 2 - SCOPE AND CONTROL OF WORK

2-1 AWARD AND EXECUTION OF CONTRACT

2-1.1 Award of Contract. The right is reserved to waive minor irregularities in the proposals and to reject any or all proposals. The award of the Contract, if it be awarded, will be to the lowest responsive, responsible Bidder, determined as provided on the Proposal Form, whose Proposal complies with all the requirements prescribed. Such award, if made, will be made within the number of Days stated in the Proposal form. If the lowest responsible Bidder refuses or fails to execute the Contract, the Agency may, within 45 additional Days, consider the next lowest Bidder to be the lowest responsive, responsible Bidder. The periods of time specified above within which the award of Contract may be made shall be subject to extension for such further period as may be agreed upon in writing by the Bidder concerned. If the Bidder's bid guarantee was in the form of a bid bond, the Bidder shall also submit a statement from the Surety that the bond has been extended for the same period.

Proposals not accompanied by a properly executed Noncollusion Affidavit required by Public Contract Code Section 7106 will be considered nonresponsive and will not be considered for award.

All bids will be compared on the basis of the quantities, amounts and unit prices, or lump sums, as shown on the Bid Proposal.

Before award, the Bidder may be required to furnish acceptable evidence of adequate capability, equipment and financial resources to adequately perform the Work. Bidders found not to be so qualified may have their bids rejected. If reasonable cause exists to believe collusion exists among Bidders, or that prices Bid are unbalanced between Bid items, any or all proposals may be rejected.

Award will not be made to a Bidder who is listed by the State Labor Commissioner as ineligible to bid, work on, or be awarded public works projects.

2-1.2 Notice of Award. Within one Day after award of Contract by the Board, the Bidder to whom Contract is awarded will be notified of award by email and telephone, or if no contact is made by telephone, then by mail. Within three business days after award of Contract, a Notice of Award will be sent, transmitting the Contract Documents to such Bidder for execution. If telephone contact is made, the Bidder may request that the Contract Documents be held in Agency's office to be picked up.

2-1.3 Execution of Contract Documents. On receipt of the Contract Documents, the Bidder shall promptly obtain the required insurance coverage, certificates of insurance, power-of-attorney and Contract bonds, execute the Contract, and transmit all required documents to the Agency.

2-1.4 Failure to Execute Documents. Should the Bidder fail to furnish Agency all required documents, properly executed, prior to the starting day of the Contract time computed as provided in 6-7.4 and stated in the Notice of Award, Agency may thereafter declare the Bidder to be in default and its Proposal guarantee forfeited.

2-1.5 Return of Proposal Guarantees. Within 10 Days after the award of the Contract, Agency will return the Proposal guarantees, other than Bidder's bonds, accompanying such of the proposals as are not to be further considered in making the award. The low and second Bidder's Proposal guarantee will be held until the Contract has been executed, after which all Proposal guarantees, except Bidders' bonds and any guarantees which have been forfeited, will be returned to the respective Bidders whose proposals they accompany.

2-2 ASSIGNMENT. No Contract or portion thereof may be assigned without consent of the Board except that the Contractor may assign money due or which will accrue to it under the Contract. If given written notice, such assignment will be recognized by the Board to the extent permitted by law, but any assignment of money shall be subject to all proper withholdings in favor of the Agency and to all deductions provided for in the Contract. All money withheld, whether assigned or not, shall be subject to being used by the Agency for completion of the Work, should the Contractor be in default.

2-3 SUBCONTRACTS.

2-3.1 General. Each Bidder shall comply with the Chapter of the Public Contract Code including Sections 4100 through 4113. The following excerpts or summaries of some of the requirements of that Chapter are included below for information.

The Bidder shall set forth in the Bid, as provided in 4104:

"(a) (1) The name, the location of the place of business, and the California contractor license number of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime contractor's total bid or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars ($10,000), whichever is greater.

(2) An inadvertent error in listing the California contractor license number provided pursuant to paragraph (1) shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the corrected contractor's license number is submitted to the public entity by the prime contractor within 24 hours after the bid opening and provided the corrected contractor's license number corresponds to the submitted name and location for that subcontractor."

If the Contractor fails to specify a Subcontractor, or specifies more than one Subcontractor for the same portion of the Work to be performed under the Contract (in excess of one-half of 1 percent of the Contractor's total bid), the Contractor shall be qualified to perform that portion itself, and shall perform that portion itself except as otherwise provided in the Code.

Except as provided in Section 4107, no prime contractor, whose Bid is accepted, shall substitute any person or Subcontractor in place of the Subcontractor listed in the original bid other than for causes and by procedures established in Section 4107.5 which provides procedures to correct a clerical error in the listing of a Subcontractor.

Section 4110 provides that a Contractor violating any of the provisions of the Chapter violates the Contract and the Board may exercise the option either to cancel the Contract or assess the Contractor a penalty in an amount of not more than 10 percent of the subcontract involved, after a public hearing.

2-3.1.1 Use of Debarred Subcontractors Prohibited. The Contractor is prohibited from performing work using a Subcontractor who is listed by the State Labor Commissioner as ineligible to work on public works projects.

2-3.2 Additional Responsibilities. The Contractor shall give personal attention to the fulfillment of the Contract and shall keep the Work under its control.

Except where the required Contractor's License Class is "B", the Contractor shall perform, with its own organization, Contract work amounting to at least 50 percent of the Contract Price except that any designated "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the Contract Price before computing the amount required to be performed by the Contractor with its own organization. "Specialty Items" will be identified by the Agency in the Bid or Proposal with an "[S]". Where an entire item is subcontracted, the value of work subcontracted will be based on the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer.

Before the work of any Subcontractor is started, the Contractor shall submit to the Engineer for approval a written statement showing the work to be subcontracted giving the name, contractor license number, registration with the Department of Industrial Relations, and business of each Subcontractor and description and value of each portion of work to be subcontracted.

2-3.3 Status of Subcontractors. Subcontractors shall be considered employees of the Contractor, and the Contractor shall be responsible for their work.

2-3.3.1 Subcontracts. The Contractor shall incorporate into all subcontracts, and the Subcontractor shall incorporate into all lower tier subcontracts, all of the Plans and Specifications which are part of the Contract between the Contractor and the Agency.

2-3.3.2 Contractor Responsible. The Contractor is responsible for properly performing and completing all Work required by the Contract whether or not it employs subcontractors for certain portions of the Work. It shall coordinate the sequence and timing of its efforts and that of its subcontractors to insure the proper and timely completion of the Work.

2-3.3.3 Specialty Contractors. Where a specialty Contractor's license is required by law or by the Specifications in order to perform certain portions of the Work, the Contractor may perform such portion with its own forces if it holds the proper license. Otherwise, it shall employ a properly licensed subcontractor to perform that portion of the Work. Such requirement to employ a subcontractor does not modify the other requirements of 2-3.

2-4 CONTRACT BONDS. Before execution of the Contract by the Agency, the Bidder shall file surety bonds with the Agency to be approved by the Board in the amounts and for the purposes noted below. Bonds issued by a Surety who is listed in the latest version of U.S. Department of Treasury Circular 570, who is authorized to issue bonds in California, and whose bonding limitation shown in said circular is sufficient to provide bonds in the amount required by the Contract shall be deemed to be approved unless specifically rejected by the Agency. Bonds from all other sureties shall be accompanied by all of the documents enumerated in Code of Civil Procedure 995.660(a). The Bidder shall pay all bond premiums, costs, and incidentals.

Each bond shall incorporate, by reference, the Contract and be signed by both the Bidder and Surety and the signature of the authorized agent of the Surety shall be notarized.

The Bidder shall provide two good and sufficient surety bonds. The "Payment Bond" (Material and Labor Bond) shall be for not less than 100 percent of the Contract Price, to satisfy claims of material suppliers and mechanics and laborers employed by it on the Work. The bond shall be maintained by the Contractor in full force and effect until the Work is accepted by the Agency, and until all claims for materials and labor are paid, and shall otherwise comply with the Civil Code.

The "Performance Bond" shall be for 100 percent of the Contract Price to guaranty faithful performance of all Work, within the time prescribed, in a manner satisfactory to the Agency, and that all materials and workmanship will be free from original or developed defects. The bond must remain in effect until the end of the warranty period set forth in 6.8-2.

Should any bond become insufficient, the Contractor shall renew the bond within 10 Days after receiving notice from the Agency.

Should any Surety at any time be unsatisfactory to the Board, notice will be given the Contractor to that effect. No further payments shall be deemed due or will be made under the Contract until a new Surety shall qualify and be accepted by the Board.

Changes in the Work, or extensions of time, made pursuant to the Contract, shall in no way release the Contractor or Surety from its obligations. Notice of such changes or extensions shall be waived by the Surety.

2-4.1 Bond Forms. Bonds shall be on forms furnished by Agency.

2-5 PLANS AND SPECIFICATIONS

2-5.1 General. The Contractor shall keep at the work site a copy of the Plans and Specifications, to which the Engineer shall have access at all times.

The Plans, Specifications, and other Contract Documents shall govern the Work. The Contract Documents are intended to be complementary and cooperative. Anything specified in the Specifications and not shown on the Plans, or shown on the Plans and not specified in the Specifications, shall be as though shown or specified in both.

The Plans shall be supplemented by such working drawings and shop drawings as are necessary to adequately control the Work.

The Contractor shall ascertain the existence of any conditions affecting the cost of the Work through reasonable examination of the work site prior to submitting the Bid..

Existing improvements visible at the work site, for which no specific disposition is made on the Plans, but which interfere with the completion of the Work, shall be removed and disposed of by the Contractor.

The Contractor shall, upon discovering any error or omission in the Plans or Specifications, immediately call it to the attention of the Engineer.

2-5.1.1 Specifications Captions. Captions accompanying specification parts, sections and paragraphs are for convenience of reference only and do not limit the content of such part, section or paragraph.

The division of the Plans into parts and the division of the Specifications into divisions and sections are for the ease of reference only and does not imply the division of work between trades or subcontractors.

2-5.2 Precedence of Contract Documents. If there is a conflict between any of the Contract Documents, the document highest in precedence shall control. The precedence shall be as follows:

1) Permits issued by jurisdictional regulatory agencies.
2) Change Orders and Supplemental Agreements; whichever occurs last.
3) Contract/Agreement.
4) Addenda.
5) Bid/Proposal.
6) Special Provisions.
7) Plans.
8) Standard Plans.
9) Standard Specifications.
10) Reference Specifications.

Detail drawings shall take precedence over general drawings.

2-5.3 Shop Drawings, Working Drawings, and Submittals.

2-5.3.1 General. Submittals shall be provided, at the Contractor's expense, as required in 2-5.3.2, 2-5.3.3 and 2-5.3.4, when required by the Plans or Special Provisions, or when requested by the Engineer.

Materials shall neither be furnished nor fabricated, nor shall any work for which submittals are required be performed, before the required submittals have been reviewed and accepted by the Engineer. Neither review nor acceptance of submittals by the Engineer shall relieve the Contractor from responsibility for errors, omissions, or deviations from the Contract Documents, unless such deviations were specifically called to the attention of the Engineer in the letter of transmittal. The Contractor shall be responsible for the correctness of the submittals.

The Contractor shall allow a minimum of 20 working days for review of submittals unless otherwise specified in the Special Provisions. Each submittal shall be accompanied by a letter of transmittal.

2-5.3.2 Working Drawings. Working drawings shall be of a size and scale to clearly show all necessary details.

Six copies and one reproducible shall be submitted. If no revisions are required, 3 of the copies will be returned to the Contractor. If revisions are required, the Engineer will return one copy along with the reproducible for resubmission. Upon acceptance, the Engineer will return 2 of the copies to the Contractor and retain the remaining copies and the reproducible.

Working drawings are required in the following subsections:

TABLE 2-5.3.2 (A)

Item	Section Number	Title	Subject
1	7-8.5.2	Sanitary Sewers	Sewage Bypass and Pumping
2	7.8.6.3	Water Pollution Control	Storm Water Pollution Prevention Plan
3	7-8.6.6	Water Pollution Control	Dewatering Plan
4	7-10.2.2	Work Area Traffic Control	Traffic Control Plan
5	7-10.4..2.2	Safety	Trench Shoring
6	207-8.4	Joints	Vitrified Clay Pipe
7	207-10.2.1	General	Fabricated Steel Pipe
8	300-3.2	Cofferdams	Structure Excavation & Backfill
9	303-1.6.1	General	Falsework
10	303-1.7.1	General	Placing Reinforcement
11	303-3.1	General	Prestressed Concrete Construction
12	304-1.1.1	Shop Drawings	Structural Steel
13	304-1.1.2	Falsework Plans	Structural Steel
14	304-2.1	General	Metal Hand Railings
15	306-2.1	General	Jacking Operations
16	306-3.1	General	Tunneling Operations
17	306-3.4	Tunnel Supports	Tunneling Operations
18	306-6	Remodeling Existing Sewer Facilities	Polyethylene Liner Installation
19	306-8	Microtunneling	Microtunneling Operations

Working drawings listed above as Items 4, 5, 8, 9, 11, 12, 13, 15 and 18 shall be prepared by a Civil or Structural Engineer registered by the State of California.

2-5.3.3 Shop Drawings. Shop drawings are drawings showing details of manufactured or assembled products proposed to be incorporated into the Work. Shop drawings required shall be as specified in the Special Provisions.

2-5.3.4 Supporting Information. Supporting information is information required by the Specifications for the purposes of administration of the Contract, analysis for verification of conformance with the Specifications, the operation and maintenance of a manufactured product or system to be constructed as part of the Work, and other information as may be required by the Engineer. Six copies of the supporting information shall be submitted to the Engineer prior to the start of the Work unless otherwise specified in the Special Provisions or directed by the Engineer. Supporting information for systems shall be bound together and include all manufactured items for the system. If resubmittal is not required, three copies will be returned to the Contractor. Supporting information shall consist of the following and is required unless otherwise specified in the Special Provisions:

1) List of Subcontractors per 2-3.2.
2) List of Materials per 4-1.4.
3) Certificates of Compliance per 4-1.5.
4) Construction Schedule per 6-1.
5) Spill Prevention and Emergency Response Plan per 7-8.5.3
6) Confined Space Entry Program per 7-10.4.5.1
7) Lean concrete base mix designs per 200-4
8) Concrete mix designs per 201-1.1.
9) Asphalt concrete mix designs per 203-6.1.
10) Pipeline layout diagrams per 207-2.1
11) Equipment and materials list per 307-1
12) Controller cabinet wiring diagrams per 307-17.2.2
13) Data, including, but not limited to, catalog sheets, manufacturer's brochures, technical bulletins, specifications, diagrams, product samples, and other information necessary to describe a system, product or item. This information is required for irrigation systems, street lighting systems, and traffic signals, and may also be required for any product, manufactured item, or system.

2-5.4 Record Drawings. The Contractor shall prepare and maintain a set of prints in the Engineer's Field Office on which the locations and description of all plumbing, mechanical, and electrical facilities, which were not detailed fully on the Plans, are marked in colored pencil. Such prints shall also indicate any authorized changes from the original Plans. Such prints shall be furnished to the Engineer before final Acceptance of the Work.

2-6 WORK TO BE DONE. The Contractor shall perform all work necessary to complete the Contract in a satisfactory manner. Unless otherwise provided, it shall furnish all materials, equipment, tools, labor and incidentals necessary to complete the Work.

All work under the Contract shall be performed in accordance with the highest standards prevailing in the trades unless otherwise specified on the Plans or in the Special Provisions. Unless otherwise specified, it is the intent that the Contractor will construct a complete facility ready for use.

2-6.1 Manufacturer's Recommendations. Where the manufacturer of any materials or equipment provides written recommendations or instructions for its use or method of installation (including labels, tags, manuals, or trade literature), such recommendations or instructions shall be complied with except where the Contract Documents specifically require deviations.

2-6.2 Testing of Installed Components. Where the specifications provide that any component of the Work is to be tested, calibrated or adjusted during or after installation, such testing shall be performed by a qualified firm, approved by the Engineer. The firm performing the testing or calibration shall be employed by and paid for by the Contractor.

2-6.3 Training of Agency Personnel. Where the specifications provide for training of Agency personnel in the use or maintenance of any component of the Work, the Contractor shall arrange for and pay for competent personnel to perform the training. Contractor shall schedule the training with the Engineer.

2-7 SUBSURFACE DATA. All soil and test hole data, groundwater elevations, and soil analyses shown on the Plans or included in the Specifications apply only at the location of the test holes and to the depths shown. Soil test reports for test holes which have been drilled are available for inspection at the office of the Engineer. Additional subsurface exploration may be performed by Bidders or the Contractor at their own expense.

The indicated groundwater elevation is that existing at the date specified in the data. It is the Contractor's responsibility to determine and allow for the groundwater elevation on the date the Work is performed. A difference in groundwater elevation between what is shown in soil boring logs and what is actually encountered during construction will not be considered as a basis for Extra Work per 3-3.

Opinions, recommendations or conclusions contained in any soils report, soil boring logs, subsurface materials investigation, geological report or other similar studies, tests or reports, prepared for the Agency, are not a part of the Contract. Contractor shall be responsible for forming its own opinions and conclusions from the facts set forth in such reports.

2-8 RIGHTS-OF-WAY. Rights-of-way, easements or rights-of-entry for the Work will be provided by the Agency. Unless otherwise provided, the Contractor shall make arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of additional work areas and facilities temporarily required. The Contractor shall indemnify and hold the Agency harmless from all claims for damages caused by such actions.

2-9 SURVEYING

2-9.1 Permanent Survey Markers. The Contractor shall notify the Engineer at least 7 Days before starting work to allow for the preservation of survey monuments, lot stakes (tagged), and bench marks. The Engineer, or the owner at its cost, shall file a Corner Record Form referencing survey monuments subject to disturbance in the Office of the County Surveyor prior to the start of construction and also prior to the completion of construction for the replacement of survey monuments. The Contractor shall not disturb survey monuments, lot stakes (tagged), or bench marks without the consent of the Engineer or the owner on Private Contracts. The Contractor shall bear the expense of replacing any that may be disturbed without permission. Replacement shall be done only under the direction of the Engineer by a Licensed Land Surveyor or a Registered Civil Engineer authorized to practice land surveying within the state.

When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the Contractor shall adjust the monument cover to the new grade within 7 Days of finished paving unless otherwise specified.

2-9.2 Survey Service. The Engineer will set only the horizontal and vertical control survey points shown on the Plans. These will be set prior to the commencement of construction. The Contractor shall preserve these points as well as any other surveys established by the Engineer for use by the Contractor for the duration of their usefulness. If any survey points established by Engineer are lost or disturbed and need to be replaced, such replacement shall be by the Engineer at the expense of the Contractor. The Contractor shall employ engineers or surveyors to perform adequate surveys and staking necessary to construct the Work to the lines, elevations and grades shown on the Plans and for the Engineer's use in checking such work. Copies of the field notes or diagrams used in setting stakes shall be promptly furnished to the Engineer.

2-9.2.1 Open Areas. Where dimensions are not given on the Plans for parking lots, landscaped areas or graded areas, distances shall be scaled. Unless otherwise indicated, straight grades and smooth vertical curves shall be set between indicated elevations. Finished surfaces shall be sloped to drain in order to eliminate ponding of water.

2-9.2.2 Utilities. Section 5-5.1 requires the Contractor's cooperation during the relocation of utilities, which may require the setting of lines and grades when needed by utility owners performing relocations.

2-9.3 Contractor's Surveys. Surveying by private engineers and surveyors on the Work shall conform to the quality and practice required by the Engineer.

2-9.3.1 Errors in Surveys. The Contractor is responsible for the accuracy of all surveys except those performed by the Engineer. To assure that a survey point set by the Engineer has not been disturbed since it was set and that it was accurately set, all surveys by the Contractor shall be based on at least two survey points set by the Engineer or by other governmental surveys, in accordance with good survey practice. Should discrepancies be found between such points, the Engineer shall be notified and construction shall not proceed until the discrepancy has been resolved.

2-9.4 Line and Grade. All Work upon completion shall conform to the lines, elevations, and grades shown on the Plans.

2-9.5 Quantity Surveys. The Engineer will perform all quantity surveys for payment purposes, however, in performing such quantity surveys, it may make use of surveys performed by the Contractor.

2-9.6 Payment for Surveys. Payment for performing all of the surveying and staking as required by the Specifications and such additional surveying and staking as required by the Contractor will be made at the lump sum price set forth in the Proposal and shall be full compensation for furnishing all labor, equipment, instruments and materials necessary to perform the Work. If no bid item for surveying is included in the Proposal, the cost of surveying shall be included in the prices bid for other applicable items of work.

2-10 AUTHORITY OF BOARD AND ENGINEER. The Board has the final authority in all matters affecting the Work. Within the scope of the Contract, the Engineer has the authority to enforce compliance with the Plans and Specifications. The Contractor shall promptly comply with instructions from the Engineer or its authorized representative.

On all questions relating to quantities, the acceptability of material, equipment, or work, the execution, progress or sequence of work, and the interpretation of Specifications or drawings, the decision of the Engineer is final and binding, and shall be precedent to any payment under the Contract, unless otherwise ordered by the Board.

2-10.1 Decisions in Writing. Any and all decisions of the Engineer interpreting Specifications or drawings shall be in writing. Any purported "interpretation" which is not in writing shall not be binding upon the Agency and should not be relied upon by the Contractor.

2-11 INSPECTION

The Work is subject to inspection and approval of the Engineer. The Contractor shall notify the Engineer before noon of the working day before inspection is required. Work shall be done only in the presence of the Engineer, unless otherwise authorized. Any work done without proper inspection will be subject to rejection. The Engineer and any authorized representatives shall at all times have access to the Work during its construction at shops and yards as well as the Work site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with these specifications. Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

2-11.1 Permit Inspections. The Contractor shall arrange for code compliance inspections by all agencies issuing permits for the Work. The Work shall not continue beyond mandatory inspection points without clearance from the controlling agency. Each agency involved shall be notified in accordance with the code they enforce or in accordance with their standard operating procedures. No extensions of time will be granted for delays occasioned by such inspections except where, through no fault of the Contractor, the inspection is delayed more than one Day beyond normal response time after proper notification has been given.
It shall be the Contractor's responsibility to see that any required inspection record card is signed off before proceeding with the next phase of the Work and completely signed off on completion of the Work.

2-11.2 Structural Observation. When the plans indicate that "Structural Observation" of specific work is required prior to Permit Inspection, Contractor shall notify Engineer, in writing, at least five working days prior to the date Contractor plans to have the work ready for structural observation. If the work is not ready for structural observation on the date indicated, Contractor shall reimburse Agency the cost of structural observer's visit to the Work site. If the work to be observed is substantially complete but is found to need correction before approval by the structural observer, Contractor shall give notice of a new date, as required above.

2-12 SPECIAL NOTICES. When specified in the Specifications or as directed by the Engineer, any notice required to be given in accordance with this subsection shall be in writing, dated, and signed by the Contractor or the Engineer. Such notices shall be served by any of the following methods:

a) Personal delivery with proof of delivery which may be made by declaration under penalty of perjury by any person over the age of 18 years. The proof of delivery shall show that delivery was performed in accordance with these provisions. Service shall be effective on the date of delivery. Notices given to the Contractor by personal delivery may be made to the Contractor's authorized representative at the Work site; or

b) Certified mail addressed to the mailing address of the recipient postage prepaid; return receipt requested. Service shall be effective on the date of the receipt of the mailing.

Simultaneously, the Agency may send the same notice by regular mail. If a notice that is sent by certified mail is returned unsigned, then delivery shall be effective pursuant to regular mail, provided the notice that was sent by regular mail is not returned.

2-13 AGENCY PERSONNEL AND AUTHORITY

2-13.1 General. The Board has complete authority for the project within the limits prescribed by law. Pursuant to resolutions duly adopted by the Board, the authority to perform certain functions has been delegated to the Director of Public Works. Agency staff personnel and Consultants delegated thereto by the Director are authorized to perform functions limited as set forth in the following list of personnel and designated duties.

2-13.2 Engineer. The Director of the Public Works Agency of the County of Ventura is the Engineer and has general authority to administer the Contract. The Engineer has the following specific authority:

(a) To issue Contract Change Orders (CCO) and to settle claims subsequent to Acceptance as follows:

Original Contract Amount	Maximum Amount of any Change Order or Claim Settlement
$50,000 or less	$5,000
greater than $50,000 and not over $250,000	10% of the original Contract amount
greater than $250,000 and not over $3,950,000	$25,000 plus 5% of the original Contract cost in excess of $250,000.
greater than $3,950,000	$210,000

CCOs and claim settlements exceeding the amounts set forth above require Board approval.

(b) To make final adjustments of quantities (FAQ) on unit price items.

(c) To accept the Work when the Contractor has completed all obligations of the Contract, in accordance with the Plans, Specifications and other Contract Documents. The Engineer also has authority to make and record the Notice of Completion.

(d) To approve progress and final payments under the Contract, including the provisions for withholding funds.

(e) To determine whether performance on the Work is satisfactory. Satisfactory performance includes compliance with all contract requirements.

(f) To approve the substitution of a Subcontractor, where allowed by law, if the listed Subcontractor does not object when notified.

(g) To suspend the Work for the benefit of the Agency.

(h) In the absence of the Agency Director, a Public Works Agency Department Director, as Deputy Director of Public Works, may exercise the Engineer's authority. Such action will be indicated by "Acting" with the Department Director's signature.

2-13.3 Department Director (Public Works Agency). The Department Director responsible for the project is designated in the Notice to Proceed. The Department Director has the following authority:

(a) To issue Contract Change Orders (CCO) as follows:

Original Contract Amount	Maximum Amount of any Change Order
Less than $500,000	$5,000
$500,000 to $1,000,000	1% of Bid Price
Greater than $1,000,000	$10,000

(b) To issue extensions of Contract time in accordance with the Contract Documents.

(c) To make final adjustment of quantities where the total does not exceed the amounts listed in (a) above.

(d) To approve the substitution of subcontractors, where allowed by law, if the listed Subcontractor does not object when notified.

(e) To determine when the Work has been completed and acknowledge in writing the completion of the Work.

2-13.4 Project manager. The Project manager responsible for the project is designated in the Notice to Proceed. This person may also be referred to as Project Engineer. The Project manager has the following authority:

(a) To interpret the Plans and Specifications.

(b) To make minor changes in the location or features of the Work where no change in cost is involved. Such changes in cost may not be the net of multiple changes.

(c) To approve substitutes for material and equipment specified by proprietary names when such material and equipment meet the Contract requirements.

(d) To approve shop drawings and submittals.

(e) To issue stop work orders when necessary to enforce the provisions of the Contract.

(f) To make determinations of each Working Day to be charged against the Contract time in accordance with 6-7.3.

(g) To take over a portion of the Work for Agency's use in accordance with 6-10.

(h) To receive all correspondence and other documents from the Contractor.

(i) To inspect the Work and perform Final Inspection subject to review by the Department Director and the Engineer.

2-13.5 Inspector. One or more inspectors will be assigned to the project by the Project manager. Substitutes may be used during absence of the assigned inspector. The Inspector has the following authority subject to review by the Project manager, Department Director and the Engineer:

(a) To view and inspect the Work, sample and test components (at the Work site and at offsite manufacturing locations), and to discuss the Work with the Contractor's field representative.

(b) To determine compliance with the Plans, Specifications and other Contract Documents and to issue warnings of noncompliance.

(c) To issue stop work notices in the following two instances only:

1) Where a safety hazard exists that has an immediate potential for serious injury or death.

2) Where the operation in progress, if continued for even a short period of time, could be adverse to the Agency's interests.

2-13.6 Other Agency Personnel and Consultants.

2-13.6.1 Materials Engineer. The Materials Engineer is designated in the Notice to Proceed. The Materials Engineer may assign one or more Materials Inspectors to the project.

Materials Inspectors have authority to sample and test material at the Work site and at offsite manufacturing or storage locations. They may furnish available written test results to the Contractor's field representative. At batch plants, they may issue warnings of noncompliance, but stop notices require the signature of the Materials Engineer or Project manager.

2-13.6.2 Surveyors & Technicians. Surveyors and technicians shall have free access to the site to perform their duties but have no authority related to Contract administration.

2-13.6.3 Other Persons. Other Agency personnel who are not involved in construction administration and the general public may be present at the site because it is their present place of work, as client/customers, as visitors, as future users of the facility, or as persons who will maintain the completed facility. Where the facility is to continue in use during construction, work access for Agency workers and client/customers shall be maintained as provided in the Special Provisions. Where the facility (or portion where construction is being performed) is not in use during construction, admittance to the Work site by Agency personnel not involved in construction administration and visitors may be allowed by the Contractor or by the inspector, subject to compliance with safety regulations. Such persons have no authority under the Contract and the Agency is not responsible for their comments, suggestions or directions.

2-13.6.4 Consultants. Consultants hired by the Agency shall have free access to the site to perform their duties but have no authority related to Contract administration, unless such duties are specifically identified in writing to the Contractor. When so identified, Consultant may perform the duties of certain Agency personnel described above.

SECTION 3 - CHANGES IN WORK

3-1 CHANGES REQUESTED BY THE CONTRACTOR

3-1.1 General. Changes in specified methods of construction may be made at the Contractor's request when approved in writing by the Engineer. Changes in the Plans and Specifications, requested in writing by the Contractor, which do not materially affect the Work and which are not detrimental to the Work or to the interests of the Agency, may be granted by the Board to facilitate the Work, when approved in writing by the Engineer. Nothing herein shall be construed as granting a right to the Contractor to demand acceptance of such changes.

3-1.2 Payment for Changes Requested by the Contractor. If such changes are granted, they shall be made at a reduction in cost or at no additional cost to the Agency. All costs to the Agency in reviewing the proposed change, or testing materials involved therein, shall be paid for by the Contractor, whether or not the change is approved.

3-2 CHANGES INITIATED BY THE AGENCY

3-2.1 General. The Agency may change the Plans, Specifications, character of the Work, or quantity of work, provided the total arithmetic dollar value of all such changes, both additive and deductive, does not exceed 25 percent of the Contract Price. Should it become necessary to exceed this limitation, the change shall be by written Supplemental Agreement between the Contractor and Agency, unless both parties agree to proceed with the change by Change Order.

Change orders shall be in writing and state the dollar value of the change or establish method of payment, any adjustment in Contract time, and, when negotiated prices are involved, shall provide for the Contractor's signature indicating its acceptance.

3-2.2 Payment for Changes Initiated by the Agency.

3-2.2.1 Contract Unit Prices. If a change is ordered in an item of work covered by a Contract unit price, and such change does not involve a substantial change in the character of the Work from that shown on the Plans or included in the Specifications, an adjustment in payment will be made based upon the increase or decrease in quantity and the Contract unit price. In the case of such an increase or decrease in a Major Bid Item, the use of this basis for the adjustment of payment will be limited to that portion of the change which, together with all previous changes to that item, is not in excess of 25% of the total cost of such item based on the original quantity and Contract unit price.

If a change is ordered in an item of work covered by a Contract unit price, and such change does involve a substantial change in the character of the Work from that shown on the Plans or included in the Specifications, an adjustment in payment will be made in accordance with 3-2.2.3.

Should any Contract item be deleted in its entirety, payment will be made only for actual costs incurred prior to notification of such deletion.

3-2.2.2 Stipulated Unit Prices. Stipulated unit prices are those established by the Agency in the Contract Documents, as distinguished from Contract unit prices submitted by the Contractor. Stipulated unit prices may be used for the adjustment of Contract changes.

3-2.2.3 Pricing. Adjustments in payments for changes other than those set forth in 3-2.2.1 and 3-2.2.2 will be determined by agreement between Contractor and Agency. If unable to reach agreement, the Agency may direct the Contractor to proceed on the basis of Extra Work in accordance with 3-3 or as set forth in 3-2.2.4.

3-2.2.4 Non-Agreed Prices. Agency may issue a change order directing the Contractor to proceed at a price set by the Agency or on the basis of Extra Work. If the Agency sets a price for the work covered by the change order, Contractor is entitled to payment for such work in accordance with 3-3 to the extent payment in accordance with 3-3 exceeds the price set by the Agency.

3-3 EXTRA WORK

3-3.1 General. New or unforeseen work will be classed as "Extra Work" when the Engineer determines that it is not covered by Contract Unit Prices or Stipulated Unit Prices.

3-3.2 Payment.

3-3.2.1 General. When the price for the Extra Work cannot be agreed upon, the Agency will pay for the Extra Work based on the accumulation of costs as provided herein.

3-3.2.2 Basis for Establishing Costs

(a) Labor. The cost of labor will be the current cost for wages prevailing for each craft or type of workers performing the Extra Work at the time the Extra Work is done, plus payment of health and welfare, pension, vacation, apprenticeship funds, and other direct costs included in the prevailing rates applicable to the project, as well as assessments or benefits required by lawful collective bargaining agreements. To the total of these labor costs, the labor surcharge set forth in the current CALTRANS Labor Surcharge and Equipment Rental Rates publication shall be applied.

The use of a labor classification which would increase the Extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs.

Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for the equipment rental. The labor cost for foremen shall be proportioned to all of their assigned work and only that applicable to Extra Work shall be paid. A foreman is defined as a lead working journeyman.

Nondirect labor costs including superintendence, payroll taxes, all types of insurance, and all other labor costs, not specifically provided for, shall be considered to be paid for as part of the markup of 3-3.2.3(a)(1).

(b) Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the Work site in the quantities involved, plus sales tax, freight and delivery.

The Agency reserves the right to approve materials and sources of supply, or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the Agency.

(c) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $200 or less.

Regardless of ownership, the rates to be used for determining equipment rental costs shall not exceed the following:

(1) For equipment that is listed in the current CALTRANS Labor Surcharge and Equipment Rental Rates publication, the rates shown therein. The right of way delay and overtime/multiple shift factors contained therein shall be used as applicable.

(2) For equipment not listed in said CALTRANS publication, the listed rates prevailing locally at equipment rental agencies, or distributors, at the time the work is performed.

(3) For equipment rental that includes operators and helpers, the applicable cost from (1) or (2) above, plus the applicable labor costs as determined in accordance with (a) above.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Necessary loading and transportation costs for equipment used on the Extra Work shall be added to the other costs.

If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Agency than holding it at the work site, it shall be returned, unless the Contractor elects to keep it at the work site at no expense to the Agency.

All equipment shall be acceptable to the Engineer, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

The reported rental rates for equipment already at the work site shall be for the duration of its use on the Extra Work, commencing at the time it is first put into actual operation on the Extra Work, plus the time required to move it from its previous site, and move it back to its previous site or to a closer site of next use.

3-3.2.2 Basis for Establishing Costs (Continued)

(d) Other Items. The Agency may authorize other items which may be required on the Extra Work. Such items include labor, service, material and equipment which are different in their nature from those required for the Work specified in the Contract and which are of a type not ordinarily available from the Contractor or any of its subcontractors.

Invoices covering all such items in detail shall be submitted with the request for payment.

(e) Invoices. Vendors' invoices for material, equipment rental, and other expenditures, shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, the Agency may establish the cost of the item involved at the lowest price which was current at the time of the report.

3-3.2.3 Markup

(a) Work by Contractor. The following percentage shall be added to the Contractor's costs and shall constitute the markup for all overhead and profits, and all other cost not specifically provided for:

(1) Labor 33%
(2) Materials..... 15%
(3) Equipment Rental 15%
(4) Other Items and Expenditures ... 15%

To the sum of the cost and markups provided for in this section, 1 percent shall be added as compensation for bonding.

(b) Work by Subcontractor. When all or any part of the Extra Work is performed by a Subcontractor, the markup established in 3-3.2.3(a) shall be applied to the Subcontractor's actual cost of such work. A markup of 10% on the first $5,000 of the subcontracted portion of the Extra Work and a markup of 5% on work in excess of $5,000 of the subcontracted portion of the Extra Work may be added by the Contractor.

3-3.3 Daily Extra Work Reports by Contractor. When the price for the Extra Work cannot be agreed upon, the Contractor shall submit a Daily Extra Work Report to the Engineer on forms furnished by the Agency, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, and for other services and expenditures when authorized. Failure to submit the Daily Extra Work Report, showing the labor and equipment hours and the quantity of materials used, by the close of the next Working Day may waive any rights for that day. Failure to submit fully completed Daily Extra Work Reports, with the required supporting documentation, within ten calendar days after the Engineer makes a written request for the such reports shall waive all rights for the work covered by the requested reports. An attempt shall be made to reconcile the Daily Extra Work Report daily, and it shall be signed by the Engineer and the Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the Daily Extra Work Report. Daily Extra Work Reports by Subcontractors or others shall be submitted through the Contractor.

The Daily Extra Work Report shall:

1) Show names of workers, classifications, and hours worked.
2) Describe and list quantities of materials used.
3) Show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable.
4) Describe other services and expenditures in such detail as the Agency may require.

In addition to the Daily Extra Work Reports, the Contractor shall furnish Certified Payroll Records for the labor included in the reports before payment will be made.

3-4 CHANGED CONDITIONS. The Contractor shall notify the Engineer in writing of the following work site conditions, hereinafter called changed conditions, promptly upon their discovery and before they are disturbed:

1) Subsurface or latent physical conditions differing materially from those represented in the Contract;
2) Unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character being performed; and
3) Material differing from that represented in the Contract which the Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II or Class III disposal site in accordance with provisions of existing law.

The Engineer will promptly investigate conditions which appear to be changed conditions. If the Engineer determines that the conditions are changed conditions and that they will materially increase or decrease the costs of any portion of the Work, a Change Order will be issued adjusting the compensation for such portion of the Work in accordance with 3-2.2. If the Engineer determines that conditions are changed conditions and that they will materially affect the performance time, the Contractor, upon submitting a written request, will be granted an extension of time subject to the provisions of 6-6.

If the Engineer determines that the conditions of which it has been notified by the Contractor do not justify an adjustment in compensation, the Contractor will be so notified in writing. This notice will also advise the Contractor of its obligation to notify the Engineer, in writing, if the Contractor disagrees.

Should the Contractor disagree with such determination, it may submit a written notice of potential claim to the Engineer before commencing the disputed work. In the event of such a disagreement, the Contractor shall not be excused on account of that disagreement from any scheduled completion date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. However, the Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties. The Contractor shall proceed as provided in 3-5.

The Contractor's failure to give notice of changed conditions promptly upon their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith.

3-5 DISPUTED WORK. If the Contractor and the Agency are unable to reach agreement on disputed work, the Agency may direct the Contractor to proceed with the Work. Payment shall be as later determined by mediation or arbitration, if the Agency and the Contractor agree thereto, or as fixed in a court of law.

Although not to be construed as proceeding under Extra Work provisions, the Contractor shall keep and furnish records of disputed work in accordance with 3-3.

SECTION 4 - CONTROL OF MATERIALS

4-1 MATERIALS AND WORKMANSHIP

4-1.1 General. All materials, parts, and equipment furnished by the Contractor in the Work shall be new, high grade, and free from defects. Quality of work shall be in accordance with the generally accepted standards. Material and work quality shall be subject to the Engineer's approval.

Materials and work quality not conforming to the requirements of the Specifications shall be considered defective and will be subject to rejection. Defective work or material, whether in place or not, shall be removed immediately from the site by the Contractor, at its expense, when so directed by the Engineer.

If the Contractor fails to replace any defective or damaged work or material after reasonable notice, the Engineer may cause such work or materials to be replaced. The replacement expense will be deducted from the amount to be paid to the Contractor.

Used or secondhand materials, parts, and equipment may be used only if permitted by the Specifications.

4-1.1.1 Materials Furnished by Agency. Materials furnished by the Agency will be available at locations designated in the Special Provisions or if not designated in the Special Provisions, they will be delivered to a single location of Agency's choice within the project area. They shall be hauled to the site of installation by the Contractor at its expense, including any necessary loading and unloading that may be involved. The cost of handling and placing materials furnished by the Agency shall be considered as included in the price paid for the Contract item involving such furnished materials.

The Contractor will be held responsible for all materials furnished to it, and it shall pay all demurrage and storage charges. Furnished materials, after delivery to Contractor, lost or damaged from any cause whatsoever shall be replaced by the Contractor. The Contractor will be liable to the Agency for the cost of replacing lost or damaged furnished material and such costs may be deducted from any monies due or to become due the Contractor.

4-1.2 Protection of Work and Materials. The Contractor shall provide and maintain storage facilities and employ such measures as will preserve the specified quality and fitness of materials to be used in the Work. Stored materials shall be reasonably accessible for inspection. The Contractor shall also adequately protect new and existing work and all items of equipment for the duration of the Contract.

The Contractor shall not, without the Agency's consent, assign, sell, mortgage, hypothecate, or remove equipment or materials which have been installed or delivered and which may be necessary for the completion of the Contract.

4-1.3 Inspection Requirements

4-1.3.1 General. Unless otherwise specified, inspection is required at the source for asphalt concrete pavement mixtures, structural concrete, metal fabrication, metal casting, welding, concrete pipe manufacture, protective coating application, and similar shop or plant operations. Steel pipe in sizes less than 450 mm (18 inches), vitrified clay and cast iron pipe in all sizes are acceptable upon certification as to compliance with the Specifications, subject to sampling and testing by the Agency. Standard items of equipment such as electric motors, conveyors, elevators, plumbing fixtures, etc., are subject to inspection at the Work site only. Special items of equipment such as designed electrical panel boards, large pumps, sewage plant equipment, etc., are subject to inspection at the source, normally only for performance testing. The Specifications may require inspection at the source for other items not typical of those listed in this section.

4-1.3.2 Inspection of Materials Not Locally Produced. When the Contractor intends to purchase materials, fabricated products, or equipment from sources located more than 80 km (50 miles) outside the geographical limits of the Agency, an inspector or accredited testing laboratory (approved by the Engineer), shall be engaged by the Contractor at its expense, to inspect the materials, equipment or process. This approval shall be obtained before producing any material or equipment. The inspector or representative of the testing laboratory shall evaluate the materials for conformance with the Plans and Specifications. The Contractor shall forward reports required by the Engineer. No materials or equipment shall be shipped nor shall any processing, fabrication or treatment of such materials be done without proper inspection by the approved agent. Approval by said agent shall not relieve the Contractor of responsibility for complying with the Contract requirements.

4-1.3.3 Inspection by the Agency. The Agency will provide all inspection and testing laboratory services within 80 km (50 miles) of the geographical limits of the Agency.

4-1.3.4 Certificates of Compliance. The Engineer may require certificates of compliance with the Specifications for materials or manufactured items produced outside of the Work site. Such certificates will not relieve the Contractor from the requirements of providing material and manufactured items complying with the Specifications even though they have been incorporated into the Work.

4-1.4 Tests of Materials. Before incorporation in the Work, the Contractor shall submit samples of materials, as the Engineer may require, at no cost to the Agency. The Contractor, at its own expense, shall deliver the materials for testing to the place and at the time designated by the Engineer. Unless otherwise provided, all initial testing and a reasonable amount of retesting shall be performed under the direction of the Engineer, and at no expense to the Contractor. If the Contractor is to provide and pay for testing, the Specifications will so state.

The Contractor shall notify the Engineer in writing, at least 15 Days in advance, of its intention to use materials for which tests are specified, to allow sufficient time to perform the tests. The notice shall name the proposed supplier and source of material.

If the notice of intent to use is sent before the materials are available for testing or inspection, or is sent so far in advance that the materials on hand at the time will not last but will be replaced by a new lot prior to use on the Work, it will be the Contractor's responsibility to re-notify the Engineer when samples which are representative may be obtained.

4-1.5 Certification. The Engineer may waive materials testing requirements of the Specifications and accept the manufacturer's written certification that the materials to be supplied meet those requirements. Materials test data may be required as part of the certification.

4-1.6 Trade Names or Equals. The Contractor may supply any of the materials specified or offer an equivalent. The Engineer shall determine whether the material offered is equivalent to that specified. Adequate time shall be allowed for the Engineer to make this determination.

Whenever any particular material, process, or equipment is indicated by patent, proprietary or brand name, or by name of manufacturer, such wording is used for the purpose of facilitating its description and shall be deemed to be followed by the words **or equal**. A listing of materials is not intended to be comprehensive, or in order of preference. The Contractor may offer any material, process, or equipment considered to be equivalent to that indicated. The substantiation of offers shall be submitted as provided in the Contract Documents.

The Contractor shall, at its expense, furnish data concerning items offered by it as equivalent to those specified. The Contractor shall have the material tested as required by the Engineer to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the item will fulfill its intended function.

Test methods shall be subject to the approval of the Engineer. Test results shall be reported promptly to the Engineer, who will evaluate the results and determine if the substitute item is equivalent. The Engineer’s findings shall be final. Installation and use of a substitute item shall not be made until approved by the Engineer.

If a substitute offered by the Contractor is not found to be equal to the specified material, the Contractor shall furnish and install the specified material.

The specified Contract completion time shall not be affected by any circumstance developing from the provisions of this section.

4-1.6.1 Compatibility with Design. Where the size, configuration, weight, fastening locations, fastening strength, utility rough-in locations, and utility capacities of equipment or devices offered by the Contractor as equivalents do not conform to those provided for in the Contract Documents or those which are necessary for equipment or devices indicated by brand names, the Contractor shall bear all costs of redesign and changes in construction necessary to adapt the offered equipment or device to the Work.

Equipment or devices will not be considered "equal" where the life cycle cost of operation, utilities and maintenance of the offered alternate is greater than those listed by brand names. Life cycle costs shall mean utility charges (demand and usage charges), maintenance, operating personnel and replacement (equipment, installation and down time expenses) all reduced to an average annual rate using the current interest rate earned on funds invested by the County Treasurer.

4-1.6.2 Trade Names Listed. Where the Agency has listed products by brand or trade name on the Plans or in the Specifications, or both, this shall not be construed as meaning every product may be used without furnishing shop drawings, without redesign of the facility or without a change in utility rough-in requirements.

Where use of products listed on the Plans or in the Specifications, or both, or where use of a substitute proposed as an "equal" product requires shop drawings, redesign of the facility, or revisions in the size and location of rough-in utility connections, or in connecting work, the Contractor shall provide any necessary shop drawings, or shall cause the preparation of any necessary redesign or revisions to the Plans at its own expense and shall bear the full cost of any necessary additional construction or reconstruction work. No work described in shop drawings, a redesign, or a revision to the Plans shall be undertaken until such shop drawings, redesign, or revisions have been approved by the Engineer. Any proposed redesign or revision to the Plans shall be accompanied by complete computations and details prepared by an appropriate licensed design professional.

4-1.7 Weighing Equipment. All scales used for proportioning materials shall be inspected for accuracy and certified within the past 12 months by the State of California Bureau of Weights and Measures, by the County Director or Sealer of Weights and Measures, or by a scale mechanic registered with or licensed by the County.

The accuracy of the work of a scale service agency, except as stated herein, shall meet the standards of the California Business and Professions Code and the California Code of Regulations pertaining to weighing devices. A certificate of compliance shall be presented, prior to operation, to the Engineer for approval and shall be renewed whenever required by the Engineer at no cost to the Agency.

All scales shall be arranged so they may be read easily from the operator's platform or area. They shall indicate the true net weight without the application of any factor. The figures of the scales shall be clearly legible. Scales shall be accurate to within 1 percent when tested with the plant shut down. Weighing equipment shall be so insulated against vibration or moving of other operating equipment in the plant area that the error in weighing with the entire plant running will not exceed 2 percent for any setting nor 1.5 percent for any batch.

4-1.8 Calibration of Testing Equipment. Testing equipment, such as, but not limited to, pressure gages, metering devices, hydraulic systems, force (load) measuring instruments, and strain-measuring devices shall be calibrated by a testing agency acceptable to the Engineer at intervals not to exceed 12 months and following repairs, modification, or relocation of the equipment. Calibration certificates shall be provided when requested by the Engineer.

SECTION 5 - UTILITIES

5-1 LOCATION. The Permittee (in the case of Private Contracts) and the Agency (in the case of Cash or Assessment Act Contracts), will search known substructure records and furnish the Contractor with copies of documents which describe the location of utility substructures, or will indicate on the Plans for the project those substructures (except for service connections) which may affect the Work. Information regarding removal, relocation, abandonment, or installation of new utilities will be furnished to prospective bidders.

Where underground main distribution conduits such as water, gas, sewer, electric power, telephone, or cable television are shown on the Plans, the Contractor shall assume that every property parcel will be served by a service connection for each type of utility.

As provided in Section 4216 of the California Government Code, at least 2 working days prior to commencing any excavation, the Contractor shall contact the regional notification center (Underground Service Alert of Southern California) and obtain an inquiry identification number.

The California Department of Transportation is not required by Section 4216 to become a member of the regional notification center. The Contractor shall contact it for location of its subsurface installations.

The Contractor shall determine the location and depth of all utilities, including service connections, which have been marked by the respective owners and which may affect or be affected by its operations. If no pay item is provided in the Contract for this work, full compensation for such work shall be considered as included in the prices bid for other items of work.

5-2 PROTECTION. The Contractor shall not interrupt the service function or disturb the support of any utility without authority from the owner or order from the Agency. All valves, switches, vaults, and meters shall be maintained readily accessible for emergency shutoff.

Where protection is required to ensure support of utilities located as shown on the Plans or in accordance with 5-1, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at its expense.

Upon learning of the existence and location of any utility omitted from or shown incorrectly on the Plans, the Contractor shall immediately notify the Engineer in writing. When authorized by the Engineer, support or protection of the utility will be paid for as provided in 3-2.2.3 or 3-3.

The Contractor shall immediately notify the Engineer and the utility owner if any utility is disturbed or damaged. The Contractor shall bear the costs of repair or replacement of any utility damaged if located as noted in 5-1.

When placing concrete around or contiguous to any non-metallic utility installation, the Contractor shall at its expense:

1. Furnish and install a 50 mm (2 inch) cushion of expansion joint material or other similar resilient material; or
2. Provide a sleeve or other opening which will result in a 50 mm (2 inch) minimum-clear annular space between the concrete and the utility; or
3. Provide other acceptable means to prevent embedment in or bonding to the concrete.

Where concrete is used for backfill or for structures which would result in embedment, or partial embedment, of a metallic utility installation; or where the coating, bedding or other cathodic protection system is exposed or damaged by the Contractor's operations, the Contractor shall notify the Engineer and arrange to secure the advice of the affected utility owner regarding the procedures required to maintain or restore the integrity of the system.

5-3 REMOVAL. Unless otherwise specified, the Contractor shall remove all interfering portions of utilities shown on the Plans or indicated in the Bid documents as "abandoned" or "to be abandoned in place". Before starting removal operations, the Contractor shall ascertain from the Agency whether the abandonment is complete, and the costs involved in the removal and disposal shall be included in the Bid for the items of work necessitating such removals.

5-4 RELOCATION. When feasible, the owners responsible for utilities within the area affected by the Work will complete their necessary installations, relocations, repairs, or replacements before commencement of work by the Contractor. When the Plans or Specifications indicate that a utility installation is to be relocated, altered, or constructed by others, the Agency will conduct all negotiations with the owners and work will be done at no cost to the Contractor, except as provided in 301-1.6. Utilities which are relocated in order to avoid interference shall be protected in their position and the cost of such protection shall be included in the Bid for the items of work necessitating such relocation.

After award of the Contract, portions of utilities which are found to interfere with the Work will be relocated, altered or reconstructed by the owners, or the Engineer may order changes in the Work to avoid interference. Such changes will be paid for in accordance with 3-2.

When the Plans or Specifications provide for the Contractor to alter, relocate, or reconstruct a utility, all costs for such work shall be included in the Bid for the items of work necessitating such work. Temporary or permanent relocation or alteration of utilities requested by the Contractor for its convenience shall be its responsibility and it shall make all arrangements and bear all costs.

The utility owner will relocate service connections as necessary within the limits of the Work or within temporary construction or slope easements. When directed by the Engineer, the Contractor shall arrange for the relocation of service connections as necessary between the meter and property line, or between a meter and the limits of temporary construction or slope easements. The relocation of such service connections will be paid for in accordance with provisions of 3-3. Payment will include the restoration of all existing improvements which may be affected thereby. The Contractor may agree with the owner of any utility to disconnect and reconnect interfering service connections. The Agency will not be involved in any such agreement.

5-5 DELAYS. The Contractor shall notify the Engineer of its construction schedule insofar as it affects the protection, removal, or relocation of utilities. Said notification shall be included as a part of the construction schedule required in 6-1. The Contractor shall notify the Engineer in writing of any subsequent changes in the construction schedule which will affect the time available for protection, removal, or relocation of utilities.

The Contractor will not be entitled to damages or additional payment for delays attributable to utility relocations or alterations if correctly located, noted, and completed in accordance with 5-1.

The Contractor may be given an extension of time for unforeseen delays attributable to unreasonably protracted interference by utilities in performing work correctly shown on the Plans.

The Agency will assume responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities within the area affected by the Work if such utilities are not identified in the Contract Documents. The Contractor will not be assessed liquidated damages for any delay caused by failure of Agency to provide for the timely removal, relocation, or protection of such existing facilities.

If the Contractor sustains loss due to delays attributable to interferences, relocations, or alterations not covered by 5-1, which could not have been avoided by the judicious handling of forces, equipment, or plant, there shall be paid to the Contractor such amount as the Engineer may find to be fair and reasonable compensation for such part of the Contractor's actual loss as was unavoidable and the Contractor may be granted an extension of time.

5-5.1 Cooperation During Utility Relocation. When utilities are to be relocated during construction, the Contractor shall cooperate and coordinate with the respective utility owners so they may relocate their facilities to clear the Work. Delays in relocation of utilities which result from failure to cooperate and coordinate will not be a cause for an extension of time or Non-Working Days.

5-6 COOPERATION. When necessary, the Contractor shall so conduct its operations as to permit access to the Work site and provide time for utility work to be accomplished during the progress of the Work.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK. The requirements of this section concerning submission of construction schedules shall not apply to projects where the time allowed to complete the Work is less than 25 Working Days or the total Contract Price bid is less than $75,000 unless required by the special provisions.

The Contractor shall submit a construction schedule concurrently with the submittal of signed Contract, Contract bonds, and certificate of insurance. The Notice to Proceed will be delayed until the schedule is received. See 6-7.4, Starting of Contract Time.

When required by the Special Provisions, a revised schedule shall be submitted monthly prior to each progress payment closure date. Processing of the progress payment will be delayed until such revised schedule complying with this section is received.

The construction schedule shall be in the form of a Construction Element vs. Time Chart as shown in Appendix B-1and a Work Complete vs. Time Chart as shown in Appendix B-2.

The B-1 Chart shall be in sufficient detail to show the chronological relationship of all activities of the project including, but not limited to, estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials, and scheduling of equipment. The B-1 Chart shall recognize the requirements of 5-5. The B-1 Chart shall reflect obtaining all materials and completing all Work under the Contract within the specified time and in accordance with these Specifications. If the Contractor intends to complete the Work prior to the time for completion, the intended date of completion shall be set forth in the B-1 Chart and the Contractor shall execute a Contract Change Order that changes the number of Working Days allowed for completion to conform with such intended completion date. The Change Order shall not change the Contract Price.

The Contractor may submit a computer generated schedule in lieu of the form in Appendix B-1 and B-2, provided all of the elements shown on that form or specified herein are included.

An updated construction schedule shall be submitted prior to the next progress payment closure date whenever the actual percent Work complete versus percent time elapsed curve falls below and to the right of the dotted line shown on Appendix B-2.

If the Contractor desires to make a major change in its method of operations after commencing construction, or if its schedule fails to reflect the actual progress, it shall submit to the Agency a revised construction schedule in advance of beginning revised operations.

Revised and updated schedules shall show actual completion to the date of the revision in the lower segmented bar for each item.

The construction schedule shall be prepared as follows (see examples in Appendices C-1 and C-2):

1. On theB-1 Chart:
   - a Enter the project name and Specification No. as shown on the notice inviting bids and the Contractors name.
   - b. List the items of Work either individually or combined where items are part of the same element of the Work.
   - c. Assign a value for each horizontal space plotting interval in Working Days as follows: 1 working day for total Contract time of less than 100 working days, 2 for 100 to 200 working days and 5 for longer projects. Enter the value used in the space provided in the lower part of the form.
   - d. At the end of performance time and draw a vertical line and label it "End Performance Time". Enter numbers at 10 times the plotting interval at the top of intermediate vertical lines.
   - e. Shade in a bar in the upper segmented section for each work item to indicate the period during which Work will be performed. Move-in time and delivery time for materials shall be shown if significant to the schedule.

2. On the B-2 Chart:
   a. Enter the project name and Specification No. as shown on the notice inviting bids.
   b. At time intervals of 10 or 20 working days:
      (1) Compute the cumulative dollar value of Work which is expected to be completed for each item of Work, including the value of the completed portion of lump-sum items.
      (2) Divide the values computed in "b(1)" by the Total Contract Price to determine the percentage of the entire Contract planned for completion at the end of each time interval.
      (3) Divide the days of performance time at the end of each time interval by the total Contract performance time to obtain the percentage of elapsed performance time.
   c. Plot each percentage of completion value figure computed in "b(2)" against the corresponding percentage of completion time computed in "b(3)" using scales on the bottom and left side of chart.
   d. Connect points plotted in "c" with a line which will show the planned progress for the entire job.

If the proposed percent Work complete versus percent time elapsed line falls below and to the right of the dotted line drawn on the B-2 Chart, the Contractor shall provide sufficient information and backup to show that the Work can be completed on time.

6-1.1 Beginning of Work. The issuance of Notice to Proceed by Agency shall constitute the Contractor's authority to enter upon the site of the Work and to begin operations provided it has also notified Engineer at least 24 hours in advance. Entry upon the site without authority will be treated as trespassing.

6-1.2 Starting Work. The Contractor may start work at any time after the Notice to Proceed is issued but work shall begin within 15 Days after the starting date for the Contract, or at such other time as may be indicated in the Special Provisions. The actual date on which the Contractor starts work will not affect the required time for completion as provided for in 6-7 and 6-7.1.

6-1.3 Work Sequence. If required by the Special Provisions, the Contractor shall start construction operations on that part of the Work designated by the Engineer.

6-1.4 Resources Required. The Work shall be conducted in such a manner and with sufficient materials, equipment, and labor to insure its completion in accordance with the Plans and Specifications within the time set forth in the Contract.

6-2 PROSECUTION OF WORK. To minimize public inconvenience and possible hazard and to restore streets and other Work areas to their original condition and former state of usefulness as soon as practicable, the Contractor shall diligently prosecute the Work to completion. If, in the Engineer's opinion, the Contractor fails to prosecute the Work to the extent that the above purposes are not being accomplished, the Contractor shall, upon orders from the Engineer, immediately take the steps necessary to fully accomplish said purposes. All costs of prosecuting the Work as described herein shall be absorbed in the Contractor's bid. Should the Contractor fail to take the necessary steps to fully accomplish said purposes, after orders of the Engineer to do so, the Engineer may suspend the Work in whole or in part, until the Contractor takes said steps.

As soon as possible under the provisions of these Specifications, the Contractor shall backfill all excavations and restore to usefulness all improvements existing prior to the start of the Work.

If Work is suspended through no fault of the Agency, all expenses and losses incurred by the Contractor during such suspensions shall be borne by the Contractor. If the Contractor fails to properly provide for public safety, traffic, and protection of the Work during periods of suspension, the Agency may elect to do so, and deduct the cost thereof from monies due the Contractor. Such action will not relieve the Contractor from liability.

6-3 SUSPENSION OF WORK

6-3.1 General. The Work may be suspended in whole or in part when determined by the Engineer that the suspension is necessary in the interest of the Agency. The Contractor shall comply immediately with any written order of the Engineer. Such suspension shall be without liability to the Contractor on the part of the Agency except as otherwise specified in 6-6.3.

6-3.2 Archaeological and Paleontological Discoveries. If discovery is made of items of archaeological or paleontological interest, the Contractor shall immediately cease excavation in the area of discovery and shall not continue until ordered by the Engineer. When resumed, excavation operations within the area of discovery shall be as directed by the Engineer.

Discoveries which may be encountered may include, but not be limited to, dwelling sites, stone implements or other artifacts, animal bones, human bones and fossils.

The Contractor shall be entitled to an extension of time and compensation in accordance with the provisions of 6-6.

6-3.3 Temporary Suspension of Work. Should suspension of Work be ordered by reason of the failure of the Contractor to carry out orders or to perform any provisions of the Contract; or by reason of weather conditions being unsuitable for performing any item or items of Work; the Contractor, at its expense, shall do all the work necessary to provide a safe, smooth, and unobstructed passageway through construction for use by public traffic during the period of such suspension. In the event that the Contractor fails to perform the work above specified, the Agency may perform such work and the cost thereof will be deducted from monies due or to become due the Contractor.

If the Engineer orders a suspension of all of the Work, or a portion of the Work which is the current controlling operation or operations, due to unsuitable weather or to such other conditions as are considered unfavorable to the suitable prosecution of the Work, the days on which the suspension is in effect shall not be considered Working Days.

If a portion of Work at the time of such suspension is not a current controlling operation or operations, but subsequently does become the current controlling operation or operations, the determination of Working Days will be made on the basis of the then current controlling operation or operations.

If a suspension of Work is ordered by the Engineer due to the failure on the part of the Contractor to carry out orders given or to perform any provision of the Contract, the Days on which the suspension order is in effect shall be considered Working Days if such days are Working Days as defined.

6-4 TERMINATION OF THE CONTRACT FOR DEFAULT..

6.4.1 General. If, prior to the acceptance of the Work, the Contractor:

a) becomes insolvent, assigns its assets for the benefit of its creditors, is unable to pay its debts as they become due, or is otherwise financially unable to complete the Work,

b) abandons the Work by failing to report to the Work site and diligently prosecute the Work to completion,

c) disregards written instructions from the Agency or materially violates provisions of the Contract Documents,

d) fails to prosecute the Work according to the schedule approved by the Engineer,

e) disregards laws or regulations of any public body having jurisdiction, or

f) commits continuous or repeated violations of regulatory or statutory safety requirements, then the Agency will consider the Contractor in default of the Contract.

Notices, and other written communications regarding default between the Contractor, the Agency, and the Surety shall be transmitted in accordance with 2-12.

6-4.2 Notice to Cure. The Agency will issue a written notice to cure the default to the Contractor and its Surety. The Contractor shall commence satisfactory corrective actions within 5 Working Days after receipt.

6-4.3 Notice of Termination for Default. If the Contractor fails to commence satisfactory corrective action within 5 Working Days after receipt of the notice to cure, or to diligently continue satisfactory and timely correction of the default thereafter, then the Agency will consider the Contractor in default of the Contract and:

a) will terminate the Contractor's right to perform under the Contract by issuing a written notice of termination for default to the Contractor and its Surety,

b) may use any materials, equipment, tools or other facilities furnished by the Contractor to secure and maintain the Work site, and

c) may furnish labor, equipment, and materials the Agency deems necessary to secure and maintain the Work site. The provisions of this subsection shall be in addition to all other legal rights and remedies available to the Agency.

6-4.4 Responsibilities of the Surety. Upon receipt of the written notice of termination for default, the Surety shall immediately assume all rights, obligations and liabilities of the Contractor under the Contract. If the Surety fails to protect and maintain the Work site, the Agency may do so, and may recover all costs incurred. The Surety shall notify the Agency that it is assuming all rights, obligations and liabilities of the Contractor under the Contract and all money that is due, or would become due, to the Contractor shall be payable to the Surety as the Work progresses, subject to the terms of the Contract.

Within 15 Working Days of receipt of the written notice of termination for default, the Surety shall submit to the Agency a written plan detailing the course of action it intends to take to remedy the default. The Agency will review the plan and notify the Surety if the plan is satisfactory. If the Surety fails to submit a satisfactory plan, or if the Surety fails to maintain progress according to the plan accepted by the Agency, the Agency may, upon 48 hours written notice, exclude the Surety from the premises, take possession of all material and equipment, and complete the Work in any way the Agency deems to be expedient. The cost of completing the Work by the Agency shall be charged against the Surety and may be deducted from any monies due, or which would become due, the Surety. If the amounts due under the Contract are insufficient for completion, the Surety shall pay to the Agency, within 30 days after the Agency submits an invoice, all costs in excess of the remaining Contract Price.

6-4.5 Payment. The Surety will be paid for completion of the Work in accordance with 9-3 less the value of damages caused to the Agency by acts of the Contractor.

6-5 TERMINATION OF CONTRACT. The Board may terminate the Contract at its own discretion or when conditions encountered during the Work make it impossible or impracticable to proceed, or when the Agency is prevented from proceeding with the Contract by act of God, by law, or by official action of a public authority.

The Agency will issue a written notice of termination for convenience in accordance with 2-12. Upon receipt, the Contractor shall immediately cease work, except work the Contractor is directed to complete by the Engineer or required to complete for public safety and convenience. The Contractor shall immediately notify Subcontractors and suppliers to immediately cease their work.

The Contractor will be paid without duplication for:

a) work completed in accordance with the Contract Documents prior to the effective date of termination for convenience;

b) reasonable costs incurred in settlement of terminated contracts with Subcontractors, suppliers and others; and

c) reasonable expenses directly attributable to termination.

The Contractor shall submit a final termination settlement proposal to the Agency no later than 90 days from the effective date of termination, unless extended, in writing, by the Agency upon written request by the Contractor.

If the Contractor fails to submit a proposal, the Agency may determine the amount, if any, due the Contractor as a result of the termination. The Agency will pay the Contractor the amount it determines to be reasonable. If the Contractor disagrees with the amount determined by the Agency as being reasonable, the Contractor shall provide notice to the Agency within 30 days of receipt of payment. Any amount due shall be as later determined by arbitration, if the Agency and the Contractor agree thereto, or as fixed in a court of law.

6-6 DELAYS AND EXTENSIONS OF TIME

6-6.1 General. If delays are caused by unforeseen events beyond the control of the Contractor, such delays will entitle the Contractor to an extension of time as provided herein, but the Contractor will not be entitled to damages or additional payment due to such delays, except as provided in 6-6.3. Such unforeseen events may include war, government regulations, labor disputes, strikes, fires, floods, adverse weather necessitating cessation of work, other similar action of the elements, inability to obtain materials, equipment or labor, required Extra Work, or other specific events as may be further described in the Specifications.

No extension of time will be granted for a delay caused by the Contractor's inability to obtain materials unless the Contractor furnishes to the Engineer documentary proof of the inability to obtain such materials in a timely manner in accordance with the sequence of the Contractor's operations and the approved construction schedule.

If delays beyond the Contractor's control are caused by events other than those mentioned above, but substantially equal in gravity to those enumerated, and an extension of time is deemed by the Engineer to be in the best interests of the Agency, an extension of time may be granted, but the Contractor will not be entitled to damages or additional payment due to such delays, except as provided in 6-6.3.

If delays beyond the Contractor's control are caused solely by action or inaction by the Agency, such delays will entitle the Contractor to an extension of time as provided in 6-6.2.

6-6.2 Extensions of Time. Extensions of time, when granted, will be based upon the effect of delays to the Work as a whole and will not be granted for noncontrolling delays to minor included portions of Work unless it can be shown that such delays did, in fact, delay the progress of the Work as a whole.

6-6.3 Payment for Delays to Contractor. The Contractor will be compensated for damages incurred due to delays for which the Agency is responsible if such delays are unreasonable in the circumstances involved and were not within the contemplation of the parties when the Contract was awarded to the Contractor and delay the Work as a whole. Such actual costs will be determined by the Engineer. The Agency will not be liable for, and in making this determination the Engineer will exclude, all damages which the Engineer determines the Contractor could have avoided by any reasonable means including, without limitation, the judicious handling of forces, equipment, or plant.

6-6.4 Written Notice and Report. If the Contractor desires payment for a delay as specified in 6-6.3 or an extension of time, it shall, within 30 Days after the beginning of the delay, file with the Agency a written request and report as to the cause and extent of the delay. The request for payment or extension must be made at least 15 Days before the specified completion date. Failure by the Contractor to file these items within the time specified will be considered grounds for refusal by the Agency to consider such request.

6-6.4.1 Documentation of Delays. When the Contractor requests an extension of time for delay due to inability to obtain materials or equipment, the documentary proof required by 6-6.1 shall include the following:

1. Date Engineer was notified of delay.
2. Date the delay began.
3. Exact description of material or equipment causing delay.
4. Documentation showing when and from whom ordered.
5. Documentation of promise to deliver.
6. Documentation of actual delivery date.
7. Description of how late delivery caused delay (include construction schedule).
8. Documentation of measures taken to get prompt delivery.
9. Documentation of attempts to get delivery from other sources.
10. Description of steps taken in project scheduling to minimize effects of late delivery.
11. Description of steps taken to get project back on schedule after actual delivery.
12. Statement of actual time lost as a result of late delivery.

6-7 TIME OF COMPLETION

6-7.1 General. The Contractor shall complete the Work within the time set forth in the Contract. The Contractor shall complete each portion of the Work within such time as set forth in the Contract for such portion. Unless otherwise specified, the time of completion of the Contract shall be expressed in Working Day

6-7.2 Working Day. A Working Day is any day within the period between the start of the Contract time as defined in 6-1 and the date provided in the Contract for completion or upon field acceptance by the Engineer of all Work provided for in the Contract, whichever occurs first, other than:

(1) Saturday,
(2) Sunday,
(3) any day designated as a holiday by the Agency,
(4) any other day designated as a holiday in a Master Labor Agreement entered into by the Contractor or on behalf of the Contractor as an eligible member of a Contractor Association,
(5) any day the Contractor is prevented from working at the beginning of the workday for cause as defined in 6-6.1,
(6) any day the Contractor is prevented from working during the first 5 hours of the workday with at least 60 percent of the normal work force for cause as defined in 6-6.1.

6-7.2.1 Holidays. Solely for the purposes of paragraph (3) of 6-7.2, the following days are designated as holidays by the Agency.

MONTH	A AGENCY EMPLOYEE HOLIDAYS	B OTHER DESIGNATED HOLIDAYS
January	1st day; 3rd Monday	None
February	3rd Monday	12th day
March	None	31st day
March-April	None	One Friday between March 21 and April 23 designated as Good Friday
May	Last Monday	None
June	None	None
July	4th day	None
August	None	None
September	1st Monday	9th day
October	None	2nd Monday
November	11th day; 4th Thursday	the Friday following the 4th Thursday
December	25th	23rd day, only if Thursday or Friday; 24th day; 31st day

If any day listed above falls on Saturday, the preceding Friday is the holiday. If any day listed above falls on Sunday, the succeeding Monday is the holiday.

No extra holiday shall result when such Friday or Monday is already designated as a holiday.
A copy of a Working Day calendar incorporating the above-listed holidays and used by the Agency for Contract time accounting purpose will be furnished to the Contractor upon request.

The term "holiday" as used in this section shall not be construed as being the same as "holiday" within the meaning of 7-2.2.

The Contractor may perform work on the holidays designated in Column A above provided it has obtained prior written approval of the Engineer at least two Days in advance of performing the work. The Contractor may perform work on the holidays designated in Column B above provided the Contractor notifies the Engineer two Days in advance of the holiday.

6-7.2.2 Landscape Maintenance Period. Where a landscape maintenance period is specified, the portion of the time in such period that follows the completion of all other Work required by the Contract shall not be Working Days for Contract time accounting.

6-7.3 Contract Time Accounting. The Engineer will make a daily determination of each Working Day to be charged against the Contract time. These determinations will be discussed and the Contractor will be furnished a periodic statement showing the allowable number of Working Days of Contract time, as adjusted, at the beginning of the reporting period. The statement will also indicate the number of Working Days charged during the reporting period and the number of Working Days of Contract time remaining. If the Contractor does not agree with the statement, the Contractor must file a written protest within 15 Days after receipt, setting forth the facts of the protest. Otherwise, the statement will be deemed to have been accepted.

6-7.4 Starting Date for Contract Time and Notice to Proceed. The starting date for Contract time accounting will be determined by adding the number of Days indicated on the Proposal form to the date the Contract is awarded, however the Agency may, at its option, delay the starting date by not more than 60 calendar Days if necessary to obtain permits, rights-of-way, or approval of federal or State authorities, or when prevented from starting the project due to causes beyond its control. Notice to Proceed will be issued within 7 calendar Days after the Contract, bonds, certificates of insurance and other documents have been returned, properly completed by the Contractor, unless the starting date is delayed as herein provided. If the Agency delays the Contract starting date, Notice to Proceed will be issued at least 7 calendar Days prior to the new starting date. Any delay caused by failure of the Contractor to properly complete or timely return the Contract Documents shall not change the Contract starting date and shall not be a cause for extending the Contract time. The Notice of Award will indicate a probable Contract starting date. The Notice to Proceed will indicate the actual Contract starting date, computed as herein described.

6-8 COMPLETION, ACCEPTANCE AND WARRANTY.

6-8.1 Completion and Acceptance. Acknowledgment of completion of the Work will occur prior to Acceptance by the Agency. Acceptance will only occur after all Contract requirements have been fulfilled, such as training, submission of warranties, maintenance manuals, record drawings, Release on Contract and the like. Acceptance by the Agency will occur when the Engineer signs the Notice of Completion.
The Work will be inspected by the Engineer promptly upon receipt of the Contractor's written assertion that the Work has been completed. If, in the Engineer's judgment, the Work has been completed in accordance with the Plans and Specifications, the Engineer will acknowledge completion of the Work. Completion of the Work, as used above, shall include the Contractor showing evidence of having received an occupancy clearance from Building and Safety, or other permit issuing agency, when a building, plumbing electrical, grading, or other permit is required for the Work. The Engineer will, in acknowledging completion of the Work, set forth in writing the date when the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect the Work. This will also be the date to which liquidated damages will be computed.

6-8.2 Warranty and Correction

6-8.2.1 Warranty The Contractor warrants to the Agency that materials and equipment furnished under the Contract will be new, unless otherwise specified in the Contract Documents, and of good quality, that the Work will be free from defects in materials and workmanship and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective by the Agency. This warranty excludes damage or defect caused by abuse (other than by the Contractor or those under the control of the Contractor), modifications not executed by the Contractor, or improper or insufficient maintenance. This warranty excludes normal wear and tear. Nothing in this warranty is intended to limit any manufacturer's warranty which provides the Agency with greater warranty rights.

6-8.2.2 Correction Period For a period of one (1) year from the date of acceptance of the Work by the Agency, the Contractor shall repair or replace any defective workmanship or materials or Work not in conformance with the Contract Documents after notice to do so from the Engineer, and within the time specified in the notice. If the Contractor fails to make such repair or replacement within the time specified in the notice, the Agency may perform the repair or replacement and the Contractor and the Contractor's sureties shall be liable for the cost thereof. The one (1) year period referenced in this section 6-8.2.2 applies only to the Contractor's obligation to repair or replace defective workmanship or materials or Work not in conformance with the Contract Documents and is not intended to constitute a period of limitations for any other rights or remedies the Agency may have regarding the Contractor's other obligations under the Contract Documents.

6-8.3 No Waiver of Legal Rights. The Agency shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and Acceptance of the Work and payment therefor from showing the true amount and character of the Work performed and materials furnished by the Contractor, nor from showing that any such measurement, estimate, or certificate is untrue or is incorrectly made, nor that the Work or materials do not in fact conform to the Contract.

The Agency shall not be precluded or estopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the Contractor or its sureties, or both, such damages as it may sustain by reason of the Contractor's failure to comply with the terms of the Contract.

Neither the Acceptance by the Engineer or by its representative, nor any payment for or Acceptance of the whole or any part of the Work, nor any extension of time, nor any possession taken by the Engineer shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any right to damages.

A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

6-8.4 Landscape Maintenance Period. Final Acceptance of the Contract shall follow the satisfactory completion of all Contract Work, including the landscape maintenance period if one is specified.

6-8.5 Non-complying Work. Neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the Agency, shall constitute an Acceptance of Work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

6-8.6 Written Warranties. The Contractor shall obtain and deliver to the Engineer all written warranties required to be furnished by the Specifications. Each of such warranty shall be underwritten by the Contractor for the full period prescribed therein, and shall bear its endorsement to such effect.

6-9 LIQUIDATED DAMAGES. Failure of the Contractor to complete the Work within the time allowed will result in damages being sustained by the Agency. Such damages are, and will continue to be, impracticable and extremely difficult to determine. For each consecutive calendar day in excess of the time specified, as adjusted in accordance with 6-6, for completion of the Work the Contractor shall pay to the Agency, or have withheld from monies due it, the sum of $250, unless otherwise provided in the Contract Documents.

Execution of the Contract under these Specifications shall constitute agreement by the Agency and Contractor that $250 per day is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the Work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs.

6-10 USE OF IMPROVEMENT DURING CONSTRUCTION. The Agency reserves the right to take over and utilize all or part of any completed facility or appurtenance. The Contractor will be notified in writing in advance of such action. Such action by the Agency will relieve the Contractor of responsibility for injury or damage to said completed portions of the improvement resulting from use by public traffic or from the action of the elements or from any other cause, except injury or damage resulting from the Contractor's operations or negligence. The Contractor will not be required to reclean such portions of the improvement before field completion, except for cleanup made necessary by its operations. Nothing in this section shall be construed as relieving the Contractor from full responsibility for correcting defective work or materials.

In the event the Agency exercises its right to place into service and utilize all or part of any completed facility or appurtenance, the Agency shall assume the responsibility and liability for injury to persons or property arising out of or resulting from the utilization of the facility or appurtenance so placed into service, except for any willful or negligent act or omission by the Contractor, Subcontractor, their officers, employees or agents.

6-10.1 Use of Improvements - Exceptions. The provisions of 6-10 shall not apply to projects for the repair, modification, enlargement or improvement of existing facilities that are to remain in use during construction except where a portion of the project which is completely independent from the rest of the Work can be completed and put into use by the Agency.

On projects on public roads, after satisfactory completion of an isolated section of the Work involving roadway improvements or repairs, when all temporary signs and other temporary Contractor facilities have been removed, the section is not being used as a detour, the section is no longer under the Contractor's control, and the section is opened to public traffic through the end of the Contract period, that section of the Work shall be taken over by the Agency as provided in 6-10. The Contractor shall indicate to the Engineer in writing when the conditions of this paragraph have been complied with and shall specify the limits of the section involved. Any taking over of the Work by the Agency shall be effective only when formal written notification is issued by the Agency.

6-11 NOTICE OF POTENTIAL CLAIM FOR ADDITIONAL COMPENSATION. Procedures for notice of claims in specific situations and circumstances are provided in the following sections:

3-4 ....Changed Conditions
6-6.4 ....Delay and Extensions of Time
6-7.3 ....Contract Time Accounting

Compliance with this section is not prerequisite to assertion of a claim involving those sections or based on differences in measurements or errors of computation as to Contract quantities.

Compliance with the provisions of this section is required in all other situations and circumstances.

It is the intention of this section that differences arising between the parties under and by virtue of the Contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action taken to resolve such differences.

The Contractor shall give the Engineer written notice of a potential claim, setting forth: (1) the reasons for which the Contractor believes additional compensation will or may be due; (2) the nature of the costs involved; and (3) insofar as possible, the amount of the potential claim.

If the claim is based upon an act or failure to act by the Engineer, the said notice must be given to the Engineer prior to the date when the work giving rise to the potential claim is commenced; in all other cases the said notice must be given to the Engineer within 15 Days after the happening of the event, thing or occurrence giving rise to the potential claim.

The Contractor shall not be entitled to the payment of any additional compensation where the written notice of potential claim has not been given to the Engineer in the manner required by and within the time limitations of this section.

6-12 DISPUTES AND CLAIMS; PROCEDURE.

6-12.1 GENERAL. Any and all decisions made on appeal pursuant to this section shall be in writing. Any "decision" purportedly made pursuant to this section which is not in writing shall not be binding upon the Agency and should not be relied upon by the Contractor.

Filing or giving the notices required under 3-4, 6-6.4, 6-7.3 and 6-11 is prerequisite to recovery under a Contractor's claim for additional compensation; nothing in this section shall excuse the Contractor from its duty to file or give the required notices, or from performing other duties required by the Contract Documents.

6-12.2 ADMINISTRATIVE REVIEW. Prior to proceeding under 6-12.3 or filing a Complaint in Arbitration, the Contractor shall exhaust its administrative remedies by submitting its claim for review and decision by the following Agency staff in the following sequence:

Project Manager, responsible for the project
Department Director (Public Works Agency), responsible for the project.
Director of the Public Works Agency (the Engineer)

If the Contractor disputes the Project Manager's decision on its claim, the Contractor shall submit the claim to the Department Director. If the Contractor disputes the Department Director's decision on its claim, the Contractor shall submit the claim to the Engineer. Agency staff decisions shall state the portion of the claim that is undisputed if any.

The Project Manager may elect to forward a claim submitted by the Contractor directly to the Department Director. The Project Manager must give the Contractor notice of that election and the Contractor may supplement its claim within 7 Days of such notice (unless the parties agree in writing to a different time) and its claim will be deemed submitted on the earlier of the day it supplements its claim, the day it states in writing that it will not supplement its claim or the day time to supplement expires. The Department Director may forward a claim timely submitted by the Contractor directly to the Engineer instead of making a decision on the claim, in which case no notice or opportunity to supplement the claim is required, and the claim shall be deemed timely submitted to the Engineer.

The Engineer's decision on the claim shall be the Agency's final decision.

Claims submitted to the Department Director and the Engineer shall be submitted in writing and shall include:

a. A copy of the disputed decision.
b. A statement as to why the Contractor believes the decision is in error.
c. All information, argument, documents and evidence (collectively, materials) that the Contractor wishes to have considered in the review. Where the request for review is made to the Engineer, in lieu of resubmitting materials which have already been submitted to the Department Director, the Contractor may include with the request a list of the materials the Contractor wants the Engineer to consider. Any additional materials and evidence not previously submitted to the Department Director shall be included with the request to the Engineer, if the Contractor wishes them to be considered. If relevant evidence is not available at the time the request is made to the Department Director or the Engineer, the Contractor shall identify such evidence and include a statement as to when such evidence will be submitted.

The Project Manager shall issue a decision on a claim within 10 Days of receipt; if the Project Manager does not do so, then the Project manager will be deemed to have decided to reject the claim in its entirety as of the conclusion of the 10th Day after receipt. The Contractor shall submit a claim to the Department Director for review and decision within 7 Days of receipt of the Project Manager's decision or of the time the Project Manager is deemed to have decided to reject the claim, whichever is applicable. The Department Director shall issue a decision on a claim within 10 Days of the timely submission of the claim; if the Department Director does not do so, then the Department Director will be deemed to have decided to reject the claim in its entirety as of the conclusion of the 10th Day after timely submission. The Contractor shall submit a claim to the Engineer for review and decision within 7 Days of receipt of the Department Director's decision or of the time the Department Director is deemed to have decided to reject the claim, whichever is applicable. If a claim is timely submitted to the Engineer and the Engineer fails to issue a decision on that claim within the time limits prescribed for issuing a written statement under Public Contract Code, section 9204, subdivision (d)(1), the Engineer shall be deemed to have decided to reject the claim in its entirety. At any time after the Project Manager receives a claim, the Agency and Contractor may agree in writing to different time limits than those set forth in this paragraph.

6-12.3 MEET AND CONFER; MEDIATION If the Contractor disputes the Agency's final decision, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the Agency shall schedule a meet and confer conference within 30 Days for settlement of the dispute.

Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the Agency shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 Days after the Agency issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the Agency and the Contractor sharing the associated costs equally. The Agency

and Contractor shall agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the Agency and Contractor cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

Failure by the Agency to meet the time requirements of this section shall result in the portion of the claim that remains in dispute being deemed rejected in its entirety.

The parties may agree to waive, in writing, mediation under this section.

6-12.4 ARBITRATION. Claims and disputes arising under or related to the performance of the Contract, for which mediation under 6-12.3 was waived or unsuccessful except for claims which have been released by execution of the "Release on Contract" as provided in 9-4, shall be resolved by arbitration unless the Agency and the Contractor agree in writing, after the claim or dispute has arisen, to waive arbitration and to have the claim or dispute litigated in a court of competent jurisdiction. Arbitration shall be pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2 of the Public Contract Code and the regulations promulgated thereto, Chapter 4 (commencing with Section 1300) of Division 2 of Title 1 of the California Code of Regulations. The arbitration decision shall be decided under and in accordance with California law, supported by substantial evidence and, in writing, contain the basis for the decision, findings of fact, and conclusions of law.

Arbitration shall be initiated by a Complaint in Arbitration made in compliance with the requirements of said Chapter 4. A Complaint in Arbitration by the Contractor shall be filed not later than 90 calendar Days after receipt of the final written decision of the Agency on the claim or dispute or within 300 Days after Acceptance of the Work by the Agency if no written decision has been issued. For the purposes of this section, "Acceptance of the Work by the Agency" shall be defined as the date the Notice of Completion is filed.

Where an election is made by either party to use the Simplified Claims Procedure provided under Sections 1340-1346 of said Chapter 4, the parties may mutually agree to waive representation by counsel.

All contracts valued at more than $25,000 between the Contractor and its subcontractors and suppliers shall include a provision that the subcontractors and suppliers shall be bound to the Contractor to the same extent that the Contractor is bound to the Agency by all terms and provisions of the Contract, including this arbitration provision.

6-13 CONTRACTOR'S WORK HOURS

6-13.1 Working Hours Limitations. Except as otherwise specified, no work shall be performed by the Contractor at the Work site between the hours of 7:00 p.m. and 7:00 a.m. the following day, nor shall work be performed on Saturdays, Sundays or holidays listed in 6-7.2.1.

6-13.2 Regular Work Schedule. The Contractor shall furnish a work schedule with the Construction Schedule required by 6-1 and inform the Engineer at least two Days in advance of changing the schedule. The schedule shall include the times for starting and ending work on each day. Such starting and ending times shall not be more than 10 1/2 hours apart.

6-13.3 Exceptions. The limitations on working hours and days shall not apply to emergency work made necessary by unusual conditions where such work is necessary to protect the Work, to protect the property of others, to protect life, or to ensure the orderly flow of traffic.

The limitations of this section shall not apply where work at times other than allowed by 6-13.1 and 6-13.2 is necessary in order to make utility connections or is required by other provisions contained in these Specifications in order to perform the work in the manner specified. In these cases, the Contractor shall obtain prior written approval of the Engineer at least two Days in advance of performing the work.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7-1 THE CONTRACTOR'S EQUIPMENT AND FACILITIES.

7-1.1 General. The Contractor shall furnish and maintain in good condition all equipment and facilities as required for the proper execution and inspection of the Work.

The Contractor shall provide and maintain enclosed toilets for the use of employees engaged in the Work. These accommodations shall be maintained in a neat and sanitary condition, and regularly pumped out.

7-1.2 Temporary Utility Services. The Contractor shall, at its own expense, make all arrangements necessary for the provision of temporary utility services necessary for its own use during performance of the Work.

The Contractor shall not draw water from any fire hydrant (except to extinguish a fire), without obtaining permission from the water utility owner.

7-1.3 Crushing and Screening Operations. Unless otherwise specified in the Special Provisions, the establishment and operation of portable screens and crushers will not be allowed on or adjacent to the Work site.

7-2 LABOR

7-2.1 General. The Contractor, its agents, and employees shall be bound by and comply with applicable provisions of the Labor Code and Federal, State, and local laws related to labor.

Any worker found by the Engineer to be incompetent, intemperate, troublesome, disorderly, or otherwise objectionable, or who fails to perform the Work properly and acceptably, shall be immediately removed from the Work site by the Contractor and shall not be reemployed in the performance on the Work.

7-2.1.1 Special Qualifications. Where the Engineer determines certain portions of the Work require experience, training, certification or other special qualifications that may not be possessed by the average journeyperson, such portions of the Work will be specifically identified in the Special Provisions and the special qualifications identified.

When work requiring special qualifications is being performed, a person with such qualifications must be in immediate charge of the work. The person may be a lead journeyperson, foreperson or trade superintendent. The general superintendent or a foreperson who is not specifically assigned to the area where the identified work is being performed will not be considered to be in immediate charge of the work.

Written certification of the required qualifications shall be furnished to the Engineer at least one week prior to the time work is commenced on the work requiring such qualifications. Such certification is subject to review and acceptance by the Engineer. If, during performance of work requiring special qualifications, the qualified person becomes temporarily or permanently unavailable to the Contractor, work shall not proceed until a qualified replacement has been accepted by the Engineer. The Engineer will promptly consider the certification of the replacement.

If identified work is performed without a person having the special qualifications in charge, the Engineer may, at its sole discretion, order such work removed and replaced at the Contractor's expense.

If, after certification is accepted, the Engineer finds that the certification was inaccurate, or work on the project indicates a lack of the knowledge and experience to supervise the work, the Engineer may order the work stopped until an acceptable replacement has been certified, accepted and is in charge.

7-2.2 Prevailing Wages. Pursuant to Section 1773.2 of the Labor Code, the current prevailing rate of per diem wages at the time of the Bid as determined by the Director of the Department of Industrial Relations (DIR) are on file at the office of the Engineer. The Contractor shall post a copy of these rates at the Work site. Pursuant to Section 1774 of the Labor Code, the Contractor and any Subcontractors shall pay not less than the specified prevailing rates of wages to workers employed on the Contract. If the Contract is Federally-funded, the Contractor and any Subcontractors shall not pay less than the higher of these rates or the rates determined by the United States Department of Labor. Pursuant to Section 1775 of the Labor Code, the Contractor and any Subcontractors, shall, as a penalty to the Agency, forfeit the prescribed amounts per calendar day, or portion thereof, for each worker paid less than the prevailing wage rates. The project is subject to the compliance monitoring and enforcement by the California Department of Industrial Relations (DIR). The contractor is responsible for posting job site notices as prescribed by regulation pursuant to Labor Code section 1771.4, subdivision (a)(2). The Contractor and each Subcontractor, if any, must be registered with the DIR pursuant to Labor Code section 1725.5 and section 1771.1. The Contractor and each Subcontractor, if any, must submit certified payrolls to the Labor Commissioner pursuant to Labor Code 1771.4.

7-2.2.1 Apprentices. Apprentices shall be employed on the Work in accordance with Labor Code Section 1777.5. The Contractor is responsible for compliance with Labor Code Section 1777.5 for all apprenticeable occupations whether employed directly or through subcontractors.

7-2.2.2 Contractors' Duties Concerning Labor Code Compliance. As required by Labor Code 1775(b)(1), Labor Code Sections 1771, 1775, 1776, 1777.5, 1813 and 1815 are required to be included in the contract between the Contractor and subcontractors. The Contractor agrees to comply with these sections and all remaining provisions of the Labor Code.

7-2.3 Payroll Records. Pursuant to Section 1776 of the Labor Code the Contractor and each Subcontractor, if any, shall keep, make available, and submit to the Engineer within ten (10) days of receipt of a written request,

certified payroll records. Pursuant to Labor Code section 1776, subsection (h), the Contractor and each Subcontractor, if any, shall, as a penalty to the Agency, forfeit the prescribed amount for each calendar day, or portion thereof, for each worker, the Contractor and each Subcontractor, if any, fails to comply with that subsection until strict compliance is effectuated. The Contractor and each Subcontractor, if any, waives any right to any notice or hearing on the forfeiture of such penalties pursuant to Labor Code sections 1726 or 1771.6. The contractor shall include the in its subcontracts as required to make this paragraph effective as to each Subcontractor. Upon written request, the Contractor shall withhold penalties forfeited by a Subcontractor pursuant to Labor Code section 1776,l subsection (h), and this paragraph from payment due to such Subcontractor and remit such penalties withheld to the Agency.

7-2.4 Hours of Labor. Pursuant to Section 1810 of the Labor Code, 8 hours of labor shall constitute a legal day's work. Pursuant to Section 1813 of the Labor Code, the Contractor and any Subcontractors, shall, as a penalty to the Agency, forfeit the prescribed amount per calendar day for each worker required or permitted to work more than 8 hours in any 1 calendar day and 40 hours in any 1 calendar week without being compensated in accordance with Section 1815.

Pursuant to Section 1810 of the Labor Code, 8 hours of labor shall constitute a legal day's work. Pursuant to Section 1813 of the Labor Code, the Contractor and each Subcontractor, if any, shall, as a penalty to the Agency, forfeit the prescribed amount per calendar day for each worker required or permitted to work more than 8 hours in any 1 calendar day and 40 hours in any 1 calendar week without being compensated in accordance with Section 1815. Contractor and each Subcontractor, if any, waives any right to any notice or hearing on the forfeiture of such penalties pursuant to Labor Code sections 1726 and 1771.6. Contractor shall include terms in its subcontracts as required to make this paragraph effective as to each Subcontractor. Upon written request, Contractor shall withhold penalties forfeited by a Subcontractor pursuant to Labor Code section 1813 and this paragraph from payments due to such Subcontractor and remit such penalties withheld to the Agency

7-3 INDEPENDENCE OF CONTRACTOR, INDEMNIFICATION AND POLLUTION

7-3.1 Independence of Contractor. It is understood and agreed that Contractor is at all times an independent contractor and that no relationship of employer-employee exists between the parties hereto. Contractor will not be entitled to any benefits payable to employees of County, including but not limited to overtime, retirement benefits, workers' compensation benefits, injury leave or other leave benefits. County is not required to make any tax or benefit deductions from the compensation payable to Contractor under the provisions of this Agreement. As an independent contractor, Contractor hereby holds County harmless from any and all claims that may be made against County based upon any contention by any third party that an employer-employee relationship exists by reason of the Agreement.

If, in the performance of this Agreement, any third persons are employed by Contractor, such persons will be entirely and exclusively under the direction, supervision and control of Contractor. All terms of employment, including hours, wages, working conditions, discipline, hiring and discharging or any other terms of employment or requirements of law, will be determined by Contractor. County will have no right or authority over such persons or the terms of such employment, except as provided in this Agreement.

7-3.2 Indemnification and Hold Harmless Clause. All activities arising out of or relating to the performance of the Work covered by this Contract shall be at the risk of Contractor. To the fullest extent permitted by law, Contractor shall defend (at Agency's request), indemnify and hold harmless Agency, and the County of Ventura if the County of Ventura is not the entity defined as Agency under this Contract, including all of their boards, agencies, departments, officers, employees, agents and volunteers (collectively, "Indemnitee"), against any and all claims, suits, actions, legal or administrative proceedings, judgments, debts, demands, damages, including injury or death to any person or persons, and damage to any property including loss of use resulting therefrom, incidental and consequential damages, liabilities, interest, costs, attorneys' fees and expenses of whatsoever kind of nature, whether arising before, during or after commencement or completion of this Contract, whether against Contractor and Indemnitee or which are in any manner, directly, indirectly, in whole or in part, arising from any act, omission, fault or negligence, whether active or passive, of Contractor, a Subcontractor or anyone directly or indirectly employed by them or anyone for whose acts they may be liable in connection with or incident to the Contract, even though the same may have resulted from the joint, concurring or contributory negligence, or from the passive negligence, of Indemnitee or any other person or persons, unless the same be caused by the sole negligence of Indemnitee, or except to the extent caused by the active negligence or willful misconduct of Indemnitee.

The Agency will notify the Contractor of the receipt of any third party claims.

7-3.3 Contamination and Pollution. Contractor, solely at its own cost and expense, will provide clean up of any premises, property or natural resources contaminated or polluted due to Contractor activities. Any fines, penalties, punitive or exemplary damages assigned due to contaminating or polluting activities of the Contractor will be borne entirely by the Contractor.

7-4 INSURANCE REQUIREMENTS

Contractor, at its sole cost and expense, shall obtain and maintain in full force during the term of this Contract the following types of insurance:

7-4.1 Workers' Compensation Insurance.

7-4.1.1 Coverage. Workers' Compensation coverage, in full compliance with Labor Code 3700, for all employees of Contractor and Employer's Liability in the minimum amount of $1,000,000. The Agency, the County of Ventura, its officers, employees or Consultants, will not be responsible for any claims in law or equity occasioned by failure of Contractor to comply with this paragraph.

7-4.1.2 Certification. Before execution of the Contract by Agency, Contractor shall file with the Engineer the following signed certification:

> "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract."

7-4.2 Commercial General Liability Insurance

7-4.2.1 Minimum Limits and Scope; Insurance Classes. "Occurrence" coverage in the minimum amount of:

Coverage Class	Coverage
L-A	$ 1,000,000 combined single limit (CSL) bodily injury and property damage each occurence and $1,000,000 aggregate
L-B	$ 1,000,000 CSL bodily injury and property damage each occurrence and $2,000,000 aggregate
L-C	$ 5,000,000 CSL bodily injury and property damage each occurrence and $5,000,000 aggregate
L-D	$ 10,000,000 CSL bodily injury and property damage each occurrence and $10,000,000 aggregate

If no coverage class is specified in "Proposal", coverage class L-B shall apply.

If Contractor maintains higher limits than the minimums shown above, the Agency requires and shall be entitled to coverage for the higher limits maintained by the Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Agency.

Coverages shall include premises/operations; products/completed operations; independent contractors; underground, explosion and collapse hazards; personal and advertising injury; broad form property damage; and broad form blanket contractual.

7-4.2.2 Coverage Exceptions. On projects where no explosives will be used and no demolition is involved, the coverage for explosion may be omitted. On projects where no excavation is involved, the coverage for underground hazard may be omitted. The omission of said coverages is at Agency's option, and shall not abrogate Contractor's responsibilities for indemnification as set forth in these Specifications.

7-4.2.3 Excess Liability Policies. All Excess Liability policies, if used, shall be on an "umbrella" or following form of the primary layer of coverage.

7-4.3 Commercial Automobile Liability Insurance

Coverage in the minimum amount of $1,000,000 CSL bodily injury and property damage, including automobile liability, any auto.

7-4.4 Property Insurance

Contractor shall arrange for its own "Course of Construction" insurance on the project to protect its interests, as Agency does not have this coverage.

Contractor is responsible for delivering to Agency Work completed in accordance with the Contract except as provided in 7-18 (Acts of God). Should the Work being constructed be damaged by fire or other causes during construction, it shall be replaced by Contractor in accordance with the requirements of the Plans and Specifications without additional expense to Agency.

7-4.5 Other Insurance Provisions.

7-4.5.1 Insurance Company Qualifications. All insurance required shall be issued by (a) an admitted company or admitted companies authorized to transact business in the State of California which have a BEST rating of B+ or higher and a Financial Size Category (FSC) of VII or larger or (b) a California approved Surplus Line carrier or carriers which have a BEST rating of A or higher and a Financial Size Category (FSC) of VII or larger.

Workers compensation insurance not meeting the above requirements but meeting all other requirements of the specifications, will be accepted.

7-4.5.2 Primary Coverage. All insurance required shall be primary coverage as respects Agency and any insurance or self-insurance maintained by Agency or the County of Ventura shall be in excess of Contractor's insurance coverage and shall not contribute to it.

7-4.5.3 Aggregate Limits Exceeded. Agency shall not be notified immediately if any aggregate insurance limit is exceeded. Contractor shall purchase additional coverage to meet requirements.

7-4.5.4 Liability in Excess of Limits. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve Contractor for liability in excess of such coverage, nor shall it preclude Agency or the County of Ventura from taking such other actions as is available to it under any other provisions of this Contract or otherwise in law.

7-4.5.5 Additional Insured Endorsements. The Agency, the County of Ventura (if not defined as Agency) and all special Districts governed by the County of Ventura Board of Supervisors, and their officials, employees, and volunteers shall be named as Additional Insured as respects Work done by or on behalf of Contractor under the Contract on all policies required (except workers' compensation). With respect to Contractor's commercial general Liability insurance, Additional Insured coverage shall include both ongoing and completed operations.

7-4.5.6 Waiver of Subrogation Rights. Contractor agrees to waive all rights of subrogation against the Agency, the County of Ventura, including its boards, and all special Districts governed by the Board of Supervisors, for losses arising directly or indirectly from the activities or Work performed by Contractor under the Contract (applies only to Workers' Compensation and Commercial General Liability).

7-4.5.7 Cancellation Notice Required. In the case of policy cancellation, Agency shall be notified by the insurance company or companies as provided for in the policy. Contractor shall notify Agency of any and all policy cancellations within three working days of the cancellation.

7-4.5.8 Documentation Required. Prior to execution of the Contract by Agency, Contractor shall provide Agency with Certificates of Insurance for all required coverages (see Appendix A for example), all required endorsement(s) and a copy of its course of insurance policy.

It is the responsibility of Contractor to confirm that all terms and conditions of Section 7-4 Insurance Requirements are complied with by any and all subcontractors that Contractor may use in the completion of the Contract.

7-5 PERMITS. The Agency will obtain, at no cost to the Contractor, all encroachment and building permits necessary to perform Contract Work in streets, highways, railways or other rights of way, unless the necessity for such permit(s) is created by a method of operation chosen by the Contractor. The Contractor shall obtain and pay for all costs incurred for permits necessitated by its operations such as, but not limited to, those permits required for night Work, overload, blasting and demolition.

The Contractor shall pay all business taxes or license fees that are required for the Work.

7-5.1 Highway and Railroad Permits. The Engineer will obtain the basic State highway and railroad encroachment permits which will include checking of plans. However, the Contractor must also obtain permits from these agencies. Inspection fees charged by these agencies must be paid by the Contractor.

7-5.2 Grading Ordinance

7-5.2.1 General. All excavation, filling and grading operations in Ventura County are governed by the Ventura County Grading Ordinance or City Ordinances, except within the project right of way shown on the Plans.

7-5.2.2 Permits Required. Work outside the project right of way which involves excavation or filling of soils is subject to all requirements of the applicable grading ordinance. The requirements may include, but are not limited to, submitting of a grading plan prepared by a Civil Engineer, obtaining a grading permit, paying the permit fee, posting a grading bond, hiring professionals for engineering and testing services, compacting fills, constructing drainage facilities and providing erosion protection.

7-5.2.3 Imported and Exported Material. To insure that neither the Agency nor the Contractor is a party to aiding or abetting any property owner (who is ultimately responsible) to violate the applicable grading ordinance, no material shall be imported from or exported or wasted outside the project right of way until the Contractor has furnished the Engineer a copy of the grading permit covering such operation on land where material is to be deposited or excavated, unless exempt.

7-5.2.4 Exemptions from Permit. No grading permit is required of the Contractor for Work performed within the project right of way shown on the Plans or on borrow or disposal areas shown on the Plans or described in the Special Provisions and which are specifically designated as being exempt from such permit requirements.

7-5.3 Building Permit.

7-5.3.1 Agency Furnished Permits. Except as provided in **7-5.3.2**, Agency will submit the plans for the Work to Department of Building and Safety, and other building related permit issuing agencies, for plan check and make the corrections necessary for the issuance of building and related permits. Agency will Pay plan check and permit fees for the Work. The Contractor may be required to furnish information to the permit issuing agencies, as required for the issuance of permits, and sign the permit.

7-5.3.2 Contractor Furnished Permits. Components or systems, required by the Contract, may require the preparation of plans and calculations to obtain approvals or permits from state or local building, fire prevention, public health, safety, environmental protection and other agencies in addition to the basic permits arranged for by the Agency as provided in **7-5.3.1**. Contractor shall take all actions in a timely manner to obtain such approvals or permits so as not to delay completion of the Work beyond the time provided in **6-7**. Contractor shall include all costs and consider the time required to obtain approvals or permits in the Contract price bid.

7-5.4 Coastal Zone Permits

7-5.4.1 Agency Furnished Permits. Permits required for Work on the project within rights of way furnished by the Agency within the Coastal Zone will be obtained by the Agency.

7-5.4.2 Contractor Furnished Permits. Permits required for the Contractor's operations outside of rights of way furnished by the Agency must be obtained by the Contractor. Such permits are required for brush removal, grading, dredging, disposal of material and many other operations within the Coastal Zone.

7-6 THE CONTRACTOR'S REPRESENTATIVE. Before starting work, the Contractor shall designate in writing a representative who shall have complete authority to act for it. An alternative representative may be designated as well. The representative or alternate shall be present at the Work site whenever work is in progress or whenever actions of the elements necessitate its presence to take measures necessary to protect the Work, persons, or property. Any order or communication given to this representative shall be deemed delivered to the Contractor. A joint venture shall designate only one representative and alternate. In the absence of the Contractor or its representative, instructions or directions may be given by the Engineer to the superintendent or person in charge of the specific work to which the order applies. Such order shall be complied with promptly and referred to the Contractor or its representative.

In order to communicate with the Agency, the Contractor's representative, superintendent, or person in charge of specific work shall be able to speak, read, and write the English language.

7-7 COOPERATION AND COLLATERAL WORK. The Contractor shall be responsible for ascertaining the nature and extent of any simultaneous, collateral, and essential work by others. The Agency, its workers and contractors and others, shall have the right to operate within or adjacent to the Work site during the performance of such work.

The Agency, the Contractor, and each of such workers, contractors and others, shall coordinate their operations and cooperate to minimize interference.

The Contractor shall include in its Bid all costs involved as a result of coordinating its work with others. The Contractor will not be entitled to additional compensation from the Agency for damages resulting from such simultaneous, collateral, and essential work. If necessary to avoid or minimize such damage or delay, the Contractor shall redeploy its work force to other parts of the Work.

Should the Contractor be delayed by the Agency, and such delay could not have been reasonably foreseen or prevented by the Contractor, the Engineer will determine the extent of the delay, the effect on the Work, and any extension of time.

7-8 WORK SITE MAINTENANCE

7-8.1 General Throughout all phases of construction, including suspension of the Work, and until acceptance per 6-8, the Contractor shall keep the Work site clean and free from rubbish and debris. Rubbish and debris collected on the Work site shall only be stored in roll-off, enclosed containers prior to disposal. Stockpiles of such will not be allowed.

When required by the Special Provisions, the Contractor shall provide a self-loading motorized street sweeper equipped with a functional water spray system. The sweeper shall clean all paved areas within the Work site and all paved haul routes at least once each working day.

The Contractor shall ensure there is no spillage along haul routes. Any such spillage shall be removed immediately and the area cleaned.

Should the Contractor fail to keep the Work site free from rubbish and debris, the Engineer may suspend the Work per 6-3 until the condition is corrected.

7-8.2 Air Pollution Control The Contractor shall not discharge smoke, dust, equipment exhaust, or any other air contaminants into the atmosphere in such quantity as will violate any Federal, State, or local regulations.

The Contractor shall also abate dust nuisance by cleaning, sweeping and spraying with water, or other means as necessary. The use of water shall conform to 7-8.6.

7-8.3 Noise Control. Noise generated from the Contractor's operations shall be controlled as specified in the Special Provisions.

7-8.4 Storage of Equipment and Materials.

7-8.4.1 General Materials and equipment shall be removed from the Work site as soon as they are no longer necessary. Before inspection by the Engineer for acceptance, the Work site shall be cleared of equipment, unused materials, and rubbish so as to present a satisfactory clean and neat appearance.

Excess excavated material shall be removed from the Work site immediately unless otherwise specified in the Special Provisions.

Forms and form lumber shall be removed from the Work site as soon as practicable after stripping.

7-8.4.2 Storage in Public Streets. Construction materials and equipment shall not be stored in streets, roads, or highways for more than 5 days after unloading unless otherwise specified in the Special Provisions or approved by the Engineer. All materials or equipment not installed or used in construction within 5 days after unloading shall be stored at a location approved by the Engineer.

Excavated material, except that which is to be used as backfill in the adjacent trench, shall not be stored in public streets unless otherwise specified in the Special Provisions or approved by the Engineer. Immediately after placing backfill, all excess material shall be removed from the Work site.

7-8.5 Sanitary Sewers.

7-8.5.1 General. The flow of sewage shall not be interrupted. Should the Contractor disrupt the operation of existing sanitary sewer facilities, or should disruption be necessary for performance of the Work, the Contractor shall bypass the sewage flow around the Work. Sewage shall be conveyed in closed conduits and disposed of in a sanitary sewer system. Sewage shall not be permitted to flow in trenches nor be covered by backfill.

Whenever sewage bypass and pumping is required by the Plans or Specifications, or the Contractor so elects to perform, the Contractor shall submit per 2-5.3 a working drawing conforming to 7-8.5.2 detailing its proposed plan of sewage bypass and pumping.

7-8.5.2 Sewage Bypass and Pumping Plan. The plan shall indicate the locations and capacities of all pumps, sumps, suction and discharge lines. Equipment and piping shall be sized to handle the peak flow of the section of sewer line to be bypassed and pumped. Equipment and piping shall conform to 7-10, the Plans, and the Special Provisions. Bypass piping, when crossing areas subject to traffic loads, shall be constructed in trenches with adequate cover and otherwise protected from damage due to traffic. Lay-flat hose or aluminum piping with an adequate casing and/or traffic plates may be allowed if so approved by the Engineer. Bypass pump suction and

discharge lines that extend into manholes shall be rigid hose or hard pipe. Lay flat hose will not be allowed to extend into manholes. The Contractor shall provide a backup bypass pumping system in case of malfunction. The backup bypass system shall provide 100 percent standby capability, and be in place and ready for immediate use.

Each standby pump shall be a complete unit with its own suction and discharge piping. In addition to the backup system, the Contractor shall furnish and operate vacuum trucks when required by the Plans or Special Provisions.

7-8.5.3 Spill Prevention and Emergency Response Plan. The Contractor shall prepare and submit per 2-5.3 a spill prevention and emergency response plan. The plan shall address implementation of measures to prevent sewage spills, procedures for spill control and containment, notifications, emergency response, cleanup, and spill and damage reporting.

The plan shall account for all storm drain systems and water courses within the vicinity of the Work which could be affected by a sewage spill. Catch basins that could receive spilled sewage shall be identified Unless otherwise specified in the Special Provisions, these catch basins shall be sealed prior to operating the bypass and pumping system. The Contractor shall remove all material used to seal the catch basins when the bypass and pumping system operations are complete.

The Contractor shall be fully responsible for containing any sewage spillage, preventing any sewage from reaching a watercourse, recovery and legal disposal of any spilled sewage, any fines or penalties associated with the sewage spill imposed upon by the Agency and/or the Contractor by jurisdictional regulatory agencies, and any other expenses or liabilities related to the sewage spill.

7-8.6 Water Pollution Control The Contractor shall prevent, control, and abate discharges of pollutants from the construction site in order to protect the storm drain system, which includes pipes, channels, streams, waterways, and other bodies of water, by the construction, installation or performance of water pollution control measures as shown on the Stormwater Pollution Control Plan (SWPCP) or Stormwater Pollution Prevention Plan (SWPPP) depending on the land area affected by the construction activity. The Contractor shall ensure compliance with the current State NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activity (General Construction Permit), NPDES No. CAS000002 and current Ventura County NPDES Municipal Separate Storm Sewer System (MS4) Permit No. CAS004002.

7-8.6.1 Compliance with NPDES General Construction Permit

7-8.6.1.1 Construction Sites

If the Work involves construction activity that results in soil disturbance of one acre or more of total land area, or results in soil disturbances of less than one acre but is a part of a work area larger than one acre, the Contractor shall comply with the requirements of the General Construction Permit NPDES No. CAS000002. Construction activity includes clearing, grading, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement. Construction activity does not include routine maintenance such as, maintenance of original line and grade, hydraulic capacity, or original purpose of the facility.

The Contractor shall comply with requirements of the General Construction Permit (NPDES No. CAS000002), obtained by the Agency, including a site-specific Storm Water Pollution Prevention Plan (SWPPP) for the Work to be developed by Qualified SWPPP Developer (QSD) and implemented by the Qualified SWPPP Practitioner (QSP). After July 1, 2010, the Agency will electronically file all required Permit Registration Documents (PRDs) through the State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website, as required prior to the commencement of construction activity. PRDs consist of the Notice of Intent (NOI), Risk Assessment, Post-Construction Calculations, a Site Map, the SWPPP, a signed certification statement by the Legally Responsible Party (LRP), and the first annual fee. For the Permit application, the Contractor shall submit to Project Manager the following:

- The completed site-specific Risk Assessment
- Post-construction calculations if applicable for the project, and
- Site-specific SWPPP developed in accordance with applicable Permits.

7-8.6.1.2 Linear Utility Projects; Contractor shall comply with the requirements of the General Construction Permit NPDES No. CAS000002 for Linear Underground/Overhead projects (LUPs) one acre or greater.

7-8.6.2 Compliance with NPDES MS4 Permit

7-8.6.2.1 Construction Sites Less Than One Acre The Contractor shall ensure implementation of an effective combination of erosion and sediment control Best Management Practices (BMPs) listed in **Table 6** of the Ventura County NPDES MS4 Permit. The Contractor shall develop and implement a Storm Water Pollution Control Plan (SWPCP).

7-8.6.2.2 Construction Sites One Acre but Less Than 5 Acres The Contractor shall ensure implementation of an effective combination of appropriate erosion and sediment control BMPs from **Table 7** (BMPs at Construction sites 1 acre or greater but less than 5 acres) of the Ventura County NPDES MS4 Permit in addition to the ones identified in **Table 6** (BMPs at Construction sites less than 1 acre) to prevent erosion and sediment loss, and the discharge of construction wastes. For all construction sites one acre or greater, the Contractor shall submit the SWPPP to the Agency for review and certification as the Local SWPPP.

7-8.6.2.3 Construction Sites 5 Acres and Greater The Contractor shall ensure implementation of an effective combination of the following BMPs in **Tables 8** (BMPs at Construction sites 5 acres or greater) in addition to the ones identified in **Table 6** (BMPs at Construction sites less than 1 acre) and **Table 7** (BMPs at Construction sites 1 acre or greater but less than 5 acres) at all construction sites 5 acres and greater to prevent erosion and sediment loss, and the discharge of construction wastes. For all construction sites one acre or greater, the Contractor shall submit the SWPPP to the Agency for review and certification as the Local SWPPP.

7-8.6.2.4 Enhanced Construction BMP Implementation

Construction sites located on hillsides, adjacent or directly discharging to CWA 303(d) listed waters for siltation or sediment, and directly adjacent to Environmentally Sensitive Areas are termed "high risk sites." Contractor shall implement enhanced practices that preclude impacts to water quality posed by the high risk sites.

Contractor shall ensure that high risk sites are inspected by the Qualified SWPPP Developer, Qualified SWPPP Practitioner, or Certified Professionals in Erosion and Sediment Control (CPESC) at the time of BMP installation, at least weekly during the wet season, and at least once each 24 hour period during a storm event that generates runoff from the site, to identify BMPs that need maintenance to operate effectively, that have failed or could fail to operate as intended.

During the wet season, the area of disturbance shall be limited to the area that can be controlled with an effective combination of erosion and sediment control BMPs. Enhanced sediment controls should be used in combination with erosion controls and should target portions of the site that cannot be effectively controlled by standard erosion controls described above. Effective sediment and erosion control BMPs proposed by the Contractor shall include the BMPs listed in Table 9 (Enhanced Construction BMP Implementation) of the NPDES MS4 Permit. The Contractor shall implement the BMPs listed in Table 9 unless shown unnecessary. Also, the Contractor shall retain records of the inspection and a determination and rationale of the BMPs selected to control runoff.

7-8.6.3 Plan.

7-8.6.3.1 The SWPCP, required for construction projects less than one acre, shall be prepared in accordance with the requirements of current Ventura County NPDES MS4 Permit No. CAS004002 and County Ordinance No. 4142.

7-8.6.3.2 The SWPPP, required for construction projects one acre or greater, shall be prepared in accordance with the requirements of the state's General Construction Permit NPDES Permit CAS000002, Ventura Countywide Stormwater Quality Management Program, NPDES MS4 Permit No. CAS004002, and County Ordinance No. 4142.

7-8.6.3.3 The SWPCP/SWPPP shall identify potential pollutant sources on the construction site that may affect the quality of discharges, whether non-stormwater or stormwater, from the site and design the use and placement of water pollution control measures, BMPs, to effectively prohibit the entry of pollutants from the site into the storm drain system during construction. At a minimum, and depending on the size of the project area, the SWPCP/SWPPP will include all appropriate minimum BMPs as required by the Ventura Countywide Stormwater Quality Management Program, NPDES MS4 Permit No. CAS004002 (Tables 6 through 9). The SWPCP/SWPPP must utilize the measures recommended in the California Stormwater Quality Association (CASQA) Stormwater BMPs Handbook for Construction (January 2003 version until July 1, 2010 and 2009 version after July 1, 2010). Starting July 1, 2010 SWPPP shall be prepared by QSD as defined in the NPDES Permit CAS000002. The Contractor shall complete, sign and submit the SWPCP/SWPPP for review and final approval by the Project Engineer, prior to issuance of the Notice to Proceed as provided in 6-7.4.

7-8.6.3.4 For all construction projects one acre and greater, the Contractor shall submit the SWPPP to the Agency for review and certification as Local SWPPP in accordance with NPDES MS4 Permit No. CAS004002 prior to the Notice to Proceed as provided in 6-7.4.

7-8.6.4 Measures. All water pollution control measures shall conform to the requirements of the submitted SWPCP/SWPPP. If circumstances during the course of construction require changes to the original SWPCP/SWPPP, a revised SWPCP/SWPPP shall be promptly submitted to the Project Manager in each instance. The SWPPP shall be amended or revised by QSD. A copy of the current SWPCP/SWPPP including revisions and amendments shall be kept at the site to ensure that field personnel has access to the current document at all times. If measures being taken are inadequate to control water pollution effectively, the Project Manager may direct the Contractor to revise the operations and no further work shall be performed until adequate water pollution control measures are implemented. Effective September 2, 2011, implementation of the SWPPP shall be overseen by the Contractor's QSP as defined in the General Construction Permit NPDES No. CAS000002. All work installed by the Contractor in connection with the SWPCP/SWPPP but not specified to become a permanent part of the Work shall be removed and the site restored in so far as practical to its original condition prior to completion of the Work.

7-8.6.4.1 Post-Construction Standards; Contractor shall ensure that applicable post-construction standards are implemented to meet applicable project requirements of the Ventura County NPDES MS4 Permit and General Construction Permit NPDES No. CAS000002 (effective September 2, 2012).

7-8.6.4.2 Active Treatment Systems; Contractor shall comply with requirements of the General Construction Permit NPDES No. CAS000002 for active treatment systems as applicable.

7-8.6.5 Monitoring and Reporting

7-8.6.5.1 Monitoring; In accordance with the General Construction Permit NPDES No. CAS000002, the Contractor shall develop and implement monitoring program for Risk Level 2 and 3 sites. In addition at Risk Level 3 sites, contractor shall perform receiving water monitoring to meet Permit requirements.

7-8.6.5.2 Reporting; the Contractor shall ensure that all submittals and reports are prepared and submitted to the RWQCB in accordance with the applicable Permits. At minimum the reports will include Annual Report (for applicable projects due September 1st), Rain Event Action Plan (due 48 hrs prior to the rain event for the applicable projects), Numeric Action Levels (NAL) Exceedance Report (as required), Numeric Effluent Limitations (NELs) Violation Report (within 24 hours after NEL exceedance is identified). Contractor shall submit required reports to the Project Manager for review and approval prior to submittal to the RWQCB.

7-8.6.6 Dewatering Activities. All dewatering activities shall be performed in accordance with applicable regulatory requirements issued by the Los Angeles Regional Water Quality Control Board, including specific requirements contained in the Waste Discharge Requirements (WDR) when issued for the Work.

7-8.6.7 Payment. The Contract lump sum price for water pollution control shall include full compensation for furnishing all labor, materials, tools, equipment, services and incidentals and for doing all work involved in water pollution control as specified herein. Payment for water pollution control will be made as the Work proceeds, and is in compliance with the approved Water Pollution Control Plan, on the following basis.

Partial payment estimate (excluding mobilization & water pollution control payments) as a percentage of the original Contract price (excluding the mobilization & water pollution control Bid items).		Cumulative amount of water pollution control pay item earned is the lesser of the amounts as computed by these two columns.	
Equal to or greater than	Less than	Percentage of water pollution control pay item	Percentage of the original Contract total.
5	10	10	1
10	20	20	2
20	50	50	3
50	Completion of Work	75	5
Completion of Work		100	

Where no Bid item is provided for water pollution control, payment for water pollution control shall be considered to be included in the other Bid items.

7-8.7 Drainage Control. The Contractor shall maintain drainage within and through the Work areas. Earth dams will not be permitted in paved areas. Temporary dams of sandbags, asphaltic concrete or other acceptable material will be permitted when necessary to protect the Work, provided their use does not create a hazard or nuisance to the public. Such dams shall be removed from the site as soon as their use is no longer necessary.

7-8.8 Final Cleaning. At the completion of the Work, the Contractor shall remove all waste materials and rubbish from and about the project, as well as all tools, construction equipment, temporary facilities, machinery, and surplus materials.

At completion of construction and just prior to final inspection, the Contractor shall thoroughly clean the interior and exterior of the buildings, including hardware, floors, roofs, sills, ledges, glass, or other surfaces where debris, plaster, paint, spots, and dirt or dust may have collected. All glass shall be washed clean and polished. Remove all grease, stains, labels, fingerprints, and other foreign materials from interior and exterior surfaces. Repair, patch, and touch up marred surfaces to match adjacent finishes.

The Contractor shall use only experienced workmen or professional cleaners for final cleaning. It shall use only cleaning materials recommended by the manufacturer of the surface to be cleaned, and use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

It shall broom-clean all paved surfaces and rake-clean other surfaces of grounds.

The Contractor shall replace air conditioning filters if units were operated during construction, and clean all ducts, blowers, and coils if air conditioning units were operated without filters during construction.

After cleaning, the Contractor shall maintain the building in a clean condition until it is accepted by the Agency.

7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS. The Contractor shall be responsible for the protection of public and private property adjacent to the Work and shall exercise due caution to avoid damage to such property.

The Contractor shall repair or replace all existing improvements within the right-of-way which are not designated for removal (e.g., curbs, sidewalks, driveways, fences, walls, signs, utility installations, pavement, structures, etc.) which are damaged or removed as a result of its operations. When a portion of a sprinkler system within the right-of-way must be removed, the remaining lines shall be capped. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.

Maintenance of street and traffic signal systems that are damaged, temporarily removed or relocated shall be done in conformance with 307-1.5.

Trees, lawns, and shrubbery that are not designated to be removed shall be protected from damage or injury. If damaged or removed because of the Contractor's operations, they shall be restored or replaced in as nearly the original condition and location as is reasonably possible. Lawns shall be reseeded and covered with suitable mulch.

The Contractor shall give reasonable notice to occupants or owners of adjacent property to permit them to salvage or relocate plants, trees, fences, sprinklers and other improvements which are designated for removal and would be destroyed because of the Work.

All costs to the Contractor for protecting, removing, and restoring existing improvements shall be absorbed in its bid.

In existing buildings, all surfaces, equipment, furniture and other property shall be protected from loss or damage by or as result of the Contractor's operations. The Contractor shall replace damaged property or shall repair and restore it to its previous condition. Patching, painting, replacement of wall, ceiling and floor covering and similar Work shall be done in such a manner that the repaired Work will not be readily noticeable.

7-10 PUBLIC CONVENIENCE AND SAFETY

7-10.1 Access.

7-10.1.1 General. The Contractor's operations shall cause no unnecessary inconvenience to the public or businesses in the vicinity of the Work. The Contractor shall have no greater length or quantity of Work under construction than can be properly prosecuted with a minimum of inconvenience to the public and other contractors engaged in adjacent or related work.

The Contractor shall provide continuous and unobstructed access to the adjacent properties unless otherwise specified in the Special Provisions or approved by Engineer. Work requiring traffic lane closures shall only be performed between the hours specified in the Special Provisions or shown on the TCP. Traffic shall be permitted to pass through the Work site, unless otherwise specified in the Special Provisions or shown on the TCP.

7-10.1.1.1 Vehicular Access. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access. If backfill has been completed to the extent that safe access may be provided and the street is opened to local traffic, the Contractor shall immediately clear the street and driveways and provide and maintain access.

7-10.1.1.2 Pedestrian Access. Safe, adequate, and ADA compliant pedestrian access shall be maintained unless otherwise approved by the Engineer. 7-10.2 Work Area Traffic Control.

7-10.2 Traffic Control

7-10.2.1 General. Work area traffic control shall conform to the California MUTCD, WATCH, or as specified in the Special Provisions. The total length of the traffic control zone shall include a buffer space, advance signing, striping transitions in advance of the Work site, existing striping, signing, and raised medians.

7-10.2.2 Traffic Control Plan.

7-10.2.2.1 General. If so specified in the Special Provisions or on the permit, the Contractor shall submit a TCP in accordance with 2-5.3. The sheets of the TCP shall display the title, phase identification, name of the firm preparing the TCP, name and stamp of the Registered Traffic or Civil Engineer, approval block for each jurisdictional agency, north arrow, sheet number, and number of sheets comprising the TCP. General notes and symbol definitions shall be included when required. Adequate dimensioning shall be provided to allow for proper field installation. The TCP shall be drawn to a 1 inch = 40 feet scale on common size sheets, either 8-1/2 inches x 11 inches, 8-112 inches x 14 inches, 11 inches x 17 inches, or 2-foot x 3-foot plan sheets as dictated by the length of the Work.

The requirements in the Special Provisions shall govern the design of the proposed TCP.

7-10.2.2.2 Payment. Payment for preparation of the TCP shall be included in the appropriate lump sum Bid items. If no Bid items have been provided, payment shall be included in the various Bid items unless otherwise specified in the Special Provisions.

7-10.3 Haul Routes. Unless otherwise specified in the Special Provisions, the haul route(s) shall be determined by the Contractor.

7-10.4 Safety.

7-10.4.1 Work Site Safety.

7-10.4.1.1 General. The Contractor shall provide safety measures as necessary to protect the public and workers within, or in the vicinity of, the Work site. The Contractor shall ensure that its operations will not create safety hazards. The Contractor shall provide safety equipment, material, and assistance to Agency personnel so that they may properly inspect all phases of the Work. When asbestos is being removed, the requirements of the CCR Title 8, Div. 1, Chapter 4, Subchapter 4 and Subchapter 7 shall be implemented.

7-10.4.1.2 Work Site Safety Official. The Contractor shall designate in writing a "Project Safety Official" who shall be at the Work site at all times, and who shall be thoroughly familiar with the Contractor's Injury and Illness Prevention Program (IIPP) and Code of Safe Practices (CSP). The Project Safety Official shall be available at all times to abate any potential safety hazards and shall have the authority and responsibility to shut down an unsafe operation, if necessary.

7-10.4.2 Safety Orders.

7-10.4.2.1 General. The Contractor shall have at the Work site, copies or suitable extracts of Construction Safety Orders, Tunnel Safety Orders, and General Industry Safety Orders issued by the State Division of Industrial Safety. Prior to beginning any excavation 5 feet in depth or greater, the Contractor shall submit to the Engineer, the name of the "Competent Person" as defined in CCR, Title 8, Section 1504, in accordance with 2-5.3. The "Competent Person" shall be present at the Work site as required by Cal-OSHA.

7-10.4.2.2 Shoring Plan. Before excavating any trench 5 feet (105m) or more in depth, the Contractor shall submit in accordance with 2-5.3 a detailed working drawing (shoring plan) showing the design of the shoring, bracing, sloping, or other provisions used for the workers' protection. If the shoring plan varies from the shoring system standards, the shoring plan shall be prepared by a registered Structural or Civil Engineer. The shoring plan shall accommodate existing underground utilities. No excavation shall start until the Engineer has accepted the shoring plan and the Contractor has obtained a permit from the State Division of Industrial Safety. A copy of the permit shall be submitted to the Engineer in accordance with 2-5.3. If the Contractor fails to submit a shoring plan or fails to comply with an accepted shoring plan, the Contractor shall suspend work at the affected location(s) when directed to do so by the Engineer. Such a directive shall not be the basis of a claim for Extra Work and the Contractor shall not receive additional compensation or Contract time due to the suspension.

7-10.4.2.3 Payment. Payment for shoring shall be included in the Bid item provided therefor. Payment for compliance with the provisions of the safety orders and all other laws, ordinances, and regulations shall be included in the various Bid items.

7-10.4.3 Use of Explosives. Explosives may be used only when authorized in writing by the Engineer, or as otherwise specified in the Special Provisions.

Explosives shall be handled, used, and stored in accordance with all applicable regulations.

Prior to blasting, the Contactor shall comply with the following requirements:

a) The jurisdictional law enforcement agency shall be notified 24 hours in advance of blasting.

b) The jurisdictional fire department shall be notified 24 hours in advance of blasting.

c) Blasting activities and schedule milestones shall be included in the Contractor's construction schedule per 6-1.

For a Private Contract, specific permission shall be obtained from the Agency in writing, prior to any blasting operations in addition to the above requirements.

The Engineer's approval of the use of explosives shall not relieve the Contractor from liability for claims caused by blasting operations.

7-10.4.4 Hazardous Substances. An MSDS as described in CCR, Title 8, Section 5194, shall be maintained at the Work site for all hazardous material used by the Contractor. Material usage shall be accomplished with strict adherence to California Division of Industrial Safety requirements and all manufacturer warnings and application instructions listed on the MSDS and on the product container label. The Contractor shall notify the Engineer if a specified product cannot be used under safe conditions. 7-10.4.5 Confined Spaces. 7-10.4.5.1 Confined Space Entry Program (CSEP). The Contractor shall be responsible for implementing, administering and maintaining a CSEP in accordance with CCR, Title 8, Sections 5156, 5157 and 5158.

Prior to the start of the Work, the Contractor shall prepare and submit a CSEP in accordance with 2-5.3. The CSEP shall address all potential physical and environmental hazards and contain procedures for safe entry into confined spaces such as the following:

a) Training of personnel

b) Purging and cleaning the space of materials and residue

c) Potential isolation and control of energy and material inflow

d) Controlled access to the space

e) Atmospheric testing of the space

f) Ventilation of the space

g) Special hazards consideration

h) Personal protective equipment

i) Rescue plan provisions

The submittal shall include the names of the Contractor's personnel, including each Subcontractor's personnel, assigned to the Work that will have CSEP responsibilities, their CSEP training, and their specific assignment and responsibility in carrying out the CSEP.

7-10.4.5 Confined Spaces.

7-10.4.5.1 Confined Space Entry Program (CSEP). The Contractor shall be responsible for implementing, administering and maintaining a CSEP in accordance with CCR, Title 8, Sections 5156, 5157 and 5158.

Prior to the start of the Work, the Contractor shall prepare and submit a CSEP in accordance with 2-5.3. The CSEP shall address all potential physical and environmental hazards and contain procedures for safe entry into confined spaces such as the following:

a) Training of personnel.

b) Purging and cleaning the space of materials and residue.

c) Potential isolation and control of energy and material inflow.

d) Controlled access to the space.

e) Atmospheric testing of the space.

f) Ventilation of the space.

g) Special hazards consideration.

h) Personal protective equipment.

i) Rescue plan provisions.

The submittal shall include the names of the Contractor's personnel, including each Subcontractor's personnel, assigned to the Work that will have CSEP responsibilities, their CSEP training, and their specific assignment and responsibility in carrying out the CSEP.

7-10.4.5.2 Permit-Required Confined Spaces. Entry into permit-required confined spaces as defined in CCR, Title 8, Section 5157 may be required as a part of the Work. Manholes, tanks, vaults, pipelines, excavations, or other enclosed or partially enclosed spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. The Contractor shall implement a permit-required CSEP prior to performing any work in a permit-required confined space. A copy of the permit shall be available at all times for review by the Contractor and the Engineer at the Work site.

7-10.4.5.3 Payment. Payment for the CSEP shall be included in the Bid items for which the CSEP is required.

7-10.5 Security and Protective Devices.

7-10.5.1 General. Security and protective devices shall consist of fencing, steel plates, or other devices as specified in the Special Provisions to protect open excavations

7-10.5.2 Security Fencing. The Contractor shall completely fence open excavations. Security fencing shall conform to 304-3.5. Security fencing shall remain in place unless workers are present and construction operations are in progress during which time the Contractor shall provide equivalent security..

7-10.5.3 Steel Plate Covers. The Contractor shall provide steel plate covers as necessary to protect from accidental entry into openings, trenches, and excavations.

7-11 PATENT FEES OR ROYALTIES. The Contractor shall absorb in its Bid, the patent fees or royalties on any patented article or process which may be furnished or used in the Work. The Contractor shall indemnify and hold the Agency harmless from any legal action that may be brought for infringement of patents.

7-12 ADVERTISING. The names of contractors, subcontractors, architects, or engineers, with their addresses and the designation of their particular specialties, may be displayed on removable signs. The size and location of such signs shall be subject to the Engineer's approval.

Commercial advertising matter shall not be attached or painted on the surfaces of buildings, fences, canopies, or barricades.

7-13 LAWS TO BE OBSERVED. The Contractor shall keep fully informed of State and National laws and County and Municipal ordinances and regulations which in any manner affect those employed in the Work or the materials used in the Work or in any way affect the conduct of the Work. It shall at all times observe and comply with all such laws, ordinances and regulations.

7-13.1 Mined Materials. Mined material from California surface mines, used on the Work, shall be from a mine identified in the list published by the California Department of Conservation (referred to as 3098 List), as required by Public Contract Code 20676. This list is available on the Internet at www.conservation.ca.gov/OMR/ab_3098_list/index.htm.

7-14 ANTITRUST CLAIMS. Section 7103.5 of the Public Contract Code provides:

> "In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgement by the parties."

7-15 RECYCLABLE CONSTRUCTION & DEMOLITION WASTES. Ventura County Ordinance Code Section, 4421 et seq, requires that if any recyclable solid wastes or marketable reusable materials will be generated on the site of the Work within the unincorporated areas of Ventura County, the Contractor shall prepare a Construction & Demolition Debris Waste Diversion Plan and submit it to the Ventura County Public Works Agency, Water & Sanitation Department - Integrated Waste Management Division (IWMD). The Contractor shall prepare and file Construction & Demolition Debris Waste Diversion Reporting Forms as required by the IWMD.

For projects within the unincorporated areas of Ventura County, the Contractor shall submit an IWMD Form B-Recycling Plan approved by IWMD prior to issuance of the Notice to Proceed as provided in 6-7.4.

For projects within the unincorporated areas of Ventura County, the Contractor shall submit an IWMD Form C-Reporting Form approved by IWMD prior to the Engineer preparing the final estimate as provided in 9-3.2.

If the site of the Work is within an incorporated city, the Contractor shall comply with all the recycling, solid waste diversion, and hauling requirements of that incorporated city.

7-16 BLANK

7-17 LOSS OR DAMAGE TO THE WORK. The Contractor is responsible for delivering to the Agency Work completed in accordance with the Contract except as provided in 7-18. Should the Work being constructed be damaged by fire or other causes before Acceptance by the Agency, it shall be replaced in accordance with the requirements of the Plans and Specifications without additional expense to the Agency. The Agency does not carry "Course of Construction" insurance on the Work. Contractor should arrange for its own insurance to protect its interests.

7-18 ACTS OF GOD. As provided in Section 7105 of the California Public Contract Code, the Contractor shall not be responsible for the cost of repairing or restoring damaged portions of the Work determined to have been proximately caused by an act of God in excess of 5 percent of the contracted amount, provided that the Work damaged was built in accordance with accepted and applicable building standards and the Specifications and Drawings. The Contractor shall obtain insurance to indemnify the Agency for any damage to the Work caused by an act of God if the premium of said insurance coverage is called for as a separate bid item in the bidding schedule for the Work. For purposes of this section, the term "acts of God" shall include only the following occurrences or conditions and effects: earthquakes in excess of a magnitude of 3.5 on the Richter Scale, and tidal waves.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

8-1 GENERAL. A field office shall be provided when required by the Plans or Special Provisions. The field office shall be at a suitable location approved by the Engineer.

A field office shall be a weather-tight building of suitable proportions with 16 m^2 (120 sq. ft.) of floor area, at least one door, and a window area of 2 m^2 (22 Sq. Ft.). A field office may be a building or a separate room in a building the Contractor may be required to provide or that it may desire to provide for its own use. In either case, the room shall have a separate exterior door. All doors shall be provided with hasps for padlocks.

The office shall be convenient to the Work. It shall be adequately heated, ventilated, electrically lighted, and provided with telephone service, all at the expense of the Contractor or plant owner. Offices are for the exclusive use of Agency personnel, unless otherwise provided herein.

Field offices at the worksite shall be removed upon completion of the Work.

All costs incurred in furnishing, maintaining, servicing, and removing a field office required at the Work site shall be included in the price bid for such item. If such item is required by the Plans or Specifications and no bid item is provided in the Proposal, the costs shall be absorbed in the other items for which bids are entered. Buildings and equipment furnished by the Contractor at the Work site under the provisions of this section are the property of the Contractor.

The first progress payment will not be approved until all facilities are in place and fully comply with the Specifications.

8-2 EQUIPMENT FOR FIELD OFFICES. Unless otherwise specified, a field office shall be equipped with:

Plan table, 0.75 m x 1.5 m (2 1/2 ft. x 5 ft.) or larger
Plan rack, capacity to hold two sets of project Plans plus all shop drawings
Desk and chair
Two lockers with hasps for padlocks

SECTION 9 - MEASUREMENT AND PAYMENT

9-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK

9-1.1 General. Unless otherwise specified, quantities of work shall be determined from measurements or dimensions in horizontal planes. However, linear quantities of pipe, piling, fencing, and timber shall be considered as being the true length measured along longitudinal axis.

Unless otherwise provided in Specifications, volumetric quantities shall be the product of the mean area of vertical or horizontal sections and the intervening horizontal or vertical dimension. The planimeter shall be considered an instrument of precision adapted to measurement of all areas.

9-1.2 Methods of Measurement. Materials and items of Work which are to be paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular sections involved.

9-1.3 Certified Weights. When payment is to be made on the basis of weight, the weighing shall be done on certified platform scales or, when approved by the Engineer, on a completely automated weighing and recording system. The Contractor shall furnish the Engineer with duplicate licensed weighmaster's certificates showing actual net weights. The Agency will accept the certificate as evidence of weights delivered.

9-1.4 Units of Measurement. Measurements shall be in accordance with 1-4.1 and 1-4.2. A metric ton or “tonne” is equal to 1000 kilograms and the unit of liquid measure is a Liter (in U.S. Standard Measures, a pound is an avoirdupois pound; a ton is 2000 pounds avoirdupois; and the unit of liquid measure is a gallon).

9-2 LUMP SUM BID ITEMS. Items for which quantities are indicated as "Lump Sum", "L.S." or "Job" shall be paid for at the price indicated in the Proposal. Such payment shall be full compensation for the items of Work and all Work appurtenant thereto.

When required by the Specifications or requested by the Engineer, the Contractor shall submit to the Engineer within 15 Days after award of Contract, a detailed schedule in triplicate, to be used only as a basis for determining progress payments on a lump sum contract or any designated lump sum bid item. This schedule should equal in total the lump sum bid and shall be in such form and sufficiently detailed as to satisfy the Engineer that it correctly represents a reasonable apportionment of the lump sum. If Mobilization or Water Pollution Control are included in the detailed schedule, those items will be paid for as provided in 9-3.4.2 and 7-8.6.4, receptively.

9-3 PAYMENT

9-3.1 General. The quantities listed in the Bid schedule will not govern final payment unless identified by Agency on the Proposal as [F]. The symbol "[F]" indicates that the quantities shown on the Proposal form are the final pay quantities. Payment to the Contractor (except those items identified as [F]) will be made only for the actual quantities of Contract items constructed in accordance with the Plans and Specifications. Upon completion of construction, if the actual quantities show either an increase or decrease from the quantities given in the Bid schedule, the Contract Unit Prices will prevail subject to the provisions of 3-2.2.1. Payment for those items identified as [F] will be based on the quantities shown on the Proposal unless changed as provided in 3-2.2.1.

The unit and lump sum prices to be paid shall be full compensation for the items of work and all appurtenant work, including furnishing all materials, labor, equipment, tools and incidentals.

Payment for items shown on the Plans or required by the Specifications, for which no pay item is provided, shall be considered included in the prices named for the other items shown on the Proposal.

Payment will not be made for materials wasted or disposed of in a manner not called for under the Contract. This includes rejected material not unloaded from vehicles, material rejected after it has been placed and material placed outside of the Plan lines. No compensation will be allowed for disposing of rejected or excess material.

Whenever any portion of the Work is performed by the Agency at the Contractor's request, the cost thereof shall be charged against the Contractor, and may be deducted from any amount due or becoming due from the Agency.

Whenever immediate action is required to prevent injury, death, or property damage, and precautions which are the Contractor's responsibility have not been taken and are not reasonably expected to be taken, the Agency may, after reasonable attempt to notify the Contractor, cause such precautions to be taken and shall charge the cost thereof against the Contractor, or may deduct such cost from any amount due or becoming due from the Agency. Agency action or inaction under such circumstances shall not be construed as relieving the Contractor or its Surety from liability.

9-3.1 General. (Continued)

Payment shall not relieve the Contractor from its obligations under the Contract; nor shall such payment be construed to be Acceptance of any of the Work. Payment shall not be construed as the transfer of ownership of any equipment or materials to the Agency. Responsibility of ownership shall remain with the Contractor who shall be obligated to store, protect, repair, replace, rebuild, or otherwise restore any fully or partially completed work or structure for which payment has been made; or replace any materials or equipment required to be provided under the Contract which may be damaged, lost, stolen or otherwise degraded in any way prior to completion of the Work under the Contract, except as provided in 6-10.

Warranty periods shall not be affected by any payment but shall commence on the date equipment or material is placed into service at the written direction of the Engineer. In the event such items are not placed into service prior to partial or final completion of the Work, the warranty periods will commence on the date set forth as the date of field completion in the Engineer's acknowledgement of completion.

If, within the time fixed by law, a properly executed notice to stop payment is filed with the Agency, due to the Contractor's failure to pay for labor or materials used in the Work, all money due for such labor or materials will be withheld from payment to the Contractor in accordance with applicable laws.

At the expiration of 35 Days from the date of recording of the Notice of Completion, or as prescribed by law, the amount deducted from the final estimate and retained by the Agency will be paid to the Contractor except such amounts as are required by law to be withheld by properly executed and filed notices to stop payment, or as may be authorized by the Contract to be further retained.

9-3.2 Partial and Final Payment. The Engineer will, after award of Contract, establish a closure date for the purpose of making monthly progress payments. The Contractor may request in writing that such monthly closure date be changed. The Engineer may approve such request when it is compatible with the Agency's payment procedure.

Each month, the Engineer will make an approximate measurement of the Work performed to the closure date and, as a basis for making monthly payments, estimate its value based on the Contract Unit Prices or as provided for in 9-2. When the Work has been satisfactorily completed, the Engineer will determine the quantity of Work performed and prepare the final estimate.

Work not conforming to the Contract Documents shall not be measured for payment.

Conformance with the Contract Documents shall be, in addition to constructing the Work in accordance with the Contract Documents, the Contractor's compliance with those portions of the Contract Documents not directly related to the completed Work, including but not limited to: construction and maintenance of detours; diversion and control of water; protection and repair of existing facilities of the Agency and adjacent owners; site maintenance; coordination with utilities and other contractors on the site; proper survey procedures and records; obtaining required permits and inspections; complying with working hour limitations; providing a Contractor's representative while Work is being performed; complying with environmental requirements; maintaining access and safety for users of facilities that are to remain in service during construction; and obeying all laws affecting the Work.

Payment for Extra Work will be made only on approved Daily Extra Work Reports with supporting documentation as required in 3-3.

From each progress estimate, 5 percent will be deducted and retained by the Agency, and the remainder less the amount of all previous payment will be paid to the Contractor.

No progress payment made to the Contractor or its sureties will constitute a waiver of the liquidated damages under 6-9.

9-3.2 Partial and Final Payment. (Continued)

As provided for in Sections 22300 of the California Public Contract Code, the Contractor may substitute securities for any monies withheld by the Agency to ensure performance under the Contract. In substituting securities, the Contractor may either:

a. Deposit qualifying securities already owned by the Contractor with the Escrow prior to the Contract payment date, or

b. Direct the Agency to send retained funds to the Escrow to be invested by the Escrow in qualifying securities as directed by the Contractor.

9-3.2.1 Release of Withheld Contract Funds. Pursuant to Public Contract Code Section 22300, Contractor has the option to deposit securities with an Escrow Agent as a substitute for retention earnings required to be withheld by Agency pursuant to the construction Contract between the Agency and the Contractor. A form of Escrow Agreement for Security Deposits in Lieu of Retention has been adopted by the Agency as one of the Contract Documents; procedures for implementing the provisions of the Escrow Agreement are contained in Escrow Instructions which shall become effective upon exercise of the option by the Contractor.

The Contractor shall take the following steps if it desires to substitute securities:

a. Execute the Escrow Agreement for Security Deposits in Lieu of Retention.
b. Furnish to the Escrow Agent a power of attorney and other forms necessary to empower the Escrow Agent to convert the securities to cash.
c. Furnish to the Escrow Agent the securities described.
d. Pay the Escrow Agent's fees and costs.

When the Contractor deposits with the Escrow Agent securities in lieu of money required to be withheld from progress payments, a sum of money equivalent to the current cash value of the securities as determined by the Escrow Agent shall be released to the Contractor by, or upon the direction of, the Agency.

If the total of the money plus the current cash conversion value of securities on deposit should fall below the aggregate amount of the sums required to be withheld from progress payments pursuant to 9-3.1 and 9-3.2, an amount equal to the difference shall be withheld from the next regular progress payment in addition to the amount which would ordinarily be withheld pursuant to 9-3.1 and 9-3.2. If the next regular progress payment is less than the total of the amounts to be withheld therefrom, the Contractor shall immediately either deposit with the Agency cash in the amount of the difference or deposit with the Escrow Agent additional securities having a current cash conversion value equal to or greater than the difference.

The Contractor shall be the beneficial owner of any such securities on deposit with the Escrow Agency and shall be entitled to any interest earned thereon prior to conversion. The Agency may direct the Escrow Agency to convert securities with the Escrow Agency into cash, and to deliver the cash to the Agency, in any case where the Contractor is in default, including the following:

a. where the Agency would be entitled to use funds withheld pursuant to 9-3.1 and 9-3.2 to satisfy claims of workers, materials suppliers or subcontractors, or to complete or correct work which the Contractor has failed or refused to complete or correct, or

b. where the Contractor has failed to comply with the requirements of this section respecting the deposit of additional cash or securities to make up for a fall in the value of securities already on deposit with the Escrow Agency.

The Agency may hold and use cash resulting from such a conversion of securities in the same manner as it would be entitled to hold and use funds withheld pursuant to 9-3.1 and 9-3.2.

9-3.2.2 Timely Progress Payments. As required by Public Contract Code Section 20104.50, the Contractor is informed that should a progress payment not be made within 30 Days after receipt of an undisputed and properly submitted payment request from the Contractor, the Agency shall pay interest to the Contractor on the unpaid amount at the rate set forth in the Code of Civil Procedures, Section 685.010(a). Agency shall promptly review payment requests, and if not determined to be proper, document to the Contractor, within 7 Days, the reasons why the request is not proper.

Contractor should refer to the code sections cited for further information.

9-3.3 Delivered Materials. Payment for the cost of materials and equipment delivered to the Work site but not incorporated in the Work will be included in the progress estimate if, prior to the closure date for the monthly progress payment, the material or equipment is listed by the Contractor on the Agency's form together with date of delivery, vendor's or Subcontractor's name and cost; is accompanied by a copy of an invoice showing the cost thereof; has an aggregate cost in excess of $5,000 for each progress payment; is currently on the Work site at an approved location and in good condition; and is one of the following:

1. Precast concrete units weighing more than 100 kilograms (200 pounds) each.
2. Structural steel members weighing more than 100 kilograms (200 pounds) each.
3. Individual pieces of electrical equipment costing over $1,000 each.
4. Individual pieces of mechanical equipment costing over $1,000 each.
5. Reinforced concrete pipe of any size.
6. Storm drainage pipe 900 mm (36") in diameter and larger.
7. Water and sewer pipe 300 mm (12") in diameter and larger.
8. Finish hardware for doors.
9. Other individual items of equipment costing over $1,000 each
10. Materials where the aggregate value of a single type of material exceeds $1,000 and is either:
    a) Fabricated or cut to fit the Work before delivery, or
    b) Of a size or type not available from any manufacturer without a special production run.

On unit price Bid items, the amount paid for materials or equipment delivered but not incorporated in the Work shall not exceed 75% of the amount of the Bid item which includes such material or equipment.

On lump sum Bid items, the amount paid for materials and equipment delivered and not incorporated in the Work shall not exceed 75% of the item in the approved schedule submitted in accordance with 9-2 of which such materials or equipment is a part.

Should materials or equipment previously paid for be damaged, destroyed, stolen or removed from the Work site, the payment previously made therefor will be deducted from the next progress payment, unless such materials or equipment are replaced prior thereto.

On the closure date for progress payments, as provided in 9-3.2, the Contractor shall certify that all materials and equipment not incorporated into the Work, for which payment has previously been made or is being requested, is still at the Work site and in good condition. Failure to provide such certification will be cause for deducting previous payments for materials not incorporated in the Work from the amount due the Contractor in the progress payment.

Payment for materials or equipment, as provided herein, shall not constitute approval or acceptance thereof nor shall such payment modify or abridge any of the rights the Agency has under the Specifications or at law nor relieve the Surety of any of its obligations under the bonds.

9-3.4 Mobilization

9-3.4.1 Scope. Mobilization includes preliminary services, work and operations, including but not limited to, furnishing required bonds, obtaining necessary permits and work areas, providing a specified field office, the movement of labor, supplies, equipment and incidentals to the Work site, and for all other work, services and operations which must be performed or for which costs are incurred prior to performing work of the other Contract items.

9-3.4.2 Payment. The Contract lump sum price bid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, services and incidentals and for doing all work involved in mobilization as specified herein. Payment for mobilization will be made as the Work proceeds on the following basis except that where a field office is required by the Specifications, no payment for mobilization will be made until the specified field office has been provided:

Partial payment estimate (excluding mobilization & water pollution control payments) as a percentage of the original Contract price (excluding the mobilization & water pollution control Bid items).		Cumulative amount of mobilization pay item earned is the lesser of the amounts as computed by these two columns.	
Equal to or greater than	Less than	Percentage of mobilization pay item	Percentage of the original Contract total.
5	10	50	5
10	20	75	7.5
20	50	95	9.5
50	Completion of Work	100	10
Completion of Work		100	

Where no Bid item is provided for mobilization, payment for mobilization shall be considered to be included in the other Bid items.

9-4 TERMINATION OF AGENCY LIABILITY. After completion of all work required by the contract, Agency will furnish Contractor a Release on Contract form stating the amount of total authorized payments for the project. Contractor shall execute and return said form within 21 days of receipt. Said form shall release and discharge the Agency from all claims of and liability to the Contractor for all manner of debts, demands, accounts, claims, and causes of action under or by virtue of said Contract except:

a. The claim against the Agency for the remainder, if any, of the amounts retained as provided in 9-3.2, and any amounts retained as required by Stop Notices or Labor Code provisions.

b. Any unsettled claims or disputes listed on the Release on Contract form which has been processed in compliance with the requirements for making claims under the Contract, including given timely notice pursuant to the applicable provisions of the Contract and following the procedure set forth in 6-12.

Acceptance of the Release on Contract by the Agency shall not be deemed a waiver or release of the Agency's right to contest either the substantive or procedural validity of any listed unsettled claims or disputes.

When executing the Release on Contract, the Contractor shall certify that each unsettled claim or dispute listed thereon has been processed in compliance with the requirements for making claims under the Contract, including giving timely notice pursuant to the applicable provisions of the Contract and following the procedures for resolution of disputes or claims set forth in 6-12 and that acceptance of the Release on Contract by the Agency shall not be deemed a waiver or release of the Agency's right to contest either the substantive or procedural validity of any listed unsettled claims or disputes.

If Contractor fails to execute and submit a Release on Contract within the 21 day time period set forth above, the Release on Contract shall be deemed to have been submitted with no unsettled claims or disputes listed on the Release on Contract. A payment of $1.00 will be made to the Contractor for such Release on Contract and waiver.

SECTION 10 - DIVERSION, CONTROL AND REMOVAL OF WATER

10-1 DESCRIPTION. This section covers the diversion, control and removal of all water entering into the construction area or otherwise affecting construction activities.

10-2 REQUIREMENTS. All permanent construction shall be performed in a site free from water unless otherwise provided for in the Special Provisions. The Contractor shall construct, maintain, and operate all necessary cofferdams, pumps, channels, flumes, drains, well points and/or other temporary diversion, protective, and water removal works required for diversion, control and removal of all water, whether surface or groundwater, whatever its source, during construction.

Inundation of partially completed Work due to lack of control during non-working periods will not be permitted, and may be cause for requiring removal and replacement of Work already completed.

The Contractor shall be responsible for obtaining the use of any property in addition to that provided for in the Plans and Specifications, which may be required for the diversion, protective, and water removal works so as not to create a hazard to persons or property or to interfere with the water rights of others.

It shall be understood and agreed that the Contractor shall hold the Agency and the Engineer harmless from legal action taken by any third party with respect to construction and operations of the diversion and protective works.

10-3 DIVERSION AND CONTROL WORKS.

Prior to beginning of work involving diversion, control and removal of water, the Contractor shall submit a water control plan to the Engineer. In the event circumstances during the course of construction require changes to the original water control plan, a revised water control plan shall be promptly submitted to the Engineer in each instance. No responsibility shall accrue to the Engineer or the Agency as a result of the plan or as a result of knowledge of the plan.

Construction and operation of the diversion, control and removal works shall be in accordance with the water control plan submitted, except deviations therefrom may be specifically approved by the Engineer.

All works installed by the Contractor in connection with dewatering, control, and diversion of water but not specified to become a permanent part of the Work, shall be removed and the site restored, insofar as practical, to its original condition prior to completion of construction or when directed by the Engineer.

10-4 PAYMENT. No separate Bid item is included. Payment for this item of Work will be considered to be included in the payments made for other items of Contract Work to which water control is incidental.

200-1 ROCK PRODUCTS

200-1.6 Stone for Riprap

200-1.6.1A Alternate Stone for Riprap. As an alternate to the requirements of Subsection 200-1.6, the sample may be subject to the following tests:

TESTS	TEST METHOD NO.	REQUIREMENTS
Apparent Specific Gravity	ASTM C 127	2.40 Min.
Resistance to Abrasion	ASTM C 535, Grading 1	35% Max.
Soundness	Section 211-8	10% Max.
Wet and Dry Loss	Section 211-9	5% Max.
Solubility	Section 211-10	No Loss

All rock shall be angular or subangular in shape. Angular shall be defined as having sharp corners and straight planes on all faces, with no evidence of wear caused by wind, water or abrasion. Subangular shall be defined the same as angular except that evidence of wear by wind, water or abrasion may be allowed. Determination of angularity will be made by the Engineer.

200-1.6.2 Riprap Size

The individual classes of rock used for riprap shall conform to the following:

Rock Sizes	RIPRAP CLASSES					
	1-Tonne (1-Ton)	½-Tonne (½-Ton)	¼-Tonne (¼-Ton)	Light	Facing	Cobble
	PERCENTAGE LARGER THAN					
2-Tonne (2-Ton)	0-5					
1-Tonne (1-Ton)	50-100	0-5				
½-Tonne (½-Ton)		50-100	0-5			
¼-Tonne (¼-Ton)	90-100		50-100	0-5		
100-kg (200-lb)		90-100		50-100	0-5	
35-kg (75-lb)			90-100	90-100	50-100	0-5
10-kg (25-lb)					90-100	95-100
0.5-kg (1-lb)	100	100	100	100	100	100

The amount of material smaller than the smallest size listed in the table for any class of riprap shall not exceed the percentage limit listed in the table determined on a weight basis.

Compliance with the percentage limit shown in the table for all other sizes of the individual pieces of any class of riprap shall be determined by the ratio of the number of individual pieces larger than the specified size compared to the total number of individual pieces larger than the smallest size listed in the table for that class.

Flat or needle shapes will not be accepted unless the thickness of individual pieces is greater than 1/3 the length.

Before placing in final location, depositing, or stockpiling within the project limits, each individual load of riprap must meet the size requirements of the class specified.

SECTION 206 - MISCELLANEOUS METAL ITEMS

206-3 GRAY IRON AND DUCTILE IRON CASTINGS

206-3.3.2A Manhole Frame and Cover Sets

Unless otherwise specified, manhole frames and covers shall be in accordance with the following Standard Plans contained in the SPPWC:

Clear Opening Diameter mm (Inches)	SPPWC Plan No.	Catalog Numbers	
		Alhambra Foundry	Long Beach Iron Works
600 (24)	630-1	A-1495	X-162
675 (27)	631-1	A-1496	X-164
750 (30)	632-1	A-1497	X-163
900 (36)	633-1	A-1498	X-106A

206-5 METAL RAILINGS.

206-5.2 Flexible Metal Guard Rail Materials.

206-5.2A Flexible Metal Guard Rail Materials; Modification. The "Construction" grade Douglas Fir for "posts, including blocks" does not have to be "free of heart center".

SECTION 210 - PAINT AND PROTECTIVE COATINGS

210-6 STORM DRAIN HARDWARE. All storm drain hardware, including manhole frames and covers, grates, protection bars, steps, etc., shall be protected from corrosion.

Storm drain hardware made of cast iron shall be protected by painting with, or dipping in, a commercial grade asphalt paint. Storm drain hardware made of steel shall be galvanized.

211-6 SIEVE ANALYSIS. Sieve analysis shall be performed in accordance with ASTM C136.

211-7 Sand Equivalent Test. This test is intended to serve as a field test to indicate the presence or absence of plastic fine material. The test shall be run in accordance with Calif. test 217 or ASTM D2419. When testing material containing asphalt, this test method shall be modified by drying the sample at a temperature not exceeding 38°C (100°F).

211-8 R-VALUE. Resistance (R-value) shall be determined by California Test 301.

211-9 SPECIFIC GRAVITY AND ABSORPTION. Apparent specific gravity, bulk specific gravity and absorption shall be determined by California Test 206, 207, 208, 209, 224, 225, or 308, Method C where zinc stearate may be substituted for paraffin.

211-10 LOS ANGELES RATTLER TEST. Loss in Los Angeles Rattler shall be determined by California Test 211.

211-11 SOUNDNESS. For riprap, the soundness shall be determined in accordance with Calif. Test 214, excluding sections D, E, G.2.b, and H, and adding the following:

a. The test sample shall be prepared by breaking or sawing a representative sampling of riprap into particles passing the 75 mm (three inch) and retained on the 50 mm (two inch) sieve. If there are a variety of rock types or degrees of weathering within a rock type, each unique type or condition must meet the loss requirement.

b. The test sample size shall be 25,000 grams (55 lbs.) ± 1 percent.

c. All particles of test sample which break into three or more pieces during testing shall be discarded. The remaining sample shall be washed on a 4.75 mm (#4) sieve and all particles retained shall be oven dried.

d. The loss in weight shall be determined by subtracting from the original weight of the test sample the final weight of all particles retained on the 4.75 mm (#4) sieve. Divide the loss in weight by the original weight and multiply by 100 to determine the percent loss.

e. Report the following:

   (1) The percent loss.

   (2) The number of pieces affected, classified as to number disintegrating, splitting, crumbling, cracking, flaking, etc.

211-12 WET AND DRY LOSS. Wet and dry loss shall be determined as follows:

A sample of rock shall be crushed, screened, oven dried, and 1,000 g (2.2 lbs.) to 1,500 g (3.3 lbs.) of the 19 mm (3/4 inch) to 9.5 mm (3/8 inch) fraction shall be taken for the test.

The crushed and graded sample shall be submerged in tap water for 8 hours at room temperature, after which the sample shall be drained and oven dried at 78°C (140°F). When dry, the sample shall be cooled to room temperature. This completes one cycle.

After 10 cycles, the percent loss shall be computed as follows:

$$\% \text{ Loss} = \frac{100 \times \text{Weight of Material Passing 4.75 mm (No. 4) Sieve}}{\text{Total Weight of Sample}}$$

211-13 SOLUBILITY. Approximately 0.5 kg (one pound), air dried samples shall be immersed in local tap water and in Pacific Ocean water (or a 3.5% sodium chloride solution) for 8 hours each at 78°C (140°F). After immersion, the samples shall be washed with tap water, air dried and reweighed.

211-14 Permeability Test. Permeability tests for granular soils shall be performed in accordance with ASTM D2434, using samples compacted to the specified field density.

PART 3 CONSTRUCTION METHODS

SECTION 301 - TREATED SOILS, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION

301-1.3 Relative Compaction

301-1.3.1 Firm, Hard and Unyielding. The term "firm, hard and unyielding" as used in 301-1.3 shall mean that when the heaviest construction and hauling equipment used on the Work drives over the subgrade, no permanent deformation shall occur either before or during pavement construction.

301-1.4 Subgrade Tolerances. Subgrade for pavement, sidewalk, curb and gutter, driveways, or other roadway structures shall not vary more than 15 mm (0.05 feet) from the specified grade and cross section. Subgrade for subbase or base material shall not vary more than 15 mm (0.05 feet) from the specified grade and cross section.

Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.

301-2 UNTREATED BASE

301-2.3 Compacting

301-2.3.1 Tolerances. The tolerance requirement in 301-2.3 is modified from 6 mm (0.02 foot) to 15 mm (0.05 foot).

SECTION 302 - ROADWAY SURFACING

302-5 ASPHALT CONCRETE PAVEMENT

302-5.1 General

302-5.1.1 Asphalt Concrete Berms. Asphalt concrete berms shall be constructed of Class III-D-PG70-10 asphalt concrete by mechanical means to conform to the details and location as shown on the Plans.

A tack coat, as provided in 302-5.4, shall be applied to the existing or new pavement preceding the placement of the asphalt concrete berms.

302-5.4 Tack Coat

302-5.4.1 Fog Seal. When specified, a fog seal consisting of material meeting the requirements of 203-3 shall be applied to the surfaces of all completed asphalt concrete at the rate of 0.36 liter per square meter (0.08 gallon per square yard) of the combined emulsion or such lesser rate ordered by the Engineer. Surface to be sealed shall be free from dust, dirt, and other foreign material. Surface shall be sealed within 7 Days after paving.

302-5.9 Measurement and Payment

302-5.9.1 Measurement and Payment for Asphalt Berm. Asphalt concrete berms will be paid for at the Contract Unit Price per linear meter (feet) of berm in place. No separate measurement or payment will be made for asphalt, aggregate, or tack coat.

302-5.9.2 Measurement and Payment for Fog Seal, Tack Coat, and Prime Coat. Measurement and payment for the specified material shall be by the tonne (ton) in place. Emulsions shall be measured after the specified dilution has been made.

SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS AND DRIVEWAYS

303-5.1 Requirements

303-5.1.4 Concrete Substitution. Class 280-C-14 (470-C-2000) may be used in lieu of Class 310-C-17 (520-C-2500) and Class 280-D-14 (470-D-2000) in lieu of Class 310-D-17 (520-D-2500) as specified in 201-1.1.2 for street surface improvements, excluding concrete pavement, when no class is specified on the Plans or in the Special Provisions.

SECTION 306 - UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

306-1.2 Installation of Pipe

306-1.2.1 Bedding

306-1.2.1.1 Bedding Material. When native material is allowed for backfill in the bedding zone, no rocks larger than 40 mm (1½") in maximum dimensions shall be included. Material containing ashes, cinders, and types of refuse or other deleterious material shall not be used as bedding.

306-1.2.1.2 Sewer Pipe Bedding. Bedding for sewer pipe from 100 mm (4") below the pipe to the spring line (horizontal diameter) of the pipe shall be free draining, granular material with a maximum size of 15 mm (1/2 inch), unless another bedding method is shown on the Plans.

Densification of the bedding material may be by the application of water or by mechanical means. Unless otherwise specified, all bedding material shall be densified to a relative density of 90%. Acceptability of densification in the bedding zone will be determined by visual inspection and probing to determine that no voids exist in the backfill material. In this paragraph, the word "voids" does not include intergranular voids in the soil structure.

306-1.2.1.3 Flexible Pipe Bedding. Bedding for flexible drainage and sewer pipe shall be granular material having a sand equivalent of at least 50. The bedding material shall be placed and compacted from 150 mm (six inches) below the pipe to the top of the bedding as defined in 306-1.2.1. A 1 m (three foot) long section of low permeability material (50% passing 75 μm (200) sieve) shall be installed and mechanically compacted in lieu of the above specified bedding material at intervals of 60 m (200 feet) or as otherwise indicated on the Plans.

306-9 DISINFECTION. All water mains and appurtenances shall be disinfected before being placed in service in accordance with AWWA C651 except as specified herein:

a. The water mains shall be chlorinated so that a chlorine residual of not less than 20 ppm remains in the water after standing in the pipe for 24 hours.

b. The Agency will perform sampling and testing of bacteriologic samples. Disinfection shall be repeated until two or more consecutive samples are negative for coliform organisms.

The pressure in the line being chlorinated shall be maintained at least 35 kPa (5 psi) lower than that existing in any Agency line to which it is connected.

306-10 WATERWORKS APPURTENANCES

306-10.1 Valves. Valves shall be located as shown on the drawings.

Each valve shall be operated prior to its installation to assure proper functioning. Valves shall be installed plumb and in alignment with the water main. Valves shall be anchored by metal ties to a concrete base. Line valves may be moved to the closest joint upon approval of the Engineer.

306-10.2 Valve Boxes. Each underground valve shall be provided with a valve box. The valve boxes shall be installed plumb and centered over the operating nut of the valve. Valve boxes shall be installed with concrete collars.

Where valve boxes are to be placed in asphaltic type pavement, they shall not be set to grade until after paving has been completed.

Where valve boxes are to be placed in concrete pavement, they shall be set to grade prior to paving operations.

306-10.3 Thrust Devices. A reaction or thrust device shall be provided on all dead ends, tees, elbows, and bends with more than 5 degrees deflection on pressure pipe lines.

Thrust devices shall be cast-in-place concrete, poured against undisturbed or compacted earth. Thrust devices shall be sized and constructed in accordance with the Plans.

Thrust devices and anchor blocks shall be constructed of Class 280-C-14 (420-C-2000) concrete. Thrust devices and anchor blocks shall be cured at least 7 Days where Type IP or II cement is used or at least 48 hours where Type III cement is used.

Metal tie-rods or clamps shall be of adequate strength to prevent movement of pipe. All metal shall be coated in accordance with AWWA C110.

306-10.4 Fire Hydrants. Fire Hydrants shall be installed as shown on the Plans.

All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the curb, with the pumper nozzle facing the curb, except that hydrants having only two hose nozzles 90 degrees apart shall be set with each nozzle facing the curb at an angle of 45 degrees.

In uncurbed public road rights of way, fire hydrants shall be located as far as possible from the traveled way while providing a 1 m (3-foot) wide clear space between the fire hydrant and the right of way line. In curbed public road rights of way, fire hydrants shall be installed so that there is 300 mm (12 inches) clear between the face of curb and the fire hydrant.

306-10.5 Fire Hydrant Barricades. Fire hydrant barricades shall consist of 100 mm (4-inch) standard steel pipe, schedule 40, filled with concrete, and having a total length of 2 m (72 inches). They shall be embedded in concrete blocks 300 mm (12 inches) in diameter and 1000 mm (40 inches) deep below ground surface with the barricade pipe embedded to 100 mm (4 inches) above the bottom of the concrete so 1 m (36 inches) extends above ground surface. The steel pipe above ground shall be painted chrome yellow in accordance with AWWA C503.

Barricades shall be installed between the fire hydrant and vehicle traffic paths at locations indicated on the Plans or where required by the water purveyor or Fire Department. Barricades shall not be installed within public road rights of way.

Fire hydrant barricades shall not obstruct the hydrant outlets.

310-5 Painting Various Surfaces

310-5.6 Painting Traffic Striping, Pavement Markings, and Curb Markings.

310-5.6.8A Application of Paint - Two Coats All painted traffic striping and markings shall be applied in two coats. The price named in any Bid item for painting traffic striping and markings shall include all costs for both applications, including any delays entailed for the required drying time between applications. If bleeding, curling or discoloration occurs following application of the second coat, unsatisfactory areas shall be given an additional coat, or coats, of paint. No additional payment will be made for work necessary to correct bleeding, curling or discoloration.

PART 4

SECTION 400 - ALTERNATE ROCK PRODUCTS, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND UNTREATED BASE MATERIAL

400-1 Rock Products

400-1.1 Requirements

400-1.1.1 General

Alternate rock material, Type S, as specified in Section 400 may be used on the Work.

400-3 Portland Cement Concrete

Suppliers of portland cement concrete shall file mix designs as required by 400-1.1.2

400-4 Asphalt Concrete

Suppliers of asphaltic cement concrete shall file mix designs as required by 400-1.1.2

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext): / FAX (A/C, No):	
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
INSURED	INSURER A :	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$ See VCSS 7-4.2
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$ See VCSS 7-4.2
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$
	X POLICY PRO-JECT LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$ 1,000,000
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$ 1,000,000
								$
	UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICE/MEMBER EXCLUDED? (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

(Agency) - (Project Name) (Project Specification number)

The Agency and the County of Ventura, including its boards, all special Districts governed by the Board of Supervisors, agencies, departments, officers, consultants, employees, agents and volunteers, is named as Additional Insured as respects work done by Contractor under the terms of the contract on General Liability and Auto Liability Policies. Waiver of Subrogation is applicable to the Agency and the County of Ventura, its boards, districts, agencies, departments, officers, employees, agents and volunteers for Work Comp and General Liability. Endorsements required for referenced contract will be issued by the Insurance Company.

CERTIFICATE HOLDER

County of Ventura
Public Works Agency L-1670
800 S. Victoria Avenue
Ventura, CA 93009-1670

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2010/05) **The ACORD name and logo are registered marks of ACORD**

Project: **Contractor:** **Specification No:**

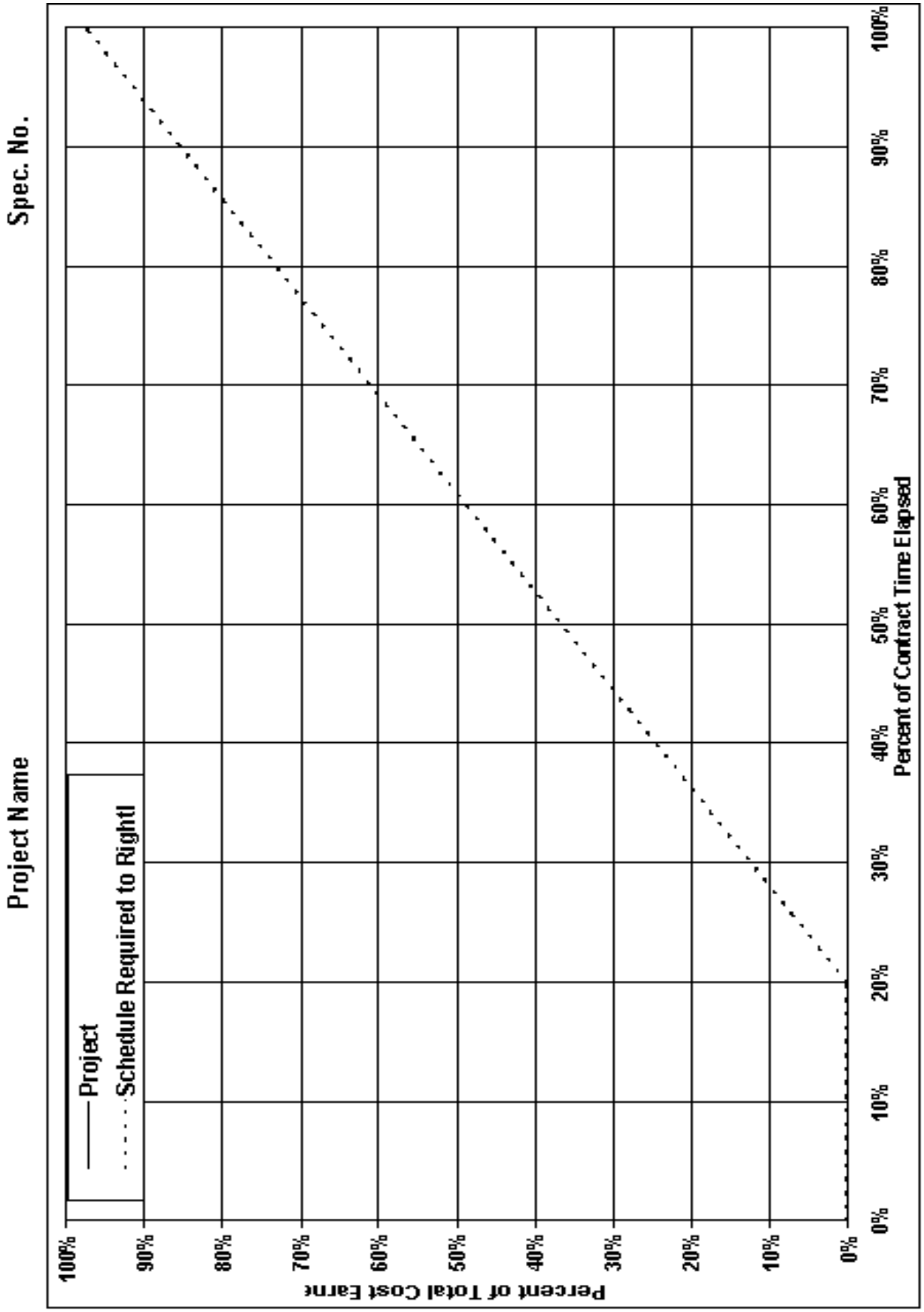
Item No.	Work or Material	WORKING DAYS OF CONSTRUCTION CONTRACT TIME																					
		BEGINNING OF CONTRACT TIME																					

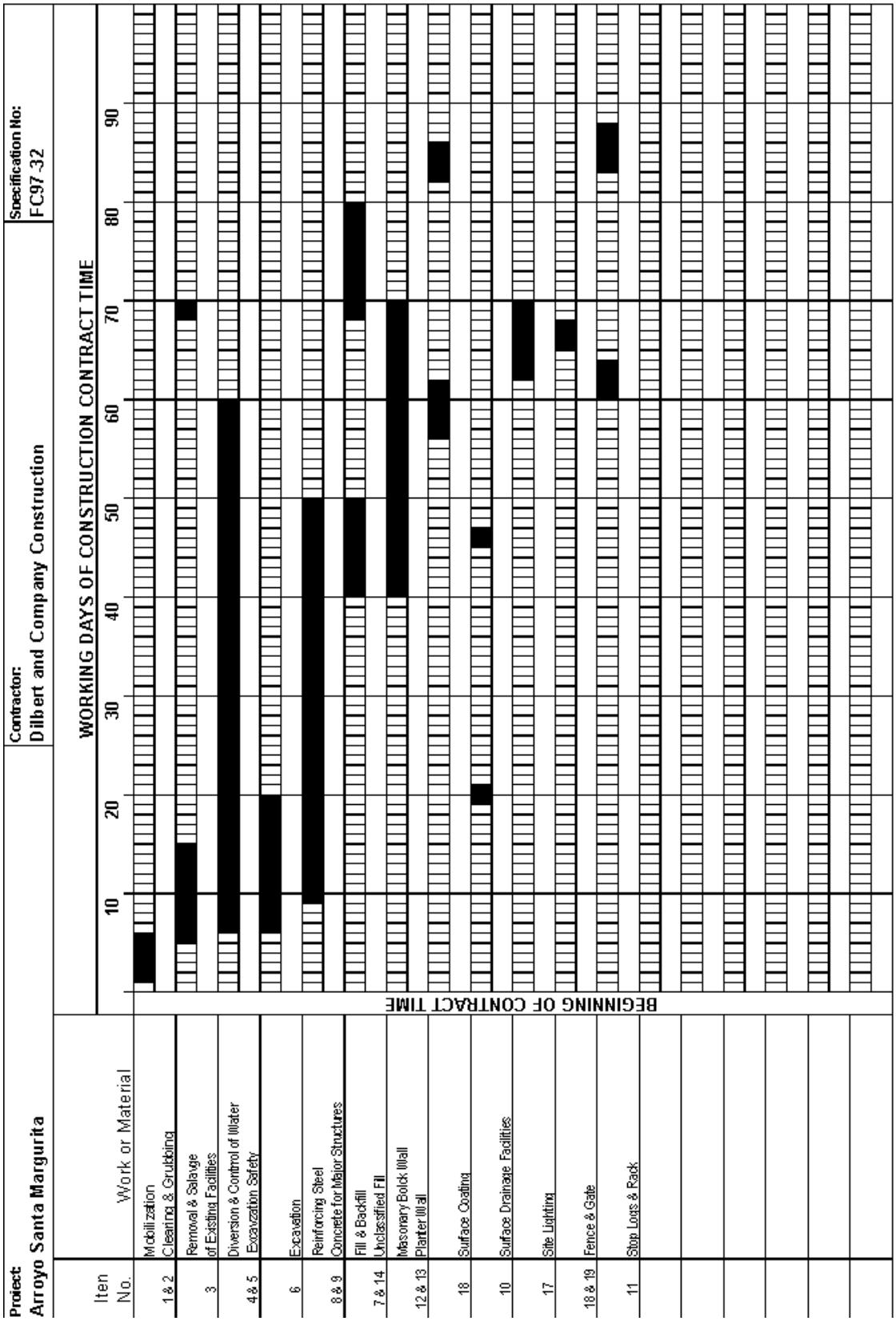
EACH HORIZONITAL INTERVAL EQUALS ____ WORKING DAYS OF CONTRACT TIME

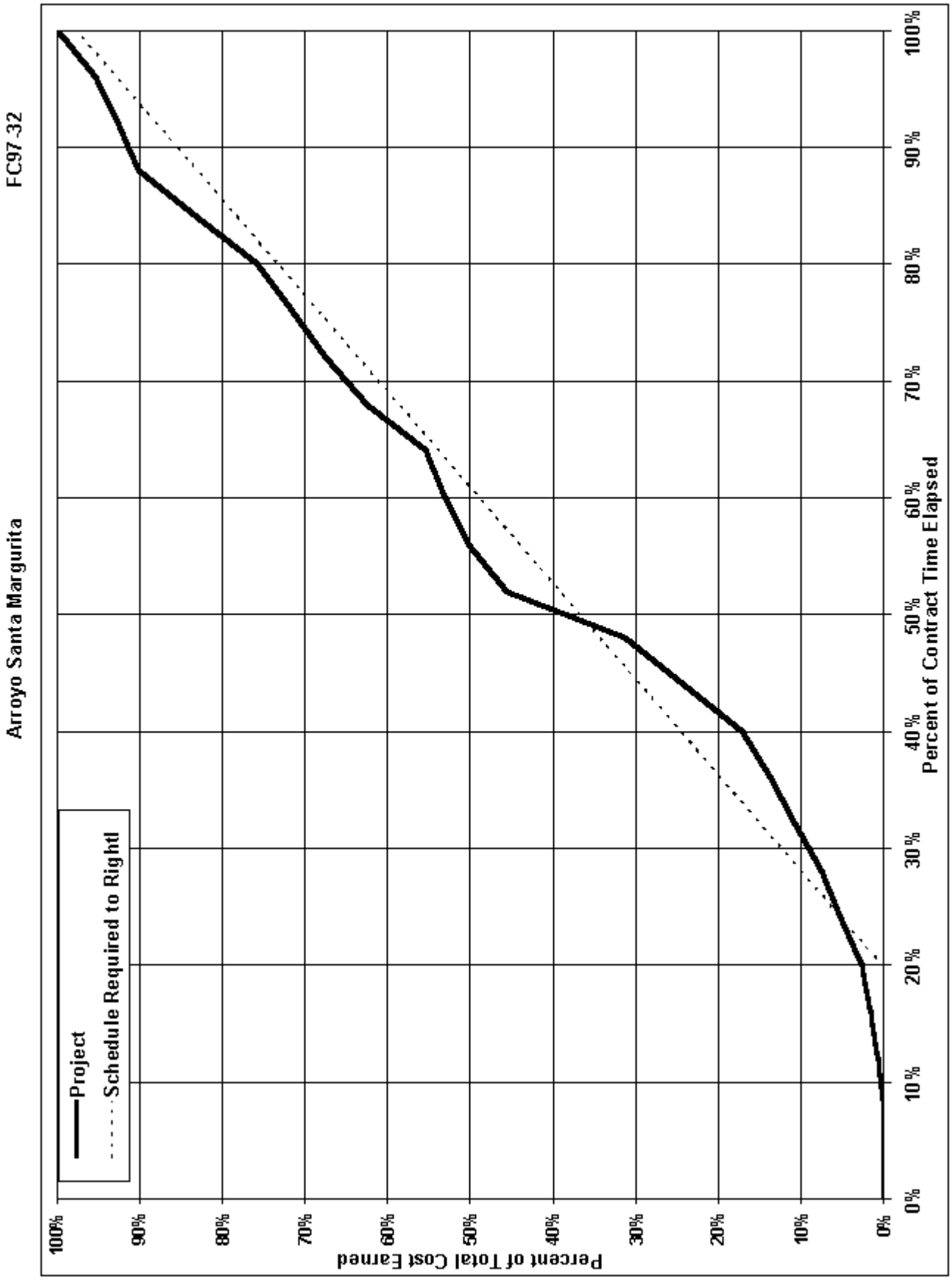
Submitted _____ Contractor

By _____ Date

Title _____


Project Name
Spec. No.
Project
Schedule Required to Right!
Percent of Total Cost Earne
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Contract Time Elapsed


Project:
Arroyo Santa Margurita
Contractor:
Dilbert and Company Construction
Specification No:
FC97-32
Item No.
Work or Material
Mobilization
1 & 2
Clearing & Grubbing
Removal & Salvage
3
of Existing Facilities
Diversion & Control of Water
4 & 5
Excavation Safety
6
Excavation
Reinforcing Steel
8 & 9
Concrete for Major Structures
Fill & Backfill
7 & 14
Unclassified Fill
Masonary Block Wall
12 & 13
Planter Wall
18
Surface Coating
10
Surface Drainage Facilities
17
Site Lighting
18 & 19
Fence & Gate
11
Stop Logs & Rack
WORKING DAYS OF CONSTRUCTION CONTRACT TIME
10
20
30
40
50
60
70
80
90
BEGINNING OF CONTRACT TIME
EACH HORIZONITAL INTERVAL EQUALS 1 WORKING DAYS OF CONTRACT TIME
Submitted Dilbert and Company Construction
Contractor
By Tina Blair
5/22/97
Date
Title President


Arroyo Santa Margurita
FC97-32
Project
Schedule Required to Right
Percent of Total Cost Earned
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Percent of Contract Time Elapsed

ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between
("Agency") whose address is _____ and
("Contractor") whose address is _____ and
("Escrow Agent") whose address is _____.

For the consideration hereinafter set forth, the Agency, Contractor and Escrow Agent agree as follows:

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Agency pursuant to the Construction Contract entered into between the Agency and Contractor for _____ in the amount of dated _____, (hereinafter referred to as the "Contract") which Contract is identified by Spec. No._____ and Auditor Controller's Contract No._____. Alternatively , on written request of the Contractor, the Agency shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Agency within ten days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Agency and Contractor. Securities shall be held in the name of _____ , and shall designate the Contractor as the beneficial owner.

(2) The Agency shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the Agency makes payments of retentions earned directly to Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until such time as the escrow created under this contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Agency pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the escrow account. These expenses and payment terms shall be determined by the Agency, Contractor and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Agency.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Agency to the Escrow Agent that Agency consents to the withdrawal of the amount sought to be withdrawn by Contractor.

(7) The Agency shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days' written notice to the Escrow Agent from the Agency of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Agency.

(8) Upon receipt of written notification from the Agency certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, the Escrow Agent shall release to the Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from the Agency and the Contractor pursuant to Sections (1) to (8), inclusive, of this Agreement and the Agency and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Agency and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Agency:

_____, Director,
Public Works Agency

_____, Director
Central Services Department

_____, Director
Engineering Services Department

Address for all of the above:
Public Works Agency
800 South Victoria Avenue
Ventura, CA 93009

SAMPLE FORM

Form used for escrow will have names and signatures of persons authorized in accordance with paragraph 10.

On behalf of Contractor:

Title

Name

Signature

Street Address

City & State Zip Code

On behalf of Escrow Agent:

Title

Name

Signature

Street Address

City & State Zip Code

At the time the Escrow Account is opened, the Agency and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

Agency:
(Agency name)

Title

Name

Signature

Contractor:
(Contractor company name)

Title

Name

Signature

EXHIBIT "A"
ESCROW INSTRUCTIONS

The parties to this escrow are _____("Agency") and _____ ("Contractor") and _____("Escrow Agent"). Agency and Contractor have entered into a contract for the construction of _____which contract is identified by Spec. No. _____ and Auditor-Controller's Contract No. _____ and was entered into by and between Agency and Contractor ("Construction Contract"). Pursuant to Public Contract Code Section 22300, Contractor may substitute certain securities for an equivalent amount of money required to be withheld from progress payments by Agency to Contractor pursuant to the Construction Contract.

The Escrow Agent is hereby instructed as follows:

1. Contractor may deliver to Escrow Agent:

   (a) Securities of the types specified in Sections 22300 of the Public Contract Code and Section 16430 of the Government Code.

   (b) Such other documents as are necessary to enable Escrow Agent to convert such securities into cash.

2. Upon receipt of such securities and other documents, Escrow Agent shall notify Agency within ten days of the deposit, and shall examine them to determine whether they are in a form sufficient to effect conversion of the securities into cash. Escrow Agent shall thereupon send written notice of its determination to Agency.

3. Escrow Agent shall hold such securities as trustee for Agency. The right of Agency to such securities is superior to any other lien or claim of lien; provided, however, that Contractor shall be entitled to any interest earned by such securities prior to their conversion to cash pursuant to section 5 hereof, and further provided that such interest may be withdrawn by Contractor at any time and from time to time without notice to Agency.

   Securities may be substituted by Contractor, but any securities substituted for securities previously deposited shall not reduce the current cash value of securities held below that last reported to Agency by Escrow Agent.

4. Escrow Agent shall determine the current cash value of such securities held by it as of the close of business on the first business day following the _____ day of each month and, in addition, on any other days which the Agency may from time to time specify in a written notice to Escrow Agent. Current cash value shall be determined as follows:

   (a) For securities traded over-the-counter or on a stock exchange:

      (1) Determine either the current bid price for the securities as of the close of business or the face value of the securities, whichever is less.

      (2) Subtract the cost of sale (broker commission).

      (3) Subtract all unpaid escrow fees and costs associated therewith.

   (b) For certificates of deposit:

      (1) Determine the face amount.

      (2) Subtract the potential interest penalty for immediate conversion.

      (3) Subtract all unpaid escrow fees and costs associated therewith.

   (c) Determine the value of other securities by procedures calculated to determine net realizable value. Promptly upon making each such determination, Escrow Agent shall notify Agency of the securities held and current cash value of such securities.

5. At any time or times that Agency believes it has a right to do so under the provisions of the Construction Contract, Agency may, without the consent of Contractor, deliver to Escrow Agent a written demand that Escrow Agent convert to cash all or any part of such securities. Upon seven days' written notice from Agency of such demand, Escrow Agent shall convert to cash all or part of such securities as demanded and shall distribute the cash as instructed by the Agency.

6. When the Construction Contract has been satisfactorily completed on the part of Contractor and any stop notices filed against the Construction Contract have been released, Agency shall give written notice to Escrow Agent that such securities may be returned to Contractor. Upon receipt of such written notice and payment of all escrow fees and costs, the Escrow Agent shall deliver to Contractor all money, interest, securities and other documents remaining in escrow and the escrow shall terminate.

7. Contractor, and not Agency, shall be liable to Escrow Agent for all of Escrow Agent's fees and costs associated with this escrow.

8. The Director of the Ventura County Public Works Agency, a Department Director of said Agency, or other person authorized in writing by such Director or Department Director is authorized to give written notice and to make written demands on behalf of Agency pursuant to sections 4, 5 and 6 hereof.

9. All written notices and demands pursuant to the escrow agreement and these Instructions shall be addressed as follows:

(a) To Agency:

Director, Ventura County Public Works Agency
800 South Victoria Avenue
Ventura, California 93009

(b) To Contractor:

(c) To Escrow Agent:

DATED: _____

_____	_____	_____
_____	_____	_____
By _____	By_____	By_____
Title _____	Title _____	Title_____
AGENCY	CONTRACTOR	ESCROW AGENT Bank Charter: State [ ] Federal [ ] Escrow Agent's Address: _____ _____

APPENDIX E BLANK

RELEASE ON CONTRACT

CONTRACT NAME: _____

SPEC. NO. _____, PROJECT NO. _____

WHEREAS, by the terms of the contract dated ____ _, 20___ entered into by _____

_____and the undersigned CONTRACTOR,

_____

_____

_____

undersigned CONTRACTOR agreed to perform certain work for the compensation specified in said contract; and

WHEREAS, the CONTRACTOR represents that said work is fully completed and that final payment is due to the CONTRACTOR under terms of said contract,

NOW, THEREFORE, in consideration of the promises and the payment by [AGENCY NAME] to the CONTRACTOR of the amount due under the contract, to wit, the sum of $_____ and the additional consideration of $1.00, receipt of which is hereby acknowledged by the CONTRACTOR, the CONTRACTOR hereby releases and forever discharges _____ of and from all manner of debts, dues, demands, sum or sums of money, accounts, claims and causes of action, in law and in equity, under or by virtue of said contract except the claim against the Agency for the remainder, if any, of the amounts retained as provided in 9-3.2, any amounts retained as required by Stop Notices or Labor Code Provisions, and any unsettled claims or disputes as follows: (If none, leave blank)

Description of Claim or Dispute	Amount	Date of Claim	Date of Notice of Potential Claim

The CONTRACTOR certifies that each unsettled claim or dispute listed hereon has been processed in compliance with the requirements for making claims under the contract, including giving notice pursuant to the applicable provisions of the contract, and following the procedures for resolution of disputes or claims set forth in subsection 6-12 of the contract. Acceptance of this Release on Contract by the [Agency Name] shall not be deemed as a waiver or release of its right to contest either the substantive or procedural validity of any listed unsettled claims or disputes.

IN WITNESS WHEREOF, the hand and seal of the CONTRACTOR have been hereunto set this ___ day of _____, 20___.

THIS FORM MUST BE ACCOMPANIED
by a proper acknowledgement form
(See Civil Code Section 1189)

Contractor

By

Title

SAMPLE PERFORMANCE AND PAYMENT BOND FORM

Bond No._____

SURETY BONDS

PERFORMANCE BOND

Whereas, the «Agency», hereinafter called "Agency", and «Contr», hereinafter called "principal", have entered into a contract dated «ContrDate» whereby principal agrees to complete certain designated work identified as project «ProjName» (Spec. No.«SpecNo»), and to perform other duties and obligations as described in said contract, which is incorporated herein by this reference and made a part hereof; and

Whereas, principal is required under the terms of said contract to furnish a bond to guarantee principal's faithful performance of the work and all terms and conditions of the contract;

Now, therefore, we the principal and the undersigned, as corporate surety, are held and firmly bound unto Agency in the penal sum of «CostText» ($«OrigCostFmtd») lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the principal, its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and provisions in the said contract and any alteration thereof made as therein provided, on principal's part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless Agency, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The above obligation shall continue after Agency's acceptance of the work for the duration of the warranty period as specified in the contract during which time if principal fails to make full, complete, and satisfactory repair or replacement to the work and/or fails to protect Agency from loss or damage resulting from or caused by defective materials or faulty workmanship, the obligation of surety hereunder shall continue so long as any obligation of principal remains.

PAYMENT BOND

And, whereas, under the terms of said contract, principal is required before entering upon the performance of the work, to file a good and sufficient payment bond with the Agency to secure the claims to which reference is made in Title 3 (commencing with Section 9000) of Part 6 of Division 4 of the Civil Code of the State of California.

Now, therefore, said principal and the undersigned, as corporate surety, are held firmly bound unto the Agency and all contractors, subcontractors, laborers, material suppliers and other persons employed in the performance of the aforesaid contract and referred to in the aforesaid Civil Code in the like sum of «CostText» dollars ($«OrigCostFmtd») for materials furnished or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts required to be deducted, withheld and paid over to the Franchise Tax Board from the wages of employees of the contractor and the contractor's subcontractors, that said surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable expenses and fees including reasonable attorney's fees incurred in successfully enforcing such obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under Title 3 (commencing with Section 9000) of Part 6 of Division 4 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should this condition of this bond be fully performed, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

GENERAL TERMS

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said contract or the plans and specifications accompanying the same shall in any manner affect its obligations on these bonds, and it does hereby waive notice of any such change, extension, alteration or addition.

Nothing herein shall limit the Agency's rights or surety's obligations under the contract or applicable law, including, without limitation, California Code of Civil Procedure section 337.15.

In witness whereof, this instrument has been duly executed by the principal and surety above named

on ,_____, 20 .

«Contr»
Name of Principal

By_____

Title_____

_____
Name of Surety

By_____
Attorney-in-Fact

Address _____

City_____ State ___ Zip_____

INDICATE COMPLETE ADDRESS OF SURETY TO WHICH CORRESPONDENCE CONCERNING THIS BOND SHOULD BE DIRECTED.

Telephone No._____

SAMPLE BOND FORM

Agency will prepare the Bond in this format and transmit it to the Contractor along with the Contract and the Notice of Award letter.

Surety shall fill in the Bond No., date identification and signature of surety in places provided.

Contractor shall sign and indicate title in place provided.

A-467/9-Tmpl

APPENDIX H
PERMITS

APPENDIX H

State Water Resources Control Board

NOTICE OF INTENT

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER No. 2009-0009-DWQ)

WDID: 4 56C399940 **Risk Level:** Level2

Property Owner Information

Type: County Agency

Name: County of Ventura Engineering Services
Address: 800 South Victoria Avenue
Address 2:
City/State/Zip: Ventura CA 93009
Contact Name: Jon Jacobson
Title: Project Manager
Phone Number: 805-654-2022
Email Address: jonathan.jacobson@ventura.org

Contractor/Developer Information

Name: County of Ventura
Address: 165 Durley Avenue
Address 2: 165 Durley Avenue
City/State/Zip: Camarillo CA 93010
Contact Name: Jon Jacobson
Title: Project Manager
Phone Number: 805-654-2022
Email Address: jonathan.jacobson@ventura.org

Construction Site Information

Contact Name: Jon Jacobson
Title: Project Manager
Site Name: Ventura County Fire Training Center
Address: 165 Durley Avenue
City/State/Zip: Camarillo CA 93010
Site Phone #: 805-654-2022
County: Ventura
Email Address: jonathan.jacobson@ventura.org
Latitude: 34.20857 Longitude: -119.07056
Construction Start: June 01, 2023
Total Size of Construction Area: 4 Acres
Complete Grading:
Total Area to be Disturbed: 4 Acres
Final Stabilization: November 01, 2024

Risk Values

R: 58.57 K: 0.32 LS: 0.11 Beneficial Uses/303(d): Yes

Type of Construction: *Other: FireTraining Facility
Receiving Water: Calleguas Creek Reach 4 (Revlon Slough)
Qualified SWPPP Developer: Daniel Lopez Certification #: C87930

RWQCB Jurisdiction: Region 4 - Los Angeles
Phone: 213-576-6600
Email: r4_stormwater@waterboards.ca.gov

Certification

Name: Jon Jacobson
Date: January 09, 2023
Title: Project Manager

APPENDIX H

State Water Resources Control Board

NOTICE OF INTENT

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER No. 2009-0009-DWQ)

WDID: 4 56C399940

Post Construction Information

Is the project located within a permitted Phase I or Phase II Municipal Separate Storm Sewer System?: _____

_____

_____

_____

VENTURA COUNTY FIRE PROTECTION DISTRICT
165 DURLEY AVENUE CAMARILLO, CA 93010-8586 Tel: (805) 389-9710

REQUIREMENTS FOR CONSTRUCTION

Case Number: FNC21-01101

Project Address:	102 DURLEY AV CAMARILLO, CA 93010			
Owner Name:	VENTURA COUNTY OF			
APN: 2300030285	**Tract #:**	**Lot #:**	**Planning #:**	**City Planning #:**

BUILDING DATA:	**Sq. Ft. Proposed:** 5431	**Existing:** 0	**Construction Type:** I-B
	Use of Building: U		**No. of Stories:** 2

FIRE DISTRICT CONDITIONS

1 *Final Fire Inspection Required.*

2 *Fire hydrant(s) shall be installed as indicated on plans approved by the Fire District. Fire hydrant(s) shall be in service prior to combustible construction. Fire hydrants shall be maintained operation and accessible at all times. No parking, storage or staging of equipment / supplies shall be located within 15 feet on either side of fire hydrants. Prior to final inspection, blue reflective hydrant location markers shall be placed on the access roads in accordance with Fire District standards.*

3 *This structure if for training only. No portions of the interior of this structure shall be used for anything other than training. Failure to comply shall require the installation of automatic fire sprinklers throughout the structure in accordance with current adopted standards.*

4 *A. All wet utilities and first lift of paving along required Fire District access roads / driveways shall be installed prior to vertical construction above any building foundation.*

B. Minimum Fire District access road / driveway width shall be installed and maintained per the approved plan and VCFPD Access Standards.

C. A minimum 20 foot clear width emergency access shall be maintained free of obstructions at all times within the development once construction starts. Where on-site access is approved at less than 20 feet, the approved width of emergency access shall be maintained free of obstructions once construction starts.

D. Provide and maintain a minimum 13 foot, 6 inch (13'-6") vertical clearance along all required Fire District access roads / driveways / turnarounds.

E. Any gate(s) across access roads shall comply with Fire District Standards. A Knox locking device shall be provided prior to final inspection of the gate(s). Do not place gate(s) into service until final inspection has been approved.

5 *Fire flow shall not be less than 1500 GPM @ 20 PSI.*

Distribution: ☐ Fire District ☐ Applicant ☐ Building & Safety ☐ Job Copy (Post on-site)

Issued By Shea Johnson Digitally signed by Shea Johnson Date: 2021.09.20 13:58:22 -07'00'
FIRE PREVENTION DIVISION

Issued Date 9/20/2021 Expiration Date 9/20/2022

(Expires at the time of building permit expiration, but shall not exceed 6 months from date of approval if no permit is issued.)

Renewed By _____ Renewal Date _____ Renewal Expiration _____
FIRE PREVENTION DIVISION

To schedule an inspection, call (805)389-9744

VENTURA COUNTY FIRE PROTECTION DISTRICT
165 DURLEY AVENUE CAMARILLO, CA 93010-8586 Tel: (805) 389-9710

REQUIREMENTS FOR CONSTRUCTION

Case Number: FNC21-01102

Project Address:	102 DURLEY AV CAMARILLO, CA 93010			
Owner Name:	VENTURA COUNTY OF			
APN: 2300030285	**Tract #:**	**Lot #:**	**Planning #:**	**City Planning #:**

BUILDING DATA:	**Sq. Ft. Proposed:** 12346	**Existing:** 0	**Construction Type:** I-B
	Use of Building: U		**No. of Stories:**

FIRE DISTRICT CONDITIONS

1 *Final Fire Inspection Required.*

2 *Fire hydrant(s) shall be installed as indicated on plans approved by the Fire District. Fire hydrant(s) shall be in service prior to combustible construction. Fire hydrants shall be maintained operation and accessible at all times. No parking, storage or staging of equipment / supplies shall be located within 15 feet on either side of fire hydrants. Prior to final inspection, blue reflective hydrant location markers shall be placed on the access roads in accordance with Fire District standards.*

3 *This structure if for training only. No portions of the interior of this structure shall be used for anything other than training. Failure to comply shall require the installation of automatic fire sprinklers throughout the structure in accordance with current adopted standards.*

4 *A. All wet utilities and first lift of paving along required Fire District access roads / driveways shall be installed prior to vertical construction above any building foundation.*

B. Minimum Fire District access road / driveway width shall be installed and maintained per the approved plan and VCFPD Access Standards.

C. A minimum 20 foot clear width emergency access shall be maintained free of obstructions at all times within the development once construction starts. Where on-site access is approved at less than 20 feet, the approved width of emergency access shall be maintained free of obstructions once construction starts.

D. Provide and maintain a minimum 13 foot, 6 inch (13'-6") vertical clearance along all required Fire District access roads / driveways / turnarounds.

E. Any gate(s) across access roads shall comply with Fire District Standards. A Knox locking device shall be provided prior to final inspection of the gate(s). Do not place gate(s) into service until final inspection has been approved.

5 *Fire flow shall not be less than 1500 GPM @ 20 PSI.*

Distribution: ☐ Fire District ☐ Applicant ☐ Building & Safety ☐ Job Copy (Post on-site)

Issued By Shea Johnson Digitally signed by Shea Johnson Date: 2021.09.20 13:57:33 -07'00'
FIRE PREVENTION DIVISION

Issued Date 9/20/2021 Expiration Date 9/20/2022

(Expires at the time of building permit expiration, but shall not exceed 6 months from date of approval if no permit is issued.)

Renewed By _____ Renewal Date _____ Renewal Expiration _____
FIRE PREVENTION DIVISION

To schedule an inspection, call (805)389-9744

APPENDIX H

COUNTY of VENTURA

LDS-01
GRADING PERMIT

LAND DEVELOPMENT SERVICES
800 South Victoria Avenue, Ventura, CA 93009
(805) 654-3027 | PWA_LDservices@ventura.org

Permit No. GP21-0121

PUBLIC WORKS VENTURA COUNTY

Grading Work Description: General grading for pad, road and utilities for the VC Fire Training Facility

Assessor Parcel No(s): 230-0-030-285

Address of Work: 165 Durley Ave, Camarillo, CA 93010

Grading Type: ☐ Regular ☒ Engineered ☐ Stockpile ☐ Agricultural ☐ Oil Field ☐ Remove & Recompact ☐ Discretionary

Depth of Cut 1 Excavation 1,100 CY Export 0 CY | Height of Fill 1 Fill 1,100 CY Import 0 CY

Destination of Surplus: On site | Source of Import: On site

Stormwater Form(s): SW-2, SWPPP WDID: 4 56C399940 QSP Required: Yes ☒ No ☐

VCPWA Comments: CP23-02, P6T18021 VC DWG No(s): 70488-70508

PROJECT CONTACT INFORMATION

Permittee: Jonathan Jacobson Address: 800 S. Victoria Avenue
City: Ventura Zip: 93009 Email: jonathan.jacobson@ventura.org Phone: (805)654-2022

Contractor: TBD Address:
City: Zip: Email: Phone:

Civil Engineer: Sal Contreras, Encompass Consultant Group, Inc Address: 333 N. Lantana ST
City: Camarillo, CA Zip: 93010 Email: sal.contreras@ecgcivil.com Phone: (805)416-8704

Soils Engineering: Matt Janousek, Cotton Shires and Associates, Inc Address: 699 Hampshire Road, Suite 102
City: Thousand Oaks, CA Zip: 91361 Email: mjanousek@cottonshires.com Phone: (805)370-8710

Geology: NA Address:
City: Zip: Email: Phone:

This permit authorizes only that work described hereon. Neither the issuance of this permit, nor the compliance with the provisions hereof or with any conditions imposed by this permit shall relieve any person from responsibility for damage to other persons or property nor impose any liability upon the governing agency for damage to other persons or property. All attached addenda are a part of this permit. All modifications of this permit or of the approved grading plan must be approved by the governing agency.

I hereby acknowledge that I have read this application and state that the above is correct, and that all excavation, grading and filling of land shall be in accordance with the approved plans, and the applicable grading ordinance. In consideration of the County issuing this grading permit the permittee agrees to comply with all provisions of this permit including the standard conditions (Page 2) and any special conditions attached hereto.

Your permit is not complete until a "NOTIFICATION OF COMPLETION - GRADING" is issued. Occupancy does not mean that your grading permit is complete.

X Signature: PERMITTEE Print Name: Jonathan Jacobson Date: 2/28/2022

Issued by: Date Issued: 4/27/2023 Expiration Date: 4/27/2026

WORKER'S COMPENSATION

It is required that each applicant file the following:

1. A certificate of consent to self-insure issued by the Director of Industrial Relations, or
2. A certificate of Worker's Compensation Insurance issued by an admitted insurer, or
3. An exact copy certified by the Director of Industrial Relations or the insurer, or
   Worker's Compensation Insurance Policy No. None Expiration Date: None
4. Statement of Understanding:
   "I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California. I further certify that I will verify compliance with the Worker's Compensation Laws of California of all sub-contractors contracted by me for any participation on projects over which I have contractual jurisdiction."
   I declare under penalty of perjury that the foregoing is true and correct.

X Signature _____ **Date** _____

FILL IN ALL BLANKS. IF NOT APPLICABLE, ENTER THE WORD "NONE or N/A"
Signature of this sheet constitutes agreement of Standard Conditions as described on page 2

STANDARD CONDITIONS

1. Grading shall be in accordance with:
   a. Ventura County Building Code (VCBC) Appendix J, Latest Edition,
   b. Ventura County Public Works Agency (VCPWA) Grading Permit Conditions, General Grading Notes, and Approved Grading Plans,
   c. Standard Specifications for Public Works Construction (SSPWC),
   d. Ventura County Standard Land Development Manual & Specifications and any supplemental conditions if applicable.
2. The Permittee shall call for inspection by the Building Official at all required stages of work with a minimum 48-hours notice. The Permittee shall obtain approval of all stages of work by the Building Official prior to proceeding with the next stage of work. Work stages are identified below as described in VCBC:
   a. Pre-grade
   b. Initial
   c. In progress
   d. Rough grade
   e. Final grade
3. The permittee shall be responsible for determining the existence and location of any existing underground facilities.
4. An excavator planning to conduct an excavation shall notify UNDERGROUND SERVICE ALERT—SOUTHERN CALIFORNIA (toll free at 811) at least two working days, and not more than 14 calendar days, before beginning that excavation. The excavator shall obtain a DigAlert ticket requesting the utility owners to mark or otherwise indicate the location of their subsurface facilities and shall renew ticket(s) as required to maintain validity throughout the duration of grading activities. The excavator shall determine the location and depth of all utilities, including all service connections, which have been marked by the respective owners and which may affect or be affected by its operations. The excavator shall take all necessary measures to protect all utilities and structures found at the site. (Ref: California Government Code Section 4216.)
5. Plan check and construction inspection deposits shall be made in accordance with the Board of Supervisor's adopted Fee and Deposit Schedule. The permittee shall pay the actual costs (including overhead) for services rendered. If at any time the actual costs exceed the deposits, the permittee shall pay the balance due before proceeding with further work. Failure to remit payment when due may result in the County issuing a "Stop Work Notice". Deposits not used will be refunded to the permittee at time of completion of all required work.
6. A preconstruction/pre-grade conference of all interested parties shall be held prior to any construction or grading. Any work performed under this permit prior to conducting a pre-grade meeting will be subject to whatever action including restoration to existing conditions before work was begun, that the County of Ventura deems necessary to inspect, correct and/or approve said work.
7. This permit is valid only to the extent of Ventura County Building Code. Permits and consent required by other interested Agencies and consent of the underlying fee owner of easement and that of easement holders shall be the responsibility of the permittee. The permittee shall be responsible for obtaining all necessary permits and permissions from affected property owners, public agencies, and others.
8. If the owner wishes to change any technical consultants, grading shall cease until a new technical consultant assumes and accepts responsibility for the grading.
9. If the property subject to this permit changes ownership, the seller shall notify the Building Official in writing of the pending transfer and pay any outstanding permit fees. The grading shall cease until the new owner contacts Land Development Services to transfer the permit to the new owner and deposit permit fees.
10. Any deviation from the approved grading plans requires prior approval by the Building Official. The permittee shall submit a change order application and revised plans for review and approval by Land Development Services, unless the Building Official provides prior approval for a minor field adjustment to be documented on the "As-Built" drawings.
11. Prior to the "Notice of Completion" – all grading disturbed areas must be stabilized and slopes vegetated with 70% coverage using native vegetation, where practical.

SPECIAL PROVISIONS

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

This Page Left Blank Intentionally

SECTION 01 00 01
GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL

A. The following items, reference, supplement, modify, change, delete from, or add to the Ventura County Standard Specifications (VCSS), Part 1 - General Provisions, Sections 1 through 10. Where any portion of the General Provisions is modified, or any paragraph, subparagraph, or clause thereof is modified or deleted, unaltered provisions remain in effect.

1. Reference VCSS 1-2 Definitions. Comply with additional requirements of Section 01 42 16, “Definitions.”
2. Abbreviations to paragraph VCSS 1-3.1. Refer to Section 01 42 13, “Abbreviations,” for additional abbreviations.
3. Reference VCSS 2-5.3 Submittals. Comply with additional requirements of Section 01 33 00, “Submittals.”
4. Reference VCSS 2-5.4 Record Drawings. Comply with the additional requirements of Section 01 78 39, “Project Record Documents.”
5. Reference VCSS 3-3.2.3 Mark-up. Comply with the modifications in this Section, Paragraph 1.17, Changes in Work.
6. Reference VCSS 4-1.2 Protection of Work and Materials. Comply with additional requirements of Section 01 73 00 “Execution”.
7. Reference VCSS 4-1.6 Trade Names or Equals. Comply with additional requirements of Section 01 25 00, “Substitutions,” for methods of requesting approval for "or equal" materials or methods.
   a. Add the following paragraph to VCSS 4-1.6.1 “When one or more than one manufacturer is listed as acceptable in a specification section, the first manufacturer and/or product listed is the basis for development of the Contract Documents and establishes the required minimum standard of quality. This is also the basis for the indicated size and dimensions of the product and/or equipment. If manufacturer and/or product other than first listed is used, then Contractor shall bear all costs of redesign and changes in construction necessary to adapt the offered equipment or product to the Work."
8. Reference VCSS 6-8.6 Written Guarantee. Comply with additional requirements of Section 01 78 36, “Warranties and Guarantees.”
9. Reference VCSS 6-13.1 Working Hour Limitations. Comply with additional requirements of Section 01 10 00 “Summary”.
10. Reference VCSS 7-8.1 Cleanup and Dust Control. Comply with the additional provisions of Section 01 74 01, “Cleaning.”
11. Reference VCSS 7-8.4 Sanitation. Comply with additional requirements of Section 01 50 01, “Temporary Facilities and Controls,”
12. Reference VCSS 7-8.5 Temporary Light, Power, and Water. Comply with additional requirements of Section 01 50 01, “Temporary Facilities and Controls”.

1.02 CONFERENCE

A. Pre-Bidding Conference. A non-mandatory pre-bidding conference will be held at the time and location indicated on page 1 of the Project Information and Bidding Documents. None of the information transmitted at this meeting will be construed in any way to modify the plans and specifications. Any modification will be forwarded to all plan holders as an addendum.

B. Pre-Construction Conference. The Engineer will schedule a pre-construction conference after Notice of Award.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality as indicated in Section 01 80 00, “Quality.”

1.04 REFERENCES

A. Conform to reference standard by date of issue current as of date of Contract Documents.

1.05 BARRIERS AND FENCING

A. Construct and maintain barricades for the following: As required by local authorities; as required to protect the Agency's property from injury or loss; as required for the protection of the public.

1.06 CUTTING AND PATCHING

A. The Contractor shall perform cutting and patching per the provisions of Section 01 73 29.

1.07 PROJECT MEETINGS

A. Project meetings shall be held as stipulated in Section 01 31 19, “Project Meetings.”

1.08 TESTS AND INSPECTIONS

A. Tests and inspections shall be performed per the provisions of Section 01 40 00, “Quality Requirements.”

1.09 DELIVERY, HANDLING AND STORAGE

A. Comply with the provisions of Section 01 65 00, “Delivery and Storage.”

1.10 SYSTEM DEMONSTRATIONS AND INSTRUCTION

A. Comply with the provisions of Section 01 79 00, “Demonstration and Training.”

1.11 CLEANING

A. The project shall be cleaned per the provisions of Section 01 74 01, “Cleaning.” This is in addition to that which is mentioned in VCSS Section 7-8.1 of the General Provisions.

1.12 OPERATION AND MAINTENANCE

A. Furnish operation and maintenance data per Section 01 78 23, “Operation and Maintenance.”

1.13 SPARE PARTS AND MAINTENANCE MANUALS

A. Provide spare parts and maintenance materials per the provisions of Section 01 78 43, “Spare Parts and Maintenance Materials.”

1.14 SUMMARY OF PROJECT

A. The Project Work, sequencing, and other provisions will be as indicated in Sections 01 10 00, “Summary” .

1.15 (NOT USED)

1.16 LABOR COMPLIANCE SOFTWARE

A. The County of Ventura has implemented, and maintains, a labor compliance software service program called “LCP Tracker”.

B. Contractors and subcontractors shall keep accurate payroll records in accordance with Labor Code Section 1776 and shall furnish weekly certified payrolls for their workers and shall input their certified payroll records electronically using LCP Tracker within 7 days following the end of the preceding week.

C. In bidding on the project, it shall be bidder’s responsibility to evaluate the cost of complying with the above-referenced LCP Tracker requirements.

D. Agency will provide materials and information to assist the Contractor with using LCP Tracker.

1.17 CHANGES IN WORK

A. Modify VCSS Section 3-3.2.3 Markup as follows:

1. Work by Contractor. The following percentages shall be the maximum markup allowed to be added to the Contractor’s costs and shall constitute the markup for all overhead and profits, and all other cost not specifically provided for:
   (1) Labor 15%
   (2) Materials 15%
   (3) Equipment Rental 15%
   (4) Other Items and expenditures 15%

   To the sum of the cost and markups provided in this section, 1% shall be added as compensation for bonding. There shall be no additional markup for insurance.

2. When all or any of the Extra Work is performed by a Subcontractor, the markup established in 01 00 01, 1.17 A shall be applied to the Subcontractor’s actual cost of such work. A mark up of 10% on the first $5,000 of the subcontractor’s portion of the Extra Work and the markup of 5% on work in excess of $5,000 of the subcontracted portion of the Extra Work may be added by the Contractor.

B. Refer to VCSS Section 3 and add the following sub-section:

3-6 CHANGE ORDERS

3-6.1 Signed Change Orders. By signing the Contract Change Order (CCO), the Contractor agrees to the total cost and time, if applicable, of the contract modification, and will accept as full payment for all costs related in any way to the signed Change Order. This shall also constitute full compensation for any extended Overhead or General Condition costs attributed as a result of this change.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 10 00
SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of Contract.
3. Owner-furnished products and systems.
4. Use of premises.
5. Agency's occupancy requirements.
6. Work restrictions.
7. Off-Site Improvements.

B. Related Sections include the following:

1. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Identification:

1. Ventura County Fire Training Center Site Improvements and Structural Training Props
2. Ventura County Fire Training Center Ladder Training Prop

B. Project Location:
165 Durley Ave.
Camarillo, CA 91360

C. Owner: Ventura County Fire Department

1. Owner's Representative: County of Ventura Public Works Agency "Engineer" and/or "Agency."

D. Architect of Record (AOR):
Mary McGrath Architects
610 16th Street, Suite 219
Oakland, CA 94612

E. The Work consists of the following:

1. The Work includes site work, concrete, masonry, steel stairs, miscellaneous metals, doors and window shutters, thermal protection systems, sound system, plumbing

(simulated fire sprinkler system), propane gas system, synthetic smoke distribution system, electrical; and fire training prop installation coordination.

2. Site light pole footings are design/build systems. Systems require deferred approvals from the local authority having jurisdiction. The Contractor is responsible for submitting and obtaining approval from the authorities having jurisdiction prior to installing systems. See specification sections for the aforementioned systems for additional requirements.

1.03 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract with a lump sum bid.

1.04 OWNER FURNISHED PRODUCTS

A. Owner Furnished Owner Installed Equipment (OFOI): The Contractor is required to install support infrastructure and systems, as shown in the Contract Documents, prior to calling for OFOI equipment installation. Contractor shall comply with the coordination requirements of the Ventura County Standard Specification (VCSS) Section 7-7.

1. OFOI Products provided by the Agency:

a. Site Power Pole – Training Prop. Pole to be provided and Installed by SCE. (Simulated cross arms and wiring system to be provided and installed by Contractor).

b. Prop Vendor System. Fire Training systems by Owner Vendor. (All pathways, backboxes, and wiring by Contractor). The Contractor is required to closely coordinate with the Prop Vendor during construction and Vendor systems installation.

B. Owner Furnished Contractor Installed Equipment (OFCI): The Contractor is required to install equipment noted as OFCI in the contract documents. The Contractor shall comply with the coordination requirements of the Ventura County Standard Specification (VCSS) Section 7-7.

1. OFCI Products provided by the Agency:

a. Propane Fuel Tanks (County Vendor);

C. All other equipment shown in the Contract Documents, except where specifically noted as OFOI or OFCI, shall be Contractor Furnished Contractor Installed (CFCI).

1.05 USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Agency's right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to within the property line boundary indicated on the drawings.

2. Driveways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Agency, Agency's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. a. Schedule deliveries to minimize use of driveways and entrances.

b. b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.06 AGENCY'S OCCUPANCY REQUIREMENTS

A. Agency Occupancy of Completed Areas of Construction: Agency reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Engineer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Agency occupancy.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Agency occupancy.

3. Before partial Agency occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Agency will operate and maintain mechanical and electrical systems serving occupied portions of building.

4. On occupancy, Agency will assume responsibility for maintenance and custodial service for occupied portions of building.

1.07 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 4:00 p.m., Monday through Friday, except as otherwise indicated.

1. Weekend Hours: As permitted by AGENCY and/or local governing jurisdiction.

2. Early Morning Hours: Comply with regulations by authorities having jurisdiction for restrictions on noisy work.

3. Hours for Utility Shutdowns: Comply with regulations established by each utility agency governing utility scheduled for shutdown.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Agency or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Obtain written permission to shut down a utility from the governing agency for each utility requiring a shutdown.

2. Notify AGENCY Project Manager not less than 7 days in advance of proposed utility interruptions.

1.08 OFF-SITE IMPROVEMENTS

A. The Contractor shall be responsible for work within any and all utility easements in order to bring project utilities to the Utility Providers' Points of Connection (POC). The Contractor shall have all licenses and qualifications mandated by the City of Camarillo, the County of Ventura and by the Utility Providers serving this jobsite prior to commencing work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 25 00
SUBSTITUTIONS

PART 1 - GENERAL

1.01 PRODUCT SELECTION - GENERAL

A. Where the Contractor proposes substitutions per the provisions of Ventura County Standard Specifications Part 1 - General Provisions, Section 4-1.6, the following conditions shall apply.

B. Listing of a manufacturer implies acceptance of them only as supplier of a product which complies with specified item.

1.02 REQUESTS FOR "OR EQUAL" SUBSTITUTION

A. Only written requests with complete substantiating data for evaluation will be considered.

1. Request must be received by Engineer not later than 30 calendar days after Notice to Proceed or 30 days prior to when item was scheduled for submission under Section 01 33 00, “Submittals,” Paragraph 1.08-A, Schedule.
2. Requests received late will not be considered.

B. In making request for substitution, or in using an approved substitute item, Supplier and Contractor:

1. Shall have investigated proposed product or method and have determined that it is equal or superior in all respects to that specified, and that it will perform intended function.
2. Shall provide same warranty for substitute item as for product or method specified.
3. Where substitute manufacturers are provided with different control panels, starters, and electrical characteristics from scheduled equipment, Contractor shall make installation complete and pay all additional costs.
4. Shall waive all claims for additional costs or time related to substitution which subsequently become apparent.
5. Shall pay all redesign and other costs resulting from substitution.
6. Shall acknowledge acceptance of these provisions in request.

1.03 SUBSTITUTION SUBMITTAL

A. Submit complete data substantiating compliance of proposed substitution with Contract Documents.

B. For products:

1. Product identification, including manufacturer's name.
2. Manufacturer's literature, marked to indicate specific model, type, size, and options to be considered:
   a. Product description.
   b. Performance and test data.

c. Reference standards.

d. Difference in power demand, air quantities, etc.

e. Dimensional differences from specified unit.

3. Full size samples if requested by Engineer.

4. Engineer reserves right to retain sample until physical units are installed on project for comparison purposes. Sample will then be returned to Contractor.

5. Contractor to pay all costs of furnishing and return of samples.

6. Engineer is not responsible for loss of or damage to samples.

7. Name and address of at least 5 similar projects and name of representative Engineer can contact; to discuss product, installation, and field performance data.

C. For construction methods:

1. Detailed description of proposed method.

2. Illustrate with drawings.

D. Itemized comparison of proposed substitute to specified item.

E. Accepted substitutions will not allow any contract time extensions.

F. Cost of proposed substitution in comparison with product or method specified.

1.04 REVIEW/APPROVAL OF SUBSTITUTIONS

A. Substitutions will not be approved by Agency if (in Agency's sole judgment):

1. They are not submitted in accordance with this section.

2. Acceptance will require substantial revision of Contract Documents and/or building spaces.

3. Request for substitution does not indicate specific item for which request is submitted.

4. They propose acceptance of manufacturer without presenting manufacturer's product/model name or number.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 26 10
REQUEST FOR INFORMATION

PART 1 - GENERAL

1.01 DEFINITIONS

A. Request for Information/Interpretation (RFI)

1. Form completed in Procore by and submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as RFI.

2. A properly prepared request for information. Interpretation shall include a detailed written statement that indicated the specific Drawings or Specification in need of clarification and the nature of the clarification requested.

   a. Drawings shall be identified by Drawing number and location on the Drawing sheet.
   b. Specification shall be identified by Section number, page and paragraph.

3. Request for Information: Request made by Contractor concerning items not indicated on Drawing or contained in Specifications that is required to properly perform the Work.

B. Improper and Frivolous RFIs:

1. RFIs that are not properly prepared, or

2. RFIs that request information that is clearly shown on the Contract Documents.

3. Improper or Frivolous RFIs shall be processed by the Consultant at the Consultant's standard hourly rate and the Consultant will charge the AGENCY, and such costs will be deducted from monies still due to the Contractor. The Contractor shall be notified by the AGENCY prior to the processing of improper RFIs.

1.02 CONTRACTOR'S REQUEST FOR INFORMATION

A. RFI shall be submitted through Procore

1. Forms shall be completely filled-in as indicated by the AGENCY.

2. RFIs numbering will be assigned by Procore.

3. Each page of attachments to RFIs shall bear RFI number and shall be consecutively number in chronological order.

4. If approved by the AGENCY, RFI will be closed in Procore.

B. When the Contractor is unable to determine from the Contract Documents, the material process or system to be installed, the AGENCY shall be requested to make a clarification of the indeterminate item.

C. Contractor shall endeavor to keep the number of RFIs to a minimum. In the event that the process becomes unwieldy, in the opinion of the AGENCY, because of the number and frequency of the RFIs submitted, the AGENCY may require the Contractor to send an email

approval of draft RFI prior to submitting through Procore.

D. RFIs shall be originated by the Contractor.

1. RFIs from Subcontractors or suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submittal to the AGENCY. Otherwise, RFI's sent directly from Subcontractor to AGENCY shall be immediately rejected.

2. RFIs from subcontractors or material suppliers sent directly to the AGENCY shall not be accepted and will be returned unanswered.

E. Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFIs which request information available in the Contract Documents will be deemed "improper" or "frivolous" as noted above.

F. In cases where RFIs are issued to request clarification of coordination issues, the Contractor shall propose the suggested solution using drawings or sketches drawn to scale and attach them to the RFI. RFIs which fail to include a suggested solution may be returned unanswered with a requirement that the Contractor submit a complete request.

G. RFIs shall not be used for the following purposes:

1. To request approval of submittals
2. To request approval of substitutions
3. To request changes which are known to entail additional cost or credit
4. To request different methods of performing Work than those drawn and specified

H. In the event the Contractor believes that a clarification by the AGENCY results in additional cost or time, Contractor shall not proceed with the Work indicated by the RFI until a Contract Change Orders is executed. RFIs shall not justify a cost increase or a change in the Project schedule.

1. Answered RFIs shall not be construed as approval to perform extra Work.

2. Unanswered RFIs will be returned with notation: Not Reviewed or Rejected

I. Contractor shall allow a reasonable time for review and response time for RFIs

1. The AGENCY has a minimum of 10 working Days to respond to RFIs.
2. RFIs received after 1:00 p.m. will be considered as received the following working day.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 03 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. General.

1. Requirements include:

a. On a periodic basis, during construction, during normal business hours, Contractor's Project Manager, Superintendent and Subcontractor representatives shall attend meetings upon request of Engineer or as required in other sections of the Specifications. Engineer may invite Agency representatives and other parties as Engineer deems appropriate. Engineer will chair the meetings. Engineer will prepare minutes of the meetings, at their sole discretion. Meeting minutes are processed and stored in Procore. Contractor has 10 days from meeting to request revisions or corrections from the meeting minutes distributed at the weekly meeting. The meetings shall include:

b. Progress Review Meetings: Held on a periodic basis, usually weekly, to review work in progress, schedule status, issues that are current as of meeting and other matters raised by Engineer or Contractor. Contractor shall be prepared, at such meetings, to propose and commit Contractor to corrective actions and associated timetables for remediation of Contractor-accountability deviations from Contract requirements, if applicable.

c. Miscellaneous Meetings: Held on an as needed basis, as deemed necessary by

d. Engineer or as proposed by Contractor and accepted by Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 31 23
WEB BASED CONSTRUCTION MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. The Agency and Contractor shall utilize Procore, a Web-based building project management software, for electronic submittal of all data and throughout the duration of the Contract. When required by the Agency's Representative, paper documents will also be provided (e.g., the signature of Contract Modifications and submission of Contract Claims). In the event of discrepancy between the electronic version and paper documents, the paper documents will govern.

B. Contractor shall include all costs associated with using this software, including user training, in the Contract bid price. The Agency will provide user profiles to the Contractor.

C. Procore is a registered trademark of Procore Technologies, Inc. Microsoft, Internet Explorer, Outlook, Word, and Excel are registered trademarks of Microsoft Corporation in the U.S.A. Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

1.02 USER ACCESS LIMITATIONS

A. The Agency's Representative will control the Contractor's access to Procore by allowing access and assigning user profiles only to accepted personnel. User profiles will define levels of access into the system; determine assigned function-based authorizations (determines what can be seen) and user privileges (determines what they can do). Subcontractors and suppliers may not have direct access to Procore.

1.03 AUTOMATED SYSTEM NOTIFICATION AND AUDIT LOG TRACKING

A. Review comments made (or lack thereof) by the Agency on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. Agency acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

1.04 SUBMITTALS

A. Agency Representative's approval is required for most submittals except submittals for information only.

1.05 COMPUTER REQUIREMENTS

A. The Contractor shall use computer hardware and software that meets the requirements of the Procore system.

B. System Requirements:

1. Operating System: Windows Windows 7 or later and Mac X or later.
2. Internet Browser: Google Chrome recommended.
3. Screen Resolution: Minimum 1024 x 768 (Recommended horizontal resolution: 1280 or higher.
4. Minimum Recommended Connection Speed: 30Mbps or above.
5. Processor Speed: 1 G and above.
6. RAM: 1G and above.
7. Recommendation of 32GB of free storage when using Procore app on mobile devices.

1.06 CONTRACTOR RESPONSIBILITY

A. The Contractor shall be responsible for the validity of the information it places in Procore and for the abilities of their personnel. Accepted users shall be knowledgeable in the use of computers, including Internet Explorer, e-mail programs such as Outlook, word processing programs such as Word, spreadsheet programs such as Excel, and Adobe Portable Document Format (PDF) document distribution program. The Contractor shall utilize the existing forms in Procore to the maximum extent possible. If a form does not exist in Procore and the Contractor must include as an attachment or by uploading the data file, PDF documents will be created through electronic conversion rather than optically scanned.

B. The Contractor is responsible for the training of their personnel in the use of Procore as needed. All costs associated with the use of this system, will be evenly distributed in the project overheads and spread across the duration of the contract; a separate cost line item will not be allowed. Procore training is available at education.Procore.com Contractor shall provide completed training certificates for each assigned profile requested.

1.07 CONNECTIVITY PROBLEMS

A. Procore is a web-based environment and therefore subject to the inherent speed and connectivity problems of the Internet. The Contractor is responsible for its own connectivity to the Internet. Procore response time is dependent on the Contractor's equipment, including processor speed, modem speed, Internet access speed, etc. and current traffic on the Internet. The Agency will not be liable for any delays associated with the use of Procore including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information. Under no circumstances shall the use of the Procore be grounds for a time extension or cost adjustment to the contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 UTILIZATION

A. Procore shall be utilized in connection with submittal preparation and information management required by Section 01 33 01 Submittals, and other Division 01 sections.

Requirements of this section are in addition to requirements of all other sections of the specifications.

1. Design Document Submittals.
    a. Provide all design drawings and specifications in file formats specified in other sections of the contract documents.
2. Shop Drawings.
    a. Shop drawing and design data documents shall be submitted as PDF attachments to the Procore submittal workflow process and form. All PDF shop drawing submittal documents shall have the Contractor's review and submittal stamp (including signatures) as specified in Section 01 33 01.
        1) Standard manufacturer installation drawings.
        2) Drawings prepared to illustrate portions of the work designed or developed by the Contractor.
        3) Coordination and Clash Detection Drawings
        4) Steel fabrication, piece, and erection drawings.
3. Product Data
    a. Product catalog data and manufacturer's instructions shall be submitted as PDF attachments to the Procore submittal workflow process and form. All PDF product data submittal documents shall have the Contractor's review and submittal stamp (including signatures) as specified in Section 01 33 01. Examples of product data include, but are not limited to:
        1) Manufacturer's printed literature.
        2) Preprinted product specification data and installation instructions.
4. Samples
    a. Sample submittals shall be physically submitted as specified in Section 01 33 01. Contractor shall enter submittal data information into Procore with a copy of the transmittal form(s) attached to the submittal. Examples of samples include, but are not limited to:
        1) Product finishes and color selection samples.
        2) Product finishes and color verification samples.
        3) Finish/color boards.
        4) Physical samples of materials.
5. Administrative Submittals.
    a. All correspondence and Preconstruction submittals shall be submitted on Procore. Examples of administrative submittals include, but are not limited to:
        1) List of contact personnel.
        2) Requests for Information (RFI).
        3) Construction Schedules and associated reports and updates.
        4) Submittal Register:

5) Plans for safety, infection control, demolition, environmental protection, and similar activities.

6) Quality Control Plan(s), Testing Plan and Log, Quality Control Reports, Production Reports, Quality Control Specialist Reports, Preparatory Phase Checklist, Initial Phase Checklist, Field Test reports, Summary reports, Rework Items List, etc.

7) Meeting minutes.

8) Any general correspondence submitted.

6. Compliance Submittals

   a. Test report, certificate, and manufacture field report submittals shall be submitted on Procore as PDF attachments. Examples of compliance submittals include, but are not limited to:

      1) Field test reports.

      2) Quality Control certifications.

      3) Manufacturer's documentation and certifications for quality of products and materials provided.

7. Record and Closeout Submittals

   a. Operation and maintenance data and closeout submittals shall be submitted on Procore as PDF documents during the approval and review stage as specified, with actual set of documents submitted for final. Examples of record submittals include, but are not limited to:

      1) Operation and Maintenance Manuals: Final documents shall be submitted as specified.

      2) As-built Drawings: Final documents shall be submitted as specified.

      3) Extra Materials, Spare Stock, etc.: Submittal forms shall indicate when actual materials are submitted.

8. Exceptions

   a. Documents with legal consequences, contract modifications, contract claims, security implications, and those required by other agencies may require an additional submittal as original hard copy with original signatures and seals. Hard copies of these documents shall be submitted as specified or as directed by the Agency's Representative.

END OF SECTION

SECTION 01 32 16
PROJECT SCHEDULE

PART 1 - GENERAL

1.01 DEFINITIONS

A. CONTRACT TIME (or TIME OF COMPLETION): In accordance with Ventura County Standard Specifications (VCSS) Part 1 - General Provisions, Sections 6-7, the duration for the Contractor to complete each portion of the Work as set forth in the Contract.

B. INITIAL SCHEDULE SUBMITTAL: The Schedule shall be submitted concurrently with the submittal of the signed Contract, Contract Bonds, and Certificate of Insurance. Once received, reviewed and accepted by the Agency, it will become the Contract Schedule.

C. CONTRACT SCHEDULE: The schedule submitted by Contractor representing the sole work plan for accomplishing the Work. Once the submitted Initial Schedule Submittal is reviewed and accepted, it shall be the base line schedule document that forms the basis of all measurements of Contract Time in the Contract Documents. The Contract Schedule may not be modified other than as called for in this Document.

D. UPDATED PROGRESS SCHEDULE: A schedule submitted periodically reflecting current work status of all Work Activities measured against the latest accepted Contract Schedule. An updated progress schedule shall be submitted monthly, at a minimum, prior to each progress payment closure date. Processing of the progress payment will be delayed until such revised schedule complying with this section is received.

E. CONTRACTOR’S REQUESTED REVISIONS REPORT: A written statement of any proposed revisions to the Contract Schedule that modify the Contractor's plan of construction, activity durations, logic or other non-progress related schedule data. The report shall list all such changes to the Contract Schedule including a description of the specific change, the reason for the change and the effect the change will have on the scheduled completion date.

F. RECOVERY SCHEDULE: As called for by this section, a schedule produced by the Contractor once the Updated Progress Schedule forecasts that the Contractor will not finish the Work within the tolerances of the Contract Time. Once the Recovery Schedule is reviewed and accepted by the Agency, it will be considered the Contract Schedule.

G. SUBMITTAL SCHEDULE: A separate schedule or portion of the Contract Schedule maintained by the Contractor that reflects the schedule for submission and approval of Submittals for materials and equipment as required in the specifications.

H. FLOAT:

1. Float or Total Float shall be defined as the difference between the early finish and late finish dates for an activity.
2. Project Float shall be defined as the difference, if any, between the Contractor’s planned Final Completion date and the Contract Completion date.
3. Negative Float is any such calculated float which results in a “negative” number.

I. WORK ACTIVITY: Any individual task of work shown on a submitted schedule that requires time and resources (manpower, equipment, materials, etc.) to be completed in a continuous operation.

J. MILESTONE: An element of the schedule that indicates the beginning or end of a major event or phase, or any other important point in the project.

K. LOOK AHEAD SCHEDULE: A schedule based on the Updated Progress Schedule that shows a limited portion of the schedule. The limited portion of the schedule shall show Work Activities that were performed at least two (2) weeks before and Work Activities planned to be performed three (3) weeks beyond the date the schedule is presented, or as reasonably requested by the Agency. Include submittal number corresponding with the work taking place.

L. CHANGE ORDER FRAGNET SCHEDULE: A schedule submitted anytime the Contractor requests an adjustment in the Contract Time. A Change Order Fragnet Schedule shall be based on the applicable portion of the Contract Schedule that is claimed to be impacted, necessitating and demonstrating an extension of the Contract Time. All modifications to the Contract Schedule's Work Activities and their associated information (including float, duration, logic, manpower, etc.) shall be clearly identified. The Change Order Fragnet Schedule submittal shall show and clearly identify the unchanged ("unimpacted") Work Activities or Milestones from the Contract Schedule that have logical ties to and from the impacted activity or chain of impacted activities. The Contract Schedule shall be left unchanged and a similar portion (i.e., the same Work Activities from the Contract Schedule) shall also be submitted for comparative purposes.

M. CRITICAL WORK ACTIVITY: A Work Activity that, if delayed, will delay the scheduled completion of the Work (i.e., Work Activities that comprise the path of least total float). All other Work Activities are defined as non-critical and considered to have float.

N. BENEFICIAL OCCUPANCY: The stage of work in the progress of the Construction Work, as determined by Agency's Representative, when the Construction is complete and in accordance with the Contract Documents except only for completion of minor items which do not impair Agency's ability to occupy and fully utilize the Construction Work for its intended purpose and a Certificate of Occupancy has been issued by the Authority Having Jurisdiction.

1.02 GENERAL REQUIREMENTS

A. Contractor shall use the Critical Path Method (CPM) of scheduling.

B. The Contractor's personnel who prepare the schedules called for by this section shall be qualified and experienced in Critical Path Method (CPM) scheduling with the specified products of this section; and capable of fulfilling the requirements of this section. The Contractor shall hire a qualified consultant to prepare and maintain the Contract Schedule, or if qualified, the Contractor may perform these services within their own organization.

C. The Contract Schedule shall be used by the Agency in review of requests by the Contractor for modification of the Contract Time in accordance with the Contract Documents. Responsibility for developing the Contract Schedule and monitoring of actual progress in relation to the Contract Time rest solely with the Contractor. Failure of the Contractor to schedule any element of the Work, or any inaccuracy in the Contract Schedule, regardless if

the Agency has reviewed and accepted such schedule, will not relieve the Contractor from its obligation to complete the Work within the Contract Time, and that the Contractor assumes full responsibility for execution of the Work. The Agency's review of and response to the schedule submissions shall not be construed as relieving the Contractor of its complete and exclusive control over the means, methods, sequences and techniques for execution of the Work.

D. All cost for preparing, printing, mailing of any schedules called for by this section, or the Contract Documents shall be part of the Contract Sum.

E. AGENCY acceptance of the monthly Updated Progress Schedule will be a condition precedent to making monthly progress payments for Work performed.

F. All Requirements of the Contract Schedule shall also apply to the Initial Schedule Submittal, Recovery Schedule, Updated Progress Schedule, Change Order Fragnet Schedule, and As-Built Schedule.

G. The Contractor shall be responsible for assuring that the work sequences are logical and the network shows a coordinated plan for complete performance of the work. If the Contractor or Agency Representative discovers an undefined element of work activity or logic, it shall be corrected by the Contractor in a schedule revision, as described in this Section. If a planned activity requires greater-than normal daily resources to accomplish, schedule submittals shall include a narrative describing the activity, and the amount and use of extraordinary resources.

H. It is expressly understood and agreed that the time of beginning, the rate of progress, and the time of completion of the work are of the essence to this Contract. Therefore, the primary objectives of the scheduling program are to ensure the adequate planning, scheduling, and execution of the construction activities (including but not limited to all activities of the Contractor, subcontractors, suppliers, utilities, etc.) so they may be performed in an orderly and expeditious manner within the Contract Time stipulated by the Contract. The scope of work for this section is to develop a Schedule demonstrating complete fulfillment of all contract requirements and to keep that Schedule up-to-date in accordance with the requirements of this section. The Schedule will be in precedence format and will be computer generated and updated and will be the controlling Schedule document utilized for managing construction.

I. All Work Activities shall be of sufficient detail to provide identification of all components utilized in executing, monitoring and evaluating progress of the Work. Each work activity shall be assigned a unique Activity Number. Each Activity Number shall be assigned an Activity Description that briefly covers the scope of work indicated. Activity Descriptions may not be altered unless a description of the revision is identified in the Contractor's Requested Revision Report and accepted by the Agency's representative. Work Activities shall be discrete items of Work that must be accomplished under the Contract and constitute definable, recognizable entities within the Project. All Work Activities shall have a defined duration. All durations shall be in multiples of working days.

J. All Work Activities shall have appropriate durations allowing measurement of their progress, but no Work Activity shall exceed ten working days unless accepted by Agency's Representative. In general, if a reasonable estimate of progress against a proposed Work

Activity cannot be reasonably measured, a Work Activity shall be broken into multiple Work Activities such that monitoring of actual progress versus planned progress can be ascertained. All Work Activities shall be of sufficient detail to provide identification of all components used in executing, monitoring, and evaluating progress of the Work.

K. The Contract duration and any adjustments for approved Change Orders shall be delineated on the schedule. Work Activities shall include all Design Work as applicable, Demolition and Construction Work deliverables, including all submittals called for in the Scope of Work; and shall include the submittal and approval of permit applications (as necessary), samples of materials, shop drawings, working drawings, testing and inspections, safety and security plans, worksite control plans, utility company point-of connection installations and applications. In addition, Work Activities shall be included for procurement of materials and equipment potentially impacting the critical path, fabrication of special materials and equipment, and their installation and testing, and delivery of Agency-furnished items. Work Activities of the Agency, that may become Critical Work Activities shall be reflected, as well as Work Activities by utilities and other similarly involved third parties associated with the Work. The Contract Schedule shall include Work Activities or Milestones representing: all design and preconstruction activities; specific Milestones for the start and completion of each stage of the Design Work, specific Milestones for when state and local agency information and reviews are required; submittal dates; production Milestones; early purchasing; key deliverables in Scope of Work; Milestones for each Contract Phase; mobilization of personnel and equipment when required; sequence of operations; commissioning Work Activities; procurement of materials and equipment; and all contract closeout Work Activities such as Punch Lists, inspections, training, and operation manuals. The planned Completion date(s) shall be shown as milestones.

L. Physical or logical constraints, restraints, and sequences of work shall be shown. Mandatory Constraints are prohibited within the Schedule. At no time shall the Progress Override feature of the scheduling software be used in any schedule submittals.

M. Float in any activity, milestone completion date or Contract completion date (i.e., Project Float) shall be considered a resource available to both the Agency and the Contractor. Float is not time for the exclusive use or benefit of either the Agency or the Contractor but must be used in the best interest of completing the project on time. The Contractor shall proceed according to the early dates and shall continue the work on that activity as scheduled until it is completed unless circumstances prevent him or her from so doing.

N. Any submitted schedule showing negative float will be rejected by the Agency.

O. The Critical Work Activities shall be identified, including critical paths for Contract interim and Final Completion Milestone dates. Not more than 35% of the schedule's Work Activities shall be critical or near critical (i.e., less than ten days of float), unless accepted by the Agency.

P. All Work Activities shall be coded at a minimum to reflect which Contract Phase and area/location they are associated with. Any Work Activity that may be involved in multiple Phases or areas/locations shall be broken into separate Work Activities to reflect each phase such work occurs in, allowing Work Activities to be grouped by Contract Phase and areas/locations.

Q. Contractor shall not sequester float through strategies including extending Work Activity duration estimates to consume available float, using preferential logic, using extensive or insufficient crew/resource loading, use of float suppression techniques, special lead/lag logic constraints (unless specifically requested in writing to Agency's Representative and accepted). Use of float time disclosed or implied by the use of alternate float suppression techniques shall not be for the exclusive use or benefit of either the Agency or Contractor. It is acknowledged that Agency-caused or Contractor-caused time savings to Work Activities on or near the critical path will increase float, such increase in float shall not be for the exclusive use or benefit of either the Agency or Contractor.

R. The Project shall be phased to allow other adjacent occupancies, along with their support spaces, in use throughout the full duration of the project.

S. When the Contractor gives notice to the Agency's Representative that the Construction Work is ready for Beneficial Occupancy, unless Agency's Representative determines that the Construction Work is not sufficiently complete to warrant an inspection to determine readiness for Beneficial Occupancy, Agency's Representative will inspect the Construction Work. If the Agency's Representative determines the work is not ready for Beneficial Occupancy the Agency's Representative will prepare and give to Contractor a comprehensive list of items to be completed or corrected before establishing Beneficial Occupancy. Contractor shall proceed promptly to complete and correct items on the list. Failure to include item on such list does not alter the responsibility of the Contractor to complete all Construction Work in accordance with the Contract Documents. Upon notification that the items on the list are completed or corrected, as applicable, the Agency's Representative will make an inspection to determine whether the Construction Work is complete.

T. When the Agency's Representative determines that the Construction Work is ready for Beneficial Occupancy the Agency's Representative will notify the Contractor.

U. The Guarantee to Repair Period for the Work covered within the area of Beneficial Occupancy, shall commence on the date that the Agency took possession. The Guarantee to Repair Period shall not commence for any equipment or systems that:

1. Are not operational (equipment or systems shall not be considered operational if they cannot be used in the intended service); or
2. Are not accepted by the Agency.

1.03 TIME OF COMPLETION

A. Acceptance by the Agency of a Schedule that indicates completion of the Work prior to Contract Completion date, or completion of an interim Milestone prior to the Contract Milestone date shall be for the convenience of the Contractor and shall not change any of the Contract requirements including but not limited to Contract Completion Date; nor shall such an early completion schedule serve as a waiver of the Contractor's nor the Owner's right to utilize the full amount of time specified in the Contract, unless so modified in a Contract Change Order.

B. The Agency shall not be responsible or liable to Contractor for any constructive acceleration due to failure of the Agency to grant time extensions under the Contract Documents; including Contractor time extension requests that fail to substantially comply with the

submission requirements and the justification requirements of this Contract for time extension requests.

1.04 CONTRACTOR COVENANTS AND GUARANTEES

A. Contractor covenants and guarantees that Contractor will not:

1. Misrepresent to Agency its Schedule and all of its components or Contractor's actual execution of the work.
2. Use schedules materially different from those submitted by Contractor to the Agency for the direction, execution or coordination of the Work.
3. Prepare schedules, updates, revisions or reports for the work which are not feasible or realistic; or which do not accurately reflect the actual intent or reasonable and actual expectations of Contractor and its Subcontractors.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SUBMITTALS

A. INITIAL SCHEDULE SUBMITTAL: Per VCSS 6-1, The Contractor shall submit the Initial Schedule Submittal concurrently with the submittal of signed Contract, Contract bonds, and certificate of insurance. The Notice to Proceed will be delayed until the schedule is received and approved by AGENCY. See VCSS 6-7.4, Starting of Contract Time.

B. FORM: Schedule submittals shall be provided as described below.

1. The Contractor shall submit an electronic copy of the Schedule. The electronic copy of the schedule will be provided in the scheduling software's native file format so that it may be restored, opened and analyzed by the Agency, as well as a PDF electronic printout. The PDF printout shall indicate the Activity Number, Activity Description, Total Float, Percent Complete, Early Start date and Early Finish date, as well as display the bars representing activity durations.
2. The Contractor shall submit a PDF electronic printout of the schedule's critical path. The PDF printout shall indicate the Activity Number, Activity Description, Total Float, Percent Complete, Early Start date and Early Finish date, as well as display the bars representing activity durations.
3. The contractor shall submit the following Schedule reports on 8-1/2" x 11" media or as requested by the Agency:
   a. Monthly Progress Report: The Monthly Progress Report shall be organized as follows:
      1) Contractor Transmittal Letter;
      2) A description of Work completed during the period;
      3) Identification of unusual resources: manpower, material, or equipment restrictions or use, including multiple shifts, 6-day work weeks, specified overtime, or work at times other than regular days or hours;

4) Description of the current critical path;
5) Changes to the critical path since the last schedule submittal;
6) Description of problem areas;
7) Current and anticipated delays, including:
    a) cause of delay,
    b) impact on other activities milestone and completion dates,
    c) corrective action and schedule adjustments to correct the delay;
8) Pending items and status of:
    a) Permits,
    b) Change Orders,
    c) Time Adjustments,
    d) Non-Compliance Notices;
9) Contract Completion Date status:
    a) Ahead of schedule and number of days,
    b) Bend schedule and number of days,
    c) Causes for any changes;

b. Activity Report: The Activity Report shall include all of the activities sorted by activity number and present the following information: Activity Number; Activity Description; Original Duration; Remaining Duration; Percentage Complete; Responsibility Code; Area Code; Early/Actual Start; Early/Actual Finish; Late Start; Late Finish; Total Float (except as specifically indicated otherwise).

c. Early Start Report: The Early Start Report shall be per the above Activity Report requirements with the exception that is shall be sorted by early start. (Note: This report shall be required with the Initial and Updated Progress Schedule submittals).

3.02 WEEKLY PROGRESS MEETING

A. Once each week, on a day established by the Agency, a meeting will be held to assess the progress achieved by the Contractor during the previous work week. The Contractor shall submit the Look Ahead Schedule (if requested) and a manpower/construction report for the previous week (the Weekly Report). The Weekly Report shall indicate for each day of the preceding week the actual manpower for each activity which was in progress. This report shall include the actual number of tradesmen which were working for the Contractor and each subcontractor each day. The Weekly Report shall also indicate for each day the weather conditions, potential delays and inspections occurring on that day. The Weekly Report shall be a report derived from the Schedule which may be completed by hand providing that the handwriting is legible to the Agency.

B. See also Section 01 3119, “Project Meetings.”

3.03 PROGRESS REPORTING AND SCHEDULE REVISIONS

A. Once each month on the date specified by the Agency, the Contractor shall prepare and submit to the Agency an Updated Progress Schedule and reports stipulated within this Section. The Updated Progress Schedule shall:

1. have a data date and be statused as of the first calendar day of the month, or other date as established by the Agency;
2. show all progress, including but not limited to as-built dates, percent complete, and resources expended;
3. show accepted changes, including but not limited to changes as the result of change orders and any changes in contract completion dates which have been accepted within this section since the last revision of the Schedule;
4. only include changes to the schedule that follow the procedure outlined in paragraph B below.

B. Should the Contractor after Agency's acceptance of the Initial Schedule Submittal desire to change Contractor's plan of construction, activity durations, logic or other non-progress related schedule data, Contractor shall submit a Contractor's Requested Revisions Report, as defined in Part 1 of this Section, to the Agency at least one week prior to the submittal of a schedule incorporating any such changes. Attached to the Report shall be a schedule analysis report (generated from the software indicated in Part 2) comparing the previously accepted schedule to the proposed schedule. At a minimum, this schedule analysis report shall show the added activities, deleted activities, added relationships, deleted relationships, changed original durations, changed remaining durations, and changed driving relationships. Requested changes that are acceptable to the Agency will be incorporated into the next Updated Progress Schedule.

C. The Contractor shall revise the Schedule as reasonable to mitigate the impact of changes and delays to the project with no change in Contract price. However, when the Agency orders changes which have the potential to impact the specific dates stipulated, a Change Order Fragnet will be prepared by the Contractor and provided with the Contractor's proposed price or extra work tabulation as required to the Agency for concurrence or revision as Agency deems necessary. After the Change Order Fragnet has been accepted by the Agency, it will be incorporated into the next Updated Progress Schedule submitted by the Contractor. Change Order logic will affect only those activities and performance dates directly concerned. Adjustments in scheduled intermediate completion dates or for the Contract as a whole will be considered only to the extent that there is insufficient remaining float to absorb these changes.

D. Neither the updating or revision of the Contractor's Schedule, nor the submission, updating, change or revision of any report or Schedule submitted to Agency by Contractor under this Section, nor Agency's review of any report or Schedule, or the nonexistence of any such report or Schedule shall have the effect of amending or modifying in any way the Contract Time, or the Contact Completion Date, nor shall it modify or limit in any way Contractor's obligations under this Contract.

3.04 REVIEW AND ACCEPTANCE

A. The Agency will review the Contractor's schedule submittals for constructability, cost allocation, and adherence to plans and specifications. The Contractor shall revise the Schedule as required by the Agency and shall submit revised Schedule to the Agency within 7 calendar days. Within 10 calendar days following submission of an acceptable schedule, the Contractor will provide electronic and/or hardcopy versions of the Contractor's Schedule Submittal as outlined above. Acceptance by the Agency of the Contractor's Schedule is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the work in accordance with the Contract. Omissions and errors in the accepted Schedule shall not excuse performance which is not in compliance with the Contract. Acceptance by the Agency in no way makes the Agency an insurer of the Schedule's success or liable for time or cost overruns flowing from its shortcomings. The Agency hereby disclaims any obligation or liability by reason of Agency's acceptance of or acquiescence to the Schedule.

B. If, in the opinion of the Agency, the Contractor falls behind the progress schedule, the Contractor shall take any and all steps necessary to improve Contractor's progress at no additional cost to the Agency; including cost impacts to other contractors, utilities, or Agency directly caused by Contractor's delay. Such steps include but are not limited to the following:

1. Increase construction manpower in such quantities and crafts as will substantially eliminate the lag in schedule progress.

2. Increase the number of working hours per shift, shifts per working day, working days per week (as allowed by the Agency), or the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate lag in scheduled progress.

3.05 RECOVERY SCHEDULE

A. If requested by the Agency, the Contractor shall prepare and submit within 14 days from notification from the Agency a Recovery Schedule in accordance with the definition included in Part 1 of this Section. The Recovery Schedule shall address a new work plan to accomplish the remaining Work within the Contract Time and shall include and identify additional concurrent operations, logic and sequence changes, additional manpower, additional shifts, or overtime work. Once reviewed and accepted by the Agency, the Recovery Schedule shall be used as the Contractor’s Updated Progress Schedule.

3.06 CHANGE ORDER FRAGNET SCHEDULE

A. In accordance with the definition included within Part 1 of this Section, a Change Order Fragnet Schedule shall be submitted any time the Contractor requests an extension of the Contract Time or an extension to other Contract requirements. A condition precedent to obtaining a time extension under the Contract shall be the timely submission of a Change Order Fragnet schedule pursuant to the requirements of this paragraph.

B. A Change Order Fragnet shall be submitted within fifteen (15) days after a delay occurs or with the Contractor’s cost proposal in response to a notice of change from the Agency. In cases where the Contractor does not submit a Change Order Fragnet for a specific change order, delay, or other Contractor requested time extension within the specified period of time, then it is mutually agreed that the particular change order, delay or Contractor request has no time impact on the Contract completion date and no time extension is required.

C. Actual delays in activities which do not affect the critical path work or which do not move the Contractor's planned completion date beyond the Contract completion date will not be the basis for an adjustment of the Contract Time.

D. All other requirements of the Contract Schedule shall apply to a Change Order Fragnet Schedule.

E. Approval or rejection of the Change Order Fragnet will be made within fifteen (15) days after receipt of the Change Order Fragnet unless additional information, subsequent meetings and negotiations are necessary. Upon mutual agreement of both parties, schedule revisions illustrating the influence of the change orders, delays, and/or Contractor requests will be incorporated into the next Updated Progress Schedule.

3.07 LOOK AHEAD SCHEDULES

A. In accordance with the definition included within Part 1 of this Document, a Look Ahead Schedule shall be submitted at each progress meeting of the Work or as reasonably requested by the Agency.

B. The schedule shall display the activity ID, activity description, planned start/finish dates, total float, and the percentage complete.

3.08 SUBMITTAL SCHEDULE

A. In accordance with the definition included within Part 1 of this Document and Section 01 33 01, "Submittals", the Submittal Schedule shall be submitted and maintained by the Contractor. The Submittal Schedule shall be a comprehensive and complete representation of task activities and dates related to the procurement of materials, equipment or other items requiring Agency or designer approval (e.g., shop drawings, product data, etc.). Provide all such dates and activity durations for submittal review and approval activities in accordance with the specification sections regarding submittals. Resubmittals shall have the same review time as the Contractor's initial submittals. For additional information on requirements for Submittals, see Section 01 33 01.

B. Include any required or necessary items furnished by the Agency or a third party.

C. Consider the nature and complexity of each submittal item and allow ample time for review, revision, correction, resubmittal, and approval sufficiently in advance of the construction requirements. Coordinate preparation and processing of submittals with performance of the Work so that work will not be delayed by submittal processing. Coordinate and sequence different categories of submittals for same work, and for interfacing units of work, so that one will not be delayed by lack of coordination with another.

D. Make the Submittal Schedule consistent with the Contract Schedule required under this Section.

E. Consider time required for preparation and review of mock-ups and the relationship between mockups and the Work.

F. Schedule submittals in sequence with the schedule for Work except as required for products known to require long lead-times. For submittal of items requiring long lead-times, submit written verification of the required lead-time from the supplier, if requested.

G. Identify on the schedule all items required by the Contract Documents, indicating:

1. The Submittal Number and Submittal Sequence Number;
2. The Specification Section Number;
3. The Submittal description and manufacturer
4. The Submittal Designation character
5. Whether the Submittal is required for review or for the record;
6. Schedule date for first submittal;
7. Schedule date for resubmittal;
8. Schedule date when Agency or Designer's final release or approval is required to be returned to the Contractor;
9. Scheduled date by which the material or equipment must be on the site so as not to delay the progress of the work.

H. To the greatest extent possible, make single submissions covering the entire work of individual technical Specification Sections. Partial or "phased" submittals for work of the same Section will not be reviewed.

I. Receipt of the Submittal Schedule by Agency will be a precondition of the receipt of the first progress payment. Agency and Designer will review the Submittal Schedule in accordance with the procedures for the Updated Progress Schedule included in this Section.

J. Submittal Schedule shall be updated and presented at progress meetings, or as requested by Agency.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 33 00
SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all submittals for work as indicated in accordance with provisions of Contract Documents.
2. Submittals include the following items:
   a. Shop drawings.
   b. Product data.
   c. Samples.
   d. Project information.
   e. Schedule of Submittals: Prior to first application for payment.
   f. Completely coordinate with all Contract work.
   g. See VCSS 2-5.3 for additional requirements.

1.02 DEFINITIONS

A. Shop Drawing submittals are drawings, diagrams, schedules and other data specially prepared for Work by Contractor, manufacturer, supplier or distributor to illustrate some portion of Work.

B. Product Data submittals are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, test data and other information furnished by Contractor to illustrate material, product or system for some portion of Work.

C. Sample submittals are physical examples which illustrate materials, equipment or workmanship and propose standards by which Work will be judged.

1. Samples also include job site mockups.

D. Project Information submittals are items pertaining to quality control and Agency information which may not require review or response by Engineer and are to be retained for project file only.

1. Examples:
   a. Test reports.
   b. Certifications.
   c. Design calculations.
   d. Installation instructions.

E. Shop Drawings, Product Data, Samples and similar submittals are for those portions of Work for which submittals are required and shall indicate the way the Contractor proposes to conform to information given and the design concept expressed in Contract Documents.

1.03 TRANSMITTAL - GENERAL

A. Submit all items to Engineer, or person or entity to whom Engineer has delegated this function in writing. All submittals shall be delivered per the requirements of Section 2-5.3 of the VCSS and Section 01 31 23, “Web Based Construction Management,” of these Special Provisions.

B. Contractor is responsible for making submissions.

1. Submit to address indicated by Agency.
2. Each transmittal to include items from one specification section only.

C. Make submittals sufficiently in advance of date required to allow Engineer reasonable time for review, and resubmission if necessary.

1. Schedule submittals requiring Engineer color selection within 30 days following award of contract.
2. Items not submitted in accordance with provisions of this section will be returned, without action, for resubmission by Contractor.

1.04 SHOP DRAWINGS AND PRODUCT DATA

A. Shop drawing and product data submittals are required as called for by specification section submittal paragraph, or by additional requirements of the respective sections.

B. Identify drawings with manufacturer, item, use, type, project designation, specification section or drawing detail reference.

C. Submit each shop drawing per the provisions of Section 01 31 23, “Web Based Construction Management.”

1. Create drawings not smaller than 24 inches x 36 inches or not larger than 30 inches x 42 inches.
2. Allow a clear space, approximately 6 x 6 inches, for notations on right hand side of each sheet.

D. Submit product data items such as equipment brochures, cuts of fixtures, or standard catalog items per the provisions of Section 01 31 23, “Web Based Construction Management.”

1. Indicate exact item or model and proposed options.
2. Include scale details, sizes, dimensions, performance characteristics, capacities, wiring diagrams, controls and other pertinent data.

1.05 SAMPLES

A. Sample submittals are required as called for by specification section submittal paragraph.

B. Identify samples with manufacturer's name, item, use, type, project designation, specification section or drawing detail reference, color, range, texture, finish and other pertinent data.

C. Engineer may, at his option, retain samples for comparison purposes.

D. Field Mockups: Fabricate on site in accordance with specification section requiring them.

1.06 PROJECT INFORMATION

A. Submit project information as called for by specification section submittal paragraph.

B. Submit project information items per the provisions of Section 01 31 23, “Web Based Construction Management.”

1. Include pertinent data.

C. Project information:

1. Engineer may review at its sole discretion project information for compliance with Contract Documents only.
2. Review will not constitute a detailed check of submitted design calculations.
3. Appropriateness and accuracy of calculations is responsibility of Contractor (and Contractor's professional engineer when such calculations are required to be professionally sealed).
4. When professional or other certification of performance criteria of materials, systems or equipment is required by Contract Documents, Engineer shall be entitled to rely upon accuracy and completeness of such calculations and certifications.

1.07 CONTRACTOR ACTION

A. Review, approve, stamp, and sign items prior to submission to Engineer.

B. Stamp indicates Contractor has:

1. Verified field dimensions and quantities.
2. Verified field construction criteria, materials, catalog numbers and similar data.
3. Reviewed and coordinated submittal data with requirements of Work and Contract Documents.
4. Certified that submittals comply with Contract Documents.

C. Reproduce and distribute submittals to Contractor's organization, including Subcontractors/vendors and to Agency in specified number of copies or additional copies as necessary to support execution of the Work.

D. Resubmit items stamped "revise and resubmit" or "rejected" until approval is received.

1. Contractor shall, if applicable, add letter suffix to previous transmittal number, to indicate resubmission, for example 03450A-1A.

2. Contractor shall direct specific attention, in writing, on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by Engineer on previous submittals.

E. Contractor shall direct specific attention, in writing or on Shop Drawings, Product Data or Samples, to deviations from Contract Documents.

1. Contractor shall not be relieved of responsibility for deviation from requirements of Contract Documents by Engineer's approval of Shop Drawings, Product Data and Samples unless Contractor has specifically informed Engineer in writing of such deviation at time of submission and Engineer has given written approval to each specific deviation. Such deviations shall require Agency's agreement unless it is considered a minor change in Work and does not involve adjustment in Contract Sum or Contract Time.

F. Contractor shall not be relieved from responsibility for errors or omissions in Shop Drawings, Product Data or Samples by Engineer's approval thereof.

G. Contractor is responsible for confirmation and correlation of dimensions at job site; for information that pertains solely to fabrication processes or to techniques of construction; and for coordination of work of all trades.

H. Completed work shall strictly conform to approved samples.

I. Do not start work which requires submittals, prior to return of submittals with Engineer's stamp indicating approval.

1.08 SCHEDULE

A. Within 30 days following Notice to Proceed, submit to Engineer a complete schedule of required submittals indicating proposed submittal dates for items in format acceptable to Engineer.

B. Include submittal number as described in 1.10 below.

C. Furnish all submittals to Engineer, for entire Contract, per the schedule indicated in Paragraph A above.

1.09 ENGINEER REVIEW: SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Review is only for conformance with design concept of project and compliance with intent of information given in Contract Documents.

B. Engineer shall stamp submittals indicating action taken.

C. Engineer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by Engineer, of any construction means, methods, techniques, sequences or procedures.

D. Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

1.10 SUBMITTAL TRANSMITTAL FORM

A. Submittals shall be submitted on Procore as PDF attachments. See Section 01 31 23, “Web Based Construction Management.”

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, or authorities having jurisdiction, are not limited by provisions of this Section.

1.03 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades-people of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.04 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.05 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.
14. Test Reports shall be signed by a Registered Civil Engineer licensed in the state of California.

D. Permits, Licenses, and Certificates: For Agency's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.06 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the state of California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

   1. Contractor responsibilities include the following:

      a. Provide test specimens representative of proposed products and construction.

      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.

e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.

2. Notify Engineer seven days in advance of dates and times when mockups will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

6. Demolish and remove mockups when directed, unless otherwise indicated.

1.07 PAYMENTS

A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the Agency. Initial tests and inspections are defined as the first tests and inspections as herein specified.

B. In the event a test of inspection indicates failure of a material or procedure to meet requirements of Contract Documents, costs for retesting and reinspection will be paid by the Agency and back-charged to the Contractor.

C. Additional tests and inspections not herein specified but requested by Engineer, will be paid for by Agency, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the Agency will pay all costs for initial testing as well as retesting and reinspection, and back-charge the Contractor.

D. Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid for by Agency and back-charged to the Contractor.

E. Costs for test or inspections which are required to correct deficiencies will be paid by the Agency and back-charged to the Contractor.

F. Cost of testing which is required solely for the convenience of Contractor in his scheduling and performance of work will be paid by the Agency and back-charged to the Contractor.

G. Overtime costs for testing and inspections performed outside the regular workday hours, including weekends and holidays, will be paid for by the Agency and back- charged to the Contractor. Such costs include overtime costs for the Engineer's Consultants.

H. Testing Laboratory will separate and identify on the invoices, the costs covering all testing and inspections which are to be back-charged to the Contractor as specified above.

1. Testing Laboratory will furnish to Engineer a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate will include number of tests, man-hours required for tests, field and plant inspections, travel time, and costs.

I. Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, the Contractor shall, on request, promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall be responsible for all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, additional cost of labor and material necessarily involved in the examination and replacement shall be reimbursed to the Contractor.

1.08 QUALITY CONTROL

A. Engineer Responsibilities: Where quality-control services are indicated as Engineer's responsibility, Engineer will engage a qualified testing agency to perform these services.

1. Engineer will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to the Engineer or Agency are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Agency or Engineer, unless agreed to in writing by Engineer.

2. Unless otherwise specified, Contractor shall notify Testing Laboratory a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. Extra laboratory expenses resulting from a failure to notify the Laboratory will be paid by the Agency and back- charged to the Contractor.

3. Contractor shall give sufficient advance notice to Testing Laboratory in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance notice cancellations or time extension will be paid for by the Agency and back-charged to the Contractor.

4. Contractor shall notify the Testing Agency a minimum of 3 working days in advance of the manufacture or material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Agency may arrange for the testing of such material at the source of supply.

   a. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from the Engineer that such testing and inspection will not be required, shall not be incorporated in the Project.

5. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

6. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section 01 33 00, "Submittals."

D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report of each test, inspection, and similar quality- control service to Engineer, with copy to Contractor and to authority having jurisdiction.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.
7. Reporting test failures: Immediately upon Testing Laboratory determination of a test failure, the Laboratory will telephone the results of test to Engineer. On the same day, Laboratory will send written test results to those named on the above distribution list.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality- assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.09 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Agency or Engineer will engage a qualified testing agency and special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Agency, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality- control service to Engineer with copy to Contractor and to authorities having jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which include a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspection of the corrected work.

1.10 ENGINEER'S INSPECTION

A. An Inspector employed by the Agency will be assigned to the work.

B. The Contractor shall notify the Inspector a minimum of two working days in advance of execution of all work that requires inspection.

C. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. Inspector shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to be fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to comply with the Contract requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Engineer.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   2. Comply with the Contract Document requirements for Division 01 Section 01 73 29, "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.03 TESTS AND INSPECTIONS

A. Perform tests and inspections for the following in conformance with the California Building Code, Title 24, Part 2, of the California Code of Regulations.

B. Excavations and Foundations (Chapter 18 and Table 1705.6)

1. Earth fill compaction – Section 1803.5
2. Excavation and fill for foundations – Section 1803.5
3. Placement, compaction and inspection of backfill per Sections 1803.5 and 1804 for fills supporting foundation.

C. Concrete (Chapter 19, Chapter 17)

1. Materials
   a. Portland Cement Tests - Section1903
   b. Concrete Aggregates – Section 1903.6
   c. Reinforcing Bars – Section 1913.2 and ASTM A370
   d. Waiver of Testing Rebar - Section 1913.2
   e. Batch Plant Inspection – Section 1705.3.2
   f. Waiver of Batch Plant Inspection and Tests - Section 1705.3
2. Concrete Quality
   a. Proportions of Concrete – Sections 1904, and 1905
   b. Strength Tests of Concrete – Section 1905.1
3. Concrete Inspection
   a. Job Site Inspection – Section 1705.3 and Table 1705.3
   b. Batch Plant or Weighmaster Inspection - Section 1705.3.2
   c. Reinforcing Bar Welding Inspection - Table 1705.3
4. Anchors in Concrete
   a. Drilled-In-Expansion Bolts or Epoxy-Type Anchors in Concrete - Table 1705.3.

D. Masonry (Chapter 21)

1. Materials
   a. Mortar & Grout Aggregates - Sections 2103.9 and 2103.13
2. Masonry Quality
   a. Mortar & Grout Tests – Section 2105.2.2.1.4
   b. Masonry Prism Tests – Sections 2105.2.2.2, and 2105.3
   c. Masonry Core Tests – Section 2105.5

d. Reinforcing Bar Tests (Chapter 19) – Section 1913.2

3. Masonry Inspection

a. Reinforcing Bar Welding Inspection - Table 1705.3

E. Structural Steel and Cold Formed Steel (Chapter 22)

1. Materials

a. Structural Steel and Cold Formed Steel – Sections 2202.1, 2205, 2210, 2211, and 2213.1

b. Material Identification – Section 1705.2, Table 1705.2.1, and Section 1705.12

2. Inspection and Tests of Structural Steel

a. Tests of Structural & Cold Formed Steel – Section 2213.1

b. Tests of High Strength Bolts, Nuts and Washers – Section 2213.1 and Table 1705.2.1

c. Tests of End Welded Stud – Section 2213.2

d. Shop Fabrication Inspection – Table 1705.2.1

e. Welding Inspection - Table 1705.2.1, AISC 360, and AISC 341

f. Nelson Stud Welding –Section 2213.2, AISC 360, and AISC 341

g. High Strength Bolt Inspection - Table 1705.2.1, and AISC 360

h. Non-Destructive Weld Testing – Section 1705.2.1, AISC 341 Appendix Q and W, as applicable

i. Test Unidentified Materials – ASTM A370-06

j. Verification of Reinforcing Steel Weldability – Table 1705.2.1

k. Inspect Welding of Reinforcing Steel – Table 1705.2.1

l. Roof Deck and Floor Deck Welding – AISC 360, SIAC 341, and CBC Table 1705.2.1.

F. Wood (Chapter 23)

1. Materials

a. Lumber and Plywood Grading - 2303

3.04 EARTHWORK

A. The Geotechnical Engineer of record or a Geotechnical Engineer selected by the Engineer will provide continuous inspection of fill and will field test fill and earth backfill as placed and compacted, and inspect excavations and subgrade before concrete is placed and provide periodic inspection of open excavations, embankments, and other cuts or vertical surfaces of earth. The Geotechnical Engineer will submit a report indicating that he has observed and tested fills and that in his opinion the fills were placed in accordance with the project specifications. Deliver report to Engineer and Authority having jurisdiction.

B. Contractor shall remove unsatisfactory material, reroll, adjust moisture, place new material, or in the case of excavations, provide proper protective measures, perform other operations

necessary, as directed by the Geotechnical Engineer whose decisions and directions will be considered final.

C. Geotechnical Engineer may require deepening of footings and so order such deepening in accordance with Division 31, Earthwork, Sections.

D. Soils Test and Inspection Procedure:

1. Allow sufficient time for testing, and evaluation of results before material to be incorporated into the project is needed. The Geotechnical Engineer shall be sole and final judge of suitability of all materials to be imported to the project.
2. Laboratory compaction tests to be used will be in accordance with ASTM D 1557.
3. Field density tests will be made in accordance with ASTM D 1556.
4. Number of tests will be determined by Geotechnical Engineer. Materials in question may not be used pending test results.
5. Excavation and embankment inspection procedure. Geotechnical Engineer will visually or otherwise examine such areas for bearing values, cleanliness and suitability.
6. Earthwork Test Reports: In order to avoid misinterpretations by the reviewing agencies, all retest results shall be reported on the same sheet, immediately following the previous failure test to which it is related. Retests shall be clearly noted as such.

3.05 TESTING OF CONCRETE

A. Concrete Mix Design:

1. The Agency will pay for the sampling of aggregate and preparation or review and approval of mix design one time for each strength and aggregate size specified. Testing cost for approval of additional mix designs will be paid by the Agency and back-charged to the Contractor. Continuous plant inspection and all tests of materials will be paid by the Agency, but the Contractor will be back-charged for all tests performed on material that do not meet specification requirements. Two copies of the mix designs shall be filed with the Engineer for record purposes only, not for review or approval.
2. Test concrete aggregates for mix design only.
3. Deliver samples of approved aggregate to Project for comparison with material delivered, if job mixed concrete is used.
4. Test suitability of aggregates in accordance with ASTM C88 if material is under suspicion and if so directed by Engineer or authority having jurisdiction.

B. If compressive result of test specimens fail to show compressive strength specified, remove and replace concrete or adequately strengthen in a manner acceptable to Engineer and authority having jurisdiction.

C. Certification shall be made that tests, whose results shall be shown, were made in accordance with provisions of Rules and Regulations of authority having jurisdiction.

D. Make all tests, take samples, and prepare samples in accordance with the latest standards adopted by American Society for Testing and Materials, referred to as ASTM.

E. Structural concrete mixed at certified approved concrete batch plants shall have quality control as follows:

1. Laboratory designed mixes using adequate cement factors.
2. Continuous batch plant inspection by qualified test technician.
3. Inspection shall comply with CBC requirements.

F. Structural concrete mixed at non-approved batch plants shall have quality control as follows:

1. Laboratory designed mixes using adequate cement factors.
2. Continuous batch plant inspection by qualified test technician.
3. Measure all water, including wash water, so total on truck does not exceed 95 percent maximum allowed in mix design.
4. Legible, certified weighmaster's certificates shall be provided the inspector for all structural and non-structural concrete.
5. At end of job, Contractor shall furnish affidavit to authority having jurisdiction, Engineer, certifying that all concrete furnished conforms to requirements of CCR Title 24 Part 2.

G. Waiver of Batch Plan Inspection: Batch plant inspection may be waived if the concrete plant complies fully with the requirements of UBC Standard 19-3, and has been certified to comply with the requirements of the National Ready Mixed concrete Association. The plant must be equipped with an automatic batcher in which the total batching cycle, except for the measuring and introduction of an admixture, is completed by activating a single starter device.

H. Agency's Inspector or Special Inspector will do the following:

1. Inspect placing of reinforcing steel and concrete at Project.
2. Obtain load ticket and identify mix before accepting each load. Keep daily record of concrete placement, identifying each truckload, time of receipt, and location of concrete in structure. Keep record until completion of Project and make available for inspection by authority having jurisdiction.
3. During progress of work, take code required number of test cylinders, but at least one set of cylinders for each 50 cubic yards or fractional part thereof for each class of concrete and at least one set from each day's pour. Test cylinders need not be made for concrete used in non-structural elements of the work.
4. One set of cylinders shall consist of 4 samples all taken from same batch, one to be tested at age of 7 days and two at 28 days.
5. Make and store cylinders according to ASTM C31.
6. Deliver cylinders to laboratory or store cylinders in a suitable protected environment for pick up by laboratory personnel.
7. Make slump test of wet concrete according to test for slump of Portland cement concrete, ASTM C 143, at least at the same frequency that the cylinders are taken.

3.06 REINFORCING STEEL

A. Tests:

1. Tests shall be performed before the delivery of steel to Project site. Steel not meeting specifications shall be rejected and shall not be shipped to the Project.

2. Testing procedure shall conform to ASTM A 615.

3. Sample at the place of distribution, before shipment: Make one tensile test and one bending test from samples out of 10 tons, or fraction thereof, of each size and kind of reinforcing steel, where taken from bundles as delivered from the mill and properly identified as to heat number. Mill analysis shall accompany report. Where identification number cannot be ascertained, or where random samples are taken, make one series of tests from each 2-1/2 tons, or fraction thereof, of each size and kind of reinforcing steel. Tests on unidentified reinforcing steel will be paid by the Agency and back-charged to the Contractor. Samples shall include not fewer than 2 pieces, each 18 inches long, or each size and kind of reinforcing steel. Inspection of welding of reinforcing steel shall be done by a specially qualified laboratory inspector and tested in accordance with AWS D1.4.

4. All steel shall have testing laboratory tags of approval attached to the steel bundle when shipped to the job site.

B. Inspector will inspect all reinforcement for concrete work for size, dimensions, locations and proper placement. Inspector shall be present during welding of all reinforcing steel.

3.07 MASONRY

A. Inspector/Special Inspector:

1. Masonry work shall be continuously inspected during laying and grouting by an Inspector specially approved for that purpose by the Authority having jurisdiction. The Inspector shall make test samples and perform such tests as are required.

2. The Inspector shall check the materials, details of construction and construction procedure. The Inspector shall furnish a verified report that of his own personal knowledge the work covered by the report has been performed and materials used and installed are in accordance with and in conformance to, the duly approved drawings and specifications.

3. No masonry shall be installed without the presence of the Special Inspector.

B. Masonry Tests:

1. Concrete Masonry Units: Test each type of unit for strength in accordance with CBC 1705.4; for absorption in accordance with ASTM C 140; for drying shrinkage in accordance with ASTM C 426.

2. Mortar and Grout Tests: At the beginning of all masonry work, at least one test sample of the mortar and grout shall be taken on 3 successive working days and at least at one week intervals thereafter. The samples shall be continuously stored in moist air until tested. They shall meet the minimum strength requirement given in CCR Title 24 Part 2, Sec. 2105.2.2.1.4. Additional samples shall be taken whenever any change in materials or Project conditions occur or whenever in the judgment of the Engineer or the authority having jurisdiction, such tests are necessary to determine the quality of the material. Test

specimens for mortar and grout shall be made as set forth in UBC Standard Nos. 21-16 and 21-18. In making the mortar test specimens the mortar shall be taken from the unit soon after spreading. After molding, the molds shall be carefully protected by a covering which shall be kept damp for at least 24 hours, after which the specimens shall be stored and tested as required for concrete cylinders. In making grout test specimens, an absorbent paper liner shall be used and the mold left in place until the specimen has hardened. The prisms shall be stored as required for concrete cylinders. They shall be tested in the vertical position.

3. Masonry Core Tests: Not less than 2 cores having a diameter 6” shall be taken from the Project. At least two cores shall be taken for each 5000 square feet of the greater of the masonry wall area or of floor area or fraction thereof. The Engineer in responsible charge of the project or the Inspector shall select the areas for sampling. Core samples shall not be soaked before testing. Materials and workmanship shall be such that, for all masonry when tested in compressions, cores shall show a strength of at least 1500 psi. When tested in shear the unit shear on the cross section of the core shall not be less than 100 pounds per square inch. Shear testing apparatus shall be of a design approved by the authority having jurisdiction. Visual examination of all cores shall be made to ascertain if the joints are filled. The Agency’s Inspectors or testing agency shall inspect the coring of the masonry walls and shall prepare a report of coring operations for general distribution. Such report shall include the total number of cores cut, the location, and the condition of all cores cut on the Project regardless of whether or not the core specimens failed during cutting operation. All cores shall be submitted to the laboratory for examination.

4. The Contractor, at his expense, shall patch all core holes with the specified grout. Use matching masonry face shells, when exposed to view.

3.08 STRUCTURAL STEEL

A. Mill certificates or affidavits and manufacturers’ certification shall be supplied to the Testing Laboratory and Inspector for verification of steel materials. Each piece shall have the heat number clearly marked. Testing Laboratory shall be notified at least 3 weeks in advance of fabrication and supplied with the reports so that is can make a shop inspection of the steel.

B. Tests of Steel Materials: If structural steel cannot be identified by heat or melt numbers, or if its source is questionable, not less than one tension test and one bend test will be made for each 5 tons or factional part thereof. Such testing shall be paid for by the Agency and back-charged to the Contractor. Structural steel identified by heat or melt numbers marked at the mill need not be tested, except testing is required of steel with Fy greater than 36 ksi.

C. General Inspection:

1. Testing Laboratory will visit the fabricator’s plant to verify that materials used check with the mill tests, affidavits of test reports, and that fabrication and welding procedures meet specifications.

2. Testing Laboratory will visually check fabricated steel against the contract drawings and reviewed shop drawings for compliance, and will make physical tests and measurements as required to meet the specifications. Single pass fillet welds may be visually checked.

3. Inspection of Shop Fabrication: Inspection of shop fabrication may be required for structural work if so designated on the Structural Tests and Inspections list or as indicated in Contract Documents. This inspection shall be made by a qualified inspector

approved by the Authority having jurisdiction. He shall furnish the Engineer and the authority having jurisdiction a report duly verified by him that the materials and workmanship conform to the approved plans and specifications.

4. Approved Fabricators: In addition to welding inspection, fabrication inspection will be required for all work done on the premises of a steel fabricator who does not hold a currently valid certificate CCR Title 24 Part 2, Sec. 1701.5, Approved Fabricators. The cost of the fabrication inspection will be paid by the Agency and back-charged to the Contractor.
5. Inspection of welding (regardless of whether fabricator has “Approved Fabricator Status”) shall be in accordance with the requirements of CCR title 24 Part 2, Table 1705.2.1. Weld inspection shall be continuous.
6. Erection Inspection: If so designated on the Structural Tests and Inspections list, Testing Laboratory will visually inspect field welded connections, perform such additional test and inspections of field work as are required by the Engineer and prepare test reports for the Engineer’s review.
7. Shop Fabrication Inspection Outside of Area: The added cost of shop fabrication inspection, and material testing outside the State of California or 150 mile radius of the Project site will be paid by the Agency and back-charged to the Contractor.
8. Ultrasonic Testing: All full penetration multi-pass groove welds shall be subject to ultrasonic testing.
    a. Defective welds shall be repaired and retested with ultrasonic equipment.
    b. Initially, all multi-pass groove field welds shall be tested at the rate of 100 percent of each individual welder. If rejectable defects occur in less than 5 percent of the welds tested, the frequency of testing may be reduced to 25 percent. If the rate of rejectable defects increases to 5 percent or more, 100 percent testing shall be reestablished until the rate is reduced to less than 5 percent. The percentage of rejects shall be calculated for each welder independently.
    c. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the expense of the Contractor, and if no root defect is visible, the weld shall be retested. If no defect is indicated on this retest, and no significant amount of the base and weld metal have been removed, no further repair or welding is necessary. If a defect is indicated, it shall be repaired at the Contractor’s expense.
    d. No steel shall be shipped without Testing Laboratory’s mark or tags of acceptance on each and every piece of steel.
9. The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.
10. Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor’s expense and at the direction of the Engineer until satisfactory performance is assured.
11. Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Engineer/Inspector/Inspection Laboratory.

D. Inspection and Tests for End Welded Studs:

1. Inspection of all the shop and field welding operations for the automatic end welded studs shall be made in accordance with CCR title 24 Part 2, Sec. 2204.1 and AISC 360 by a qualified welding inspector approved by the Authority having jurisdiction. The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved by the welding inspector.
2. At the beginning of each day's work, a minimum of 2 test stud welds shall be made with the equipment to be used on metal which is the same as the actual work piece. The test studs shall be subjected to a 90 degree bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

E. Corrections:

1. Correct deficiencies in structural steel work, which inspections and test report indicate to be not in compliance with the specified requirements.
2. Perform additional test required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the Agency and back-charged to the Contractor.

3.09 ASPHALTIC CONCRETE PAVING

A. Asphaltic concrete mix design proposed by the Contractor shall be submitted to the Engineer for review. Proposed mix may be tested for conformance with the specifications, including grading, asphalt content and stability.

B. At the Engineer's option, one sample of the mix shall be taken during each day's paving operation and tested for asphalt content and gradation.

C. At the engineer's option, continuous inspection of the paving operation shall be provided. Testing Laboratory shall check for proper thickness, proper mix temperatures, proper rolling procedures and general workmanship.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 42 13
ABBREVIATIONS

PART 1 - GENERAL

1.01 ABBREVIATIONS

A. The following abbreviations may be used in the contract documents:

AAMA	Architectural Aluminum Manufacturers' Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIA	American Institute of Architects
AIMA	Acoustical and Insulation Materials Association
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
	ASME American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPI	American Wood Preservers' Association
AWS	American Welding Society
BHMA	Builders Hardware Manufacturers' Association
BTU	British Thermal Unit
CAC	California Administrative Code
CBC	California Building Code
CEC	California Electric Code
CAL/OSHA	State of California Construction Safety Orders
CLFMI	Chain Link Fence Manufacturers' Institute
CMC	California Mechanical Code
CPC	California Plumbing Code
CRSI	Concrete Reinforcing Steel Institute
CALTRANS	State of California, Business and Transportation Agency, Department of Transportation, "Standard Specifications"
ESO	Electrical Safety Orders
FAA	Federal Aviation Administration
FGMA	Flat Glass Marketing Association
FM	Factory Mutual System, Factory Mutual Engineering Corporation
FS	Federal Specifications
IBC	International Building Code
MM	State of California, Business and Transportation Agency, Department of Transportation, "Materials Manual"
NEC	National Electrical Code
NEMA	National Electric Manufacturers' Association
NFPA	National Fire Protection Association
PS	United States Department of Commerce Product Standard
RIS	Redwood Inspection Service
SCE	Southern California Edison
SFM	State of California, Office of State Fire Marshal
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.

TCA	Tile Council of America
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USS	United States Standard
WCLIB	West Coast Lumber Inspection Bureau
WI	Woodwork Institute

B. Additional abbreviations used only on the drawings are listed and defined thereon.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 16
DEFINITIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Basic definitions are included here to define terminology used throughout specifications.
2. Definitions given are in addition to terms defined in the General Provisions.

1.02 COMPLETION

A. Completion: The meaning of terms such as "substantial completion", "beneficial occupancy", "field completion", or any such terminology through which the opinion is expressed that contract Work is complete, shall be defined in Ventura County Standard Specification (VCSS) Part 1- General Provisions Sections 6-8, Completion, Acceptance and Warranty. No item warranty period covered under this contract shall commence until such completion.

1.03 THE CONTRACT

A. The Contract is defined in the General Provisions.

B. The Contract Documents shall not be construed to create a contractual relationship of any kind 1) between the Consultant and Contractor, 2) between the Agency and a Subcontractor or Sub-subcontractor, or 3) between any persons or entities other than the Agency and Contractor.

1.04 FURNISH

A. Unless specifically limited in context, means furnishing to project site items specified, to include packaging, shipping, unloading, storing, protecting, unpacking, relocating and assembling if necessary.

1.05 INSTALL

A. Means incorporating in the Work including all necessary labor, materials, equipment and connections to perform work indicated and protection thereof after installation until Acceptance.

1.06 PROVIDE

A. Means furnish and install.

1.07 THE CONTRACTOR SHALL

A. In the interest of conciseness and an imperative writing style, any sentences, statements, and clauses used in the Specifications may exclude any form of the verb "shall" which is normally expressed in verb phrase with verbs such as "furnish", "install", "provide", "perform", "construct", "erect", "comply", "apply", and "submit". Any such sentences, statements, and

clauses are to be interpreted to include an applicable form of the phrase "the Contractor shall" and requirements described therein interpreted as mandatory elements of the Contract.

1.08 OBSERVATION

A. "Observe" or "Observation" means "to become generally familiar with the process and quality of the work and to determine if the work is proceeding in general accordance with the Contract Documents based on what is plainly visible at the construction site, without the removal of materials or other construction that is in place."

1.09 ACCEPTABLE PERFORMANCE

A. A component or system being able to meet specified design parameters under actual load.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:

1. Water service and distribution.
2. Temporary electric power and light.
3. Sanitary facilities, including drinking water and washing facilities.
4. Storm and sanitary sewer.

C. Support facilities include, but are not limited to, the following:

1. Field Office(s).
2. Temporary enclosures.
3. Waste disposal services.
4. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Temporary fire protection.
2. Enclosure fence for the site.

1.02 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.

B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

C. Installer: Work to be performed only by workers thoroughly skilled and specifically trained in the techniques of installing prefinished interior panels. Installer to be currently approved by Manufacturer of prefinished panels.

1.03 STANDARDS - COMPLY WITH THE FOLLOWING LISTED STANDARDS

A. NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations

B. ANSI A10 Series standards for "Safety Requirements for Construction and Demolition

C. NECA Electrical Design Library "Temporary Electrical Facilities

D. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

E. NFPA 10 "Standard for Portable Fire Extinguishers"

F. NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1.04 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Open-Mesh Fencing: Provide 0.120-inch- (3-mm-) thick, galvanized 2-inch (50-mm) chain link fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches (38 mm) I.D. for line posts and 2-1/2 inches (64 mm) I.D. for corner posts.

2.02 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel office activities and to accommodate project meeting specified in other Division 01 sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.

2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.

3. Drinking water and private toilet.
4. Coffee machine and supplies.
5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

C. Agency Inspector Office: Provide private field office for Agency's use in accordance with Section 8 of the VCSS. Private office may be a separate room within the Common-Use Field Office and shall be equipped with a plan table, mini-fridge, desk and chair.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.03 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

F. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

G. Heating Equipment: Unless Engineer authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
   1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
   2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
   3. Obtain temporary easements as necessary to bring temporary utilities to the site where the existing easements cannot be used for that purpose.
   4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Agency or Architect. Neither the Agency nor Architect will accept cost or use charges as a basis of claims for Change Orders.

B. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switchgear.
   1. Install electric power service underground, except where overhead service must be used.
   2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

3.03 SUPPORT FACILITIES INSTALLATION

A. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual

Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.

B. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

C. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Engineer.

B. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

C. Enclosure Fence: Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.

D. Provide open-mesh, chainlink fencing with posts set in a compacted mixture of gravel and earth or portable fencing, if appropriate, with sufficient hold down weight to prevent overturning.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

F. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

G. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.05 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Unless the Agency requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.

END OF SECTION

SECTION 01 57 23
STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Requirements for compliance with the Storm Water Pollution Prevention Plan (SWPPP) developed specifically for this project.

B. Related Sections: All sections of this Specification shall comply with the requirements of this Section.

C. The SWPPP requires compliance of all trades on the Project which use or manipulate materials of any nature that can potentially enter the natural storm-water drainage system.

D. Representative materials controlled by the SWPPP include the erosion of native soils and fill materials, leakage or spills from construction vehicles and machinery, stored fuels, concrete truck washout, chemical treatments, curing compounds, paints, plasters, paving materials, adhesives and sealants, trash and general construction debris, pesticides, fertilizers, and any other material which can be carried by running water or percolate into the earth.

1.02 REGULATORY BACKGROUND

A. After October 1, 1992, as required by the Federal Water Pollution Control Act (Clean Water Act) and regulations of the U.S. Environmental Protection Agency and of the State of California Water Resources Control Board, any construction activity of one acre or more must be regulated as an industrial activity in terms of storm water discharge from the site and must be covered by a National Pollutant Discharge Emission System (NPDES) permit. The Act further decrees fines of as much as $25,000 per day per violation.

B. The Water Resources Control Board has developed one NPDES permit for all regulated construction within California, in order to avoid each construction project having to obtain an individual Federal permit. For each construction project, property owners are required to file a Notice of Intent (NOI) with the State. This NOI notifies the State of the construction project, certifies that the Owner agrees to the provisions of the NPDES permit, and further certifies that that Owner has a Storm Water Pollution Prevention Plan and program in place. The NPDES permit, as implemented and enforced by the subsidiary Regional Water Quality Control Boards, requires all owners of land where construction activity occurs to:

1. Eliminate or reduce non-storm water discharges to storm sewer systems and other water of the nation.
2. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for each construction site.
3. Perform inspections of storm water pollution prevention measures.

C. The Agency is responsible for filing the Notice of Intent (NOI) for this project, developing the SWPPP, and monitoring its effectiveness.

D. The Contractor is required to become familiar with and comply with all provisions of the SWPPP during construction of this project.

1. Contractor shall have a Qualified SWPPP Practitioner (QSP) with a current certificate onsite as required to perform inspections, make recommendations, collect samples, and prepare reports for submission to the State in accordance with the requirements of the SWPPP and the 2022 Construction Stormwater General Permit.

1.03 SUBMITTALS

A. Product Data: Provide product catalog cut sheets of all temporary and permanent equipment and specialty items that must be provided to the jobsite in order to comply with SWPPP, including items necessary for storage, disposal, and recycling.

B. Shop Drawings: Provide four copies of the site plan(s) indicating construction staging, storage, portable restrooms, concrete washout, refuse areas, and vehicular routing and parking areas. Submittal may be colored pencil or marker on a print of the Erosion Control Plan(s). One copy of each will be distributed to Inspector, Engineer, and Contractor.

C. No construction activities or mobilization may commence until the perimeter site controls have been installed.

D. Provide plan(s) for approval one week minimum prior to start of site mobilization.

E. Update and submit revised plan(s) as required during construction as SWPPP facilities change due to construction phasing.

1.04 QUALITY ASSURANCE

A. Pre-Construction Conference: Contractor, all subcontractors, and all heavy equipment operators shall attend the pre-construction conference, at which time the contractor and his subcontractors shall ask any questions relating to the SWPPP and Erosion Control Plan(s). Attendance is mandatory.

B. Contractor’s Project Manager, Project Engineer, and Construction Superintendent shall become familiar with all aspects of the SWPPP and shall be responsible for ensuring compliance with the SWPPP for the project. Contractor shall enforce compliance with requirements of the SWPPP by all subcontractors.

C. Engineer will monitor effectiveness of Contractor’s personnel in ensuring compliance. Engineer will be responsible for maintaining a photographic record of all aspects of the execution of the SWPPP.

1.05 PERFORMANCE REQUIREMENTS

A. Contractor and all subcontractors shall abide by the minimum requirements of the Storm Water Pollution Prevention Plan in all respects. The contractor shall install any additional temporary Best Management Practices as needed based upon site conditions in order to maintain compliance with the State NPDES Permit and SWPPP.

B. Contractor and all subcontractor shall read and be thoroughly familiar with all requirements of the SWPPP as it pertains to the site and work to be done. Copies of the SWPPP are distributed as part of the Bid and Contract Documents, and are also available from the Engineer. Entering into this Contract signified Contractor has read the Storm Water Pollution Prevention Plan, fully understands all of its conditions and requirements, and consents to be bound by it. Contractor shall be responsible for the performance of the subcontractors.

C. Penalties: Contractor shall pay any fines and be liable for any other penalties that may be imposed by the regulatory agency for violations of the SWPPP during the course of the work. In cases of violations, Contractor shall be responsible to complete any and all corrective measures, at his own expenses, as may be directed by the regulatory agency.

D. If Engineer becomes aware of violations of the SWPPP, they will immediately inform the Contractor in writing. Contractor shall immediately cease the violation and shall restore the site, at his own expense, to the same condition it was in before the violation, to the satisfaction of the Engineer.

E. Should Contractor continue to violate requirements of the SWPPP, or refuse to comply, or refuse to repair results of a violation to the Engineer's satisfaction, for purposes of this Contract it shall be considered as any other violation of the Contract. Engineer will take necessary measures as set forth in the General Provisions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide all temporary and permanent storm water pollution prevention equipment, materials, and facilities as required by or as necessary to comply with the SWPPP.

B. Storm Water Pollution Prevention Plan Prepared by: Encompass Consulting Group.

PART 3 - EXECUTION

3.01 IMPLEMENTATION

A. All measures required in the SWPPP shall be executed as dictated by the SWPPP itself.

B. During construction, make changes as necessary for proper functioning of SWPPP measures.

C. At completion of work, Contractor shall remove all temporary SWPPP measure and dispose of any pollutants in a legal manner off-site, or as otherwise required by the SWPPP.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.03 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.04 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

B. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

C. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

   a. Form of Approval: As specified in Division 01 Section 01 33 00, "Submittals."

   b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section 01 33 00, "Submittals." Show compliance with requirements.

E. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

   1. Substitution Request Form: Use CSI Form 13.1A.

   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified material or product cannot be provided.

      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Agency and separate contractors, that will be necessary to accommodate proposed substitution.

      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

      e. Samples, where applicable or requested.

      f. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and Owners.

      g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

      h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

      i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

      j. Cost information, including a proposal of change, if any, in the Contract Sum.

k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Engineer will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.

b. Use product specified if Engineer cannot make a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

1.07 Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.

2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

4. Store cementitious products and materials on elevated platforms.

5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Agency's construction forces. Coordinate location with Engineer.

1.08 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Agency.
   2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Agency.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
   3. Refer to Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section 01 77 00, "Closeout Procedures."

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Engineer reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Engineer's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
2. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements. The product with “basis of design” designation in the list is the product upon which the design is based. If the Contractor selects a subsequent product in the list, Contractor must bear the cost of re-design and construction pursuant to VCSS Section 4-1.6.
3. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

C. Visual Matching Specification: Where Specifications require "match Engineer's sample," provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01, Section 01 25 00, "Substitutions," for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 PRODUCT SUBSTITUTIONS

A. Timing: Engineer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.

B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Agency a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Agency

must assume. Agency's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Agency, and similar considerations.

2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor' Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. List of similar installations for completed projects with project names and addresses and names and addresses of Architect’s and Owner’s if needed.
11. Samples, if requested.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 65 00
DELIVERY AND STORAGE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all labor, materials, tools, equipment and services for delivery, handling, and storage of materials and equipment as indicated in accordance with provisions of Contract Documents.
2. Completely coordinate with all other Contract work.

B. Comply with applicable codes.

C. Provide fire protection.

D. Contractor will arrange for delivery, unload, handle, and properly store all Owner- furnished, Contractor-installed items (OFCI).

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PRODUCT DELIVERY

A. By manufacturer's normal means unless otherwise required by Contract Documents.

B. In original labeled containers.

C. Where applicable, with UL labeling on packages.

D. Contractor responsible for acceptance at site.

E. Inspect items for damage upon delivery.

3.02 PRODUCT HANDLING AND STORAGE

A. Use methods to avoid damage to item or structure.

B. Protect weather fragile items from weather damage.

C. Handle and store bulk aggregates to avoid contamination.

D. Store to allow air circulation.

E. Store only in authorized areas on site.

F. Replace damaged items. Repair only with Engineer's prior written acceptance.

G. Protect installed items as required until acceptance of Work.

H. Uncrate, assemble, if required, and remove debris.

I. When off-site storage is authorized, perform re-handling to move items to site at no added cost.

3.03 CLEANUP

A. Remove excess materials from site.

END OF SECTION

SECTION 01 71 35
RESTORATION OF IMPROVEMENTS

PART 1 - GENERAL

1.01 STRUCTURES

A. The Contractor shall carefully cut and or remove such existing structures, utilities, and improvements as required to complete the work, including but not limited to: curbs, gutters, underground utilities, sidewalks and utility poles, as may be necessary for the performance of the work and shall rebuild the structures thus removed in as good a condition as found. The Contractor shall also repair existing structures or improvements, which may be damaged as a result of the work under this contract.

1.02 ROADS AND STREETS

A. Unless otherwise specified, roads and streets in which the surface is removed, broken, or damaged, or in which the ground has caved or settled during the work under this contract, shall be resurfaced and brought to the original grade and section by the Contractor. Roadways used by the Contractor shall be cleaned and repaired to local County and State Standards. Before resurfacing material is placed, edges of pavements shall be trimmed back far enough to provide clean solid, saw-cut vertical faces, and shall be free of loose material.

1.03 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition or better.

B. Existing guard posts, barricades, and fences shall be protected and replaced if damaged.

C. Special attention shall be given to avoid trees, bushes and shrubs not indicated for removal.

1.04 PROTECTION OF EXISTING INSTALLATIONS

A. The Contractor shall immediately correct or replace existing equipment, controls or systems that are damaged as a result of his operations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 73 00
EXECUTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Agency-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Land Surveyor.

B. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.04 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

3.01 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.

b. List of detrimental conditions, including substrates.

c. List of unacceptable installation tolerances.

d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated.
3. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.04 FIELD ENGINEERING

A. Identification: Engineer will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.05 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level, (unless noted otherwise).
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. .

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.

2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.06 OWNER FURNISHED PRODUCTS

A. Owner Furnished Owner Installed (OFOI)

1. Site Access – Provide access and support pursuant to VCSS Section 4-1.1.1 (not including installation, which shall be performed by Agency).

2. Coordination – Provide cooperation and coordination in accordance with VCSS Section 7-7.

B. Owner Furnished Contractor Installed (OFCI)

1. Site Access – Provide access and support pursuant to VCSS Section 4-1.1.1.

2. Coordination – Provide cooperation and coordination in accordance with VCSS Section 7-7.

3.07 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris. Dispose of waste to a legal disposal facility.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted. Comply with waste disposal requirements in Division 01, Section 01 74 19, “Construction Waste Management and Disposal.”

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.08 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01, Section 01 40 00, "Quality Requirements."

3.09 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01, Section 01 73 29, "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

2. Defective construction includes the placement of concrete slabs which do not slope as indicated on documents.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken surfaces.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes procedural requirements for cutting and patching of pavement for utility tie-ins through existing street improvements.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, submit to Engineer for review materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

B. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. Concrete and Asphalt Pavement: Cut using a cutting machine, such as an abrasive saw where cutting passes through concrete sidewalk paving, remove concrete from joint to joint.

2. Excavating and Backfilling: Comply with requirements in applicable Division 02 Sections where required by cutting and patching operations.

3. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where patches at asphalt occur, overlay asphalt a minimum of one foot past the trench opening. Slurry coat the trench area to match existing adjacent pavement.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 01 74 01
CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all labor, materials, tools, equipment and services for all cleaning as indicated in accordance with provisions of Contract Documents.
2. Completely coordinate with all other Contract work.

1.02 FIRE PROTECTION

A. Store volatile waste in covered metal containers.

B. Remove from premises daily.

1.03 POLLUTION CONTROL

A. Conduct cleanup and disposal operations to comply with local ordinances and anti-pollution laws.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS

A. Use materials recommended by manufacturers of surfaces to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 GENERAL

A. Clean all items installed under this Contract.

1. Leave free of stains, damage, or defects prior to final acceptance.
2. Include cleaning and sweeping all finished wall surfaces, floors, doors, hardware, window shutters, lighting fixtures and items of equipment.
3. Replace damaged or defaced items not acceptable to Engineer, to his satisfaction at no additional expense to Agency.

3.02 DURING CONSTRUCTION

A. Clean up all waste materials, rubbish, and debris from site and access and dispose of off-site.

B. Repair, patch, and touch-up marred surfaces to match adjacent finishes damaged by his own operations.

C. Schedule cleaning operations so that contaminants resulting from cleaning do not fall on wet painted surfaces.

D. Leave the Work "broom clean."

3.03 FINAL CLEANING

A. Use experienced workmen or professional cleaners for final cleaning.

B. At completion of construction, just prior to acceptance or occupancy, perform final cleaning.

C. Remove dirt, stains, labels, protective films and foreign materials.

D. Repair and touch-up marred areas.

E. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from interior and exterior surfaces of fixtures, hardware, and equipment.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall meet the County of Ventura Construction and Demolition Waste Management Recycling Ordinance 4773.

B. Contractor shall submit a Construction and Demolition Waste Management Debris Recycling Plan prior to the start of construction per the requirements of the ordinance section 4773-5.

1.02 CONTRACTOR RESPONSIBILITY

A. The Contractor shall be responsible for tracking all debris leaving the site.

B. The Contractor is responsible for preparing a Construction and Demolition Recycling Compliance report at the completion of construction. All costs associated with the tracking of this recycling effort will be evenly distributed in the project overheads and spread across the duration of the contract; a separate cost line item will not be allowed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 UTILIZATION

A. Additional information and requirements can be found at the following website: https://www.ventura.org/environment/waste-and-recycling.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.03 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.04 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.06 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Agency unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.
   a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Agency's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Engineer of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Engineer. Advise Agency's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Agency's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Engineer of changeover in heat and other utilities.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements, including touchup painting.
9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection

and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.07 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Paragraph 1.9
2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.08 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Engineer.

d. Name of Contractor.

e. Page number.

4. Submit list of incomplete items in one of the following formats:

a. MS Excel electronic file. Engineer will return annotated file.

b. PDF electronic file. Engineer will return annotated file.

c. Three paper copies. Engineer will return two copies.

1.09 FINAL PAYMENT REQUIREMENTS

A. Submittals prior to final payment: Provide the following prior to final payment.

1. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, waste disposal receipts, and similar final record information.

2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.

a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.

4. Submit test/adjust/balance records.

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Agency's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Agency during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

g. Sweep concrete floors broom clean in unoccupied spaces.

h. Clean transparent materialsin doors and windows. Remove glazing compounds and other noticeable, vision- obscuring materials.

i. Remove labels that are not permanent.

j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

l. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.

m. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01, Section 01 74 19, "Construction Waste Management and Disposal."

3.02 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.

1.03 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.04 SUBMITTALS

A. Initial Submittal: Submit two draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Engineer will return one copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Engineer will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Engineer's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Engineer's comments.

1.05 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.02 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Agency.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Engineer.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross- referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.

5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.03 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.

2. Emergency instructions.

3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Agency's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.04 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.05 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.01 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Agency's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Agency's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01, Section 01 78 39, "Project Record Documents."

G. Comply with Division 01, Section 01 77 00, "Closeout Procedures," for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 01 78 36
WARRANTIES AND GUARANTEES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all labor, materials, tools, equipment and services for all warranties and guarantees as indicated in accordance with provisions of Contract Documents.
2. Completely coordinate with all other Contract work.

B. In addition to one year General Guarantee, provide specified extended written warranties/ guarantees for products and installations which exceed basic one year General Guarantee required by General Provisions.

C. Provide manufacturer's warranties/guarantees for products.

1. Where manufacturer's or other sub-tier entity's standard warranties/guarantees expire before expiration date required by Contract Documents, obtain and pay for extensions, as part of Contract Price.

PART 2 - PRODUCTS

2.01 WARRANTIES/GUARANTEES

A. Assemble warranties/guarantees forms in 3-ring white binders, each with 3-inch spine, and clear sleeve on cover and spine. Completely index each binder with card stock indexing system identified by appropriate Construction Specifications Institute "Master Format" specification section numbering system, with each warranty/guarantee clearly labeled.

B. Identify each warranty/guarantee in manner consistent with names and identification numbers used in Contract Documents.

C. Neatly type or draft all warranties/guarantees not furnished in printed form.

D. Furnish warranty documents, signed by indicated individuals and entities.

PART 3 - EXECUTION

3.01 DELIVERY

A. Deliver all items to Agency for review within 30 calendar days after completion of the Work.

B. Deliver all final and corrected items to Agency prior to acceptance of the Work.

END OF SECTION

This Page Left Blank Intentionally

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

This Section Includes:

A. Administrative and procedural requirements for project record documents, including:

1. Record drawings.
2. Record specifications.
3. Record submittals.

1.02 DEFINITIONS

A. Documents required for construction: A complete set of all documents required by the Contract Documents, including but not limited to:

1. Contract drawings.
2. Project manual/specifications.
3. Addenda.
4. Shop drawings.
5. Product data.
6. Project data.
7. Change orders.
8. Modifications.
9. Field test records.
10. Warranties.
11. Samples and mock-ups.
12. Deferred Approval Shop Drawings.

B. Field Documents: Complete set of all documents required for construction (defined above).

1. To be used for construction of project.

C. Project Record Documents: Complete separate set of all documents required for construction (defined above) except samples and mock-ups.

1. To be used only for recording periodic changes to Contract Documents.
2. Do not use these documents for construction of project. Maintain Project Record Documents in a neat, clean condition.

1.03 SUBMITTALS

A. Record Drawings: Comply with the following.

1. Number of Copies: Submit (1) one set of marked-up record prints.
2. Submit PDF electronic files.

B. Record Specifications: Submit annotated PDF electronic files of the project's specifications, including addenda and contract modifications.

C. Record Submittals: Submit PDF electronic files of the project's final approved submittals.

PART 2 - PRODUCTS

2.01 RECORD DRAWINGS

A. Record Prints: Maintain (1) one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as RFIs and modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from what is originally shown. Require the individual or entity who obtained record data, whether the individual or entity is an installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that are difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as practicable after obtaining it.
    d. Record and check markups before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include the following.

    a. Dimensional changes to the Drawings.
    b. Revisions to details shown on the Drawings.
    c. Depths of foundations below first floor.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Modifications made as part of responses to RFIs.
    k. Changes made by Change Order or Construction Change Directive.
    l. Changes made following the Architect's written orders.
    m. Details not on the original Contract Drawings.
    n. Field records for variable and concealed conditions.
    o. Record information on the work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information for producing marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the work at same location.
5. Mark important additional information that was either shown schematically or omitted from the original Drawings.
6. Note RFI numbers, Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Promptly before inspection for the Certificate of Substantial Completion, review marked-up record prints with the Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows.

1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to the Architect for resolution.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: Include the following.

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of the Architect.
e. Name of the Contractor.

2.02 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of the project.

B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction.

1. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss.
2. Provide access to project record documents for the AGENCY's reference during normal working hours.

END OF SECTION

SECTION 01 78 43
SPARE PARTS AND MAINTENANCE MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all labor, materials, tools, equipment and services for all spare parts and maintenance materials as indicated in accordance with provisions of Contract Documents.

1.02 SUBMITTALS

A. Requirements for submittal:

1. Provide transmittal letter to Engineer containing: Date, project title, Contractor's name and address, Title, description and quantity submitted.
2. Provide products, spare parts, maintenance and extra materials in quantities specified in the individual specification sections.

PART 2 - PRODUCTS

2.01 SPARE PARTS AND TOOLS

A. Contractor shall package in clearly identified boxes all spare parts and tools required in the individual specifications sections.

1. Indicate manufacturer's name, part name and stock number, the piece of equipment by equipment number that each part or tool is for, and the name, address and phone number of closest supplier of the spare part or tool.

2.02 MAINTENANCE MATERIALS

A. Contractor shall package in clearly identified boxes in accordance with manufacturer's recommendations, all maintenance materials required in the individual specifications sections.

1. Indicate material trade name and stock number, which item material is to be used with, and the name, address and phone number of closest supplier.

2.03 EXTRA MATERIALS

A. Contractor shall package in clearly identified containers, or install where indicated. In accordance with manufacturer's recommendations, all extra materials required to be provided in the individual specification sections.

1. Indicate trade name, stock number, size, and color, where product is to be used, and the name, address and phone number of closest supplier.

PART 3 - EXECUTION

3.01 DELIVERY

A. Deliver spare parts and materials at least 30 calendar days prior to final Acceptance.

B. Deliver to a location at the project site and place in a location as directed by Engineer.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 SUMMARY

This Section Includes:

A. Administrative and procedural requirements for instructing the Owner's personnel, including

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the instruction schedule with the Owner's operations. Adjust schedule as necessary to minimize disrupting the Owner's operations and to ensure availability of the Owner's personnel.
2. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
3. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the AGENCY.

B. Pre-instruction Conference: Conduct conference at the project site in conformance with requirements in Section 01 31 00. Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize the instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.03 SUBMITTALS

A. Informational Submittals:

1. Instruction Program: Submit an outline of the instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time; and the instructors' names for each training module. Include learning objectives and outlines for each training module.

a. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recordings of live instructional modules.

2. Attendance Record: For each training module, submit a list of participants and the length of instruction time.
3. Evaluations: For each participant and for each training module, submit results and documentation of required performance-based tests.

B. Closeout Submittals:

1. Demonstration and Training Video Recordings: Submit (2) two copies within (7) seven calendar days of end of each training module.

a. Identification: On each copy, provide an applied label with the following information.

1) The name of the project.
2) The name and address of the videographer.
3) The name of the Architect.
4) The name of the Construction Manager.
5) The name of the Contractor.
6) The date of the video recording.

2. Transcript: Provide prepared and bound transcripts in a format matching operation and maintenance manuals.

a. Mark appropriate identification on the front and spine of each binder.
b. Include a cover sheet with the same label information as the corresponding video recording.
c. On each page, include the name of the project and the date of the video recording.

3. At completion of training, submit complete training manuals for the AGENCY's use in PDF electronic file format.

1.04 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced in photographing demonstration and training events or similar to those required.

PART 2 - PRODUCTS

2.01 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that each participant is expected to master. For each module, include instruction for the following, as applicable to the system, equipment, or component.

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if the Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project record documents.
    e. Identification systems.
    f. Warranties and bonds.
    g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.
    h. Normal shutdown instructions.
    i. Operating procedures for emergencies.

j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:

   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.
   h. Schedules for routine preventative maintenance.

8. Repairs: Include the following:

   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.01 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23.

B. Set up instructional equipment at the instruction location.

C. Do not begin instruction until component, assembly or system has been tested as specified and is in correct operating condition.

3.02 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to

1. prepare instruction program and training modules;
2. coordinate instructors; and
3. coordinate between the Contractor and the AGENCY for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct the AGENCY's personnel to adjust, operate, and maintain systems, subsystems, and equipment that is not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with the AGENCY with at least (7) seven calendar days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At the conclusion of each training module, assess and document each participant's mastery of module by use of a performance-based test.

F. Cleanup: Collect used and leftover educational materials and remove from the project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.03 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At the beginning of each training module, record each chart containing the learning objective and lesson outline.

B. Video: Provide at least 640 x 480 video resolution converted to format file type acceptable to the Owner, on electronic media.

1. Electronic Media: Read-only format compact disc, or equivalent acceptable to the AGENCY, with commercial-grade graphic label.
2. File Hierarchy: Organize folder structure and file locations according to the project manual table of contents. Provide a complete screen-based menu.
3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in the project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training on a portable storage device that describes the following for each the Contractor involved on the project, arranged according to the project table of contents:

a. The name of the Contractor and Installer.
b. Business address.

c. Business phone number.
d. Point of contact.
e. E-mail address.

C. Recording: Mount the camera on a tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training sessions in segments not more than 15 minutes.

a. Produce segments to present a single significant piece of equipment per segment.
b. Organize segments with multiple pieces of equipment to follow order of the Project Manual table of contents.
c. Where training sessions on a particular piece of equipment exceed 15 minutes, stop filming and pause the training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible before recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Pre-produced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

H. Do not leave site until instruction report is signed by AGENCY.

END OF SECTION

SECTION 01 80 00
QUALITY ASSURANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Furnish all labor, materials, tools, equipment and services necessary to meet requirements delineated.
2. Completely coordinate with other Contract work.
3. Perform additional work specified under respective Specification sections.

1.02 SUBMITTALS

A. Qualifications of Designers, Manufacturers, Fabricators, and Installers:

1. Where individual specification sections require specific qualifications for manufacturer, fabricators, applicators or installer; submit documentation substantiating the required qualifications of the organization or personnel proposed for the Work.
2. Submit qualification documentation at least 30 calendar days prior to start of Work for the specification section which requires the qualification.

B. Demonstration and Training

1. Furnish preliminary instruction forms and instruction itinerary.
2. Submit outline of instruction materials and proposed itinerary at least 30 calendar days prior to start of demonstration and training.
3. Demonstration and training must be complete prior to release of withheld contract funds (see General Provisions).

C. Commissioning

1. Provide acceptance certification from manufacturer representative, suppliers and subcontractors for applicable specification sections.

PART 2 - PRODUCTS

2.01 DEFINITIONS AND PROCEDURES

A. Manufacturer, Fabricator, and Installer Qualifications:

1. "Years" refers to the number of years of experience in the type of work specified in the individual Specification sections listed in the attached report. If the installer, fabricator, or manufacturer is a corporation, the corporation must have been in force under its current name for at least the number of years listed. If elements of Contractor's installation are subcontracted, such subcontracted work shall be by Subcontractors with the necessary specialty contractor license(s). The experience requirements apply to the individuals in Contractor's organization performing the installation and those who are responsible for the design, fabrication and manufacturing processes.

B. Warranties:

1. No warranty documents or alternate warranty submittals prepared by the manufacturer or supplier or sub-contractor to the Contractor will be accepted by the Agency. Only the requirements of the Contract's General Guarantee, set out in the Ventura County Standard Specification Part 1 - General Provisions Sections 6-8, are acceptable, as amended (where applicable) by Section 01 78 23, “Operation and Maintenance Data.”

2. The warranty documents are to be signed by all individuals in the Contractor's procurement structure, including all levels from manufacturer through supplier through sub-contractor and Contractor.

C. Demonstrations and Training:

1. Demonstration, training, and commissioning may be performed by Contractor contemporaneously, subject to Engineer's express pre- approval.

D. Extended Service:

1. "Extended service" refers to the Contractor providing all labor, material, and equipment necessary to maintain, service and repair the equipment and materials under Specifications sections concerned for the designated period commencing from the date of Acceptance of the Work.

2. Contractor shall perform all scheduled maintenance and service work, including changing all filters and following all lubrication schedules and performing any necessary repairs to keep the equipment and/or materials in proper working order for the duration of the period noted.

E. Commissioning:

1. Specifications sections that are designated as requiring commissioning obligate Contractor to cause an individual from the manufacturer's or fabricator's organization to come to the project site and start up the equipment concerned to verify that it has been installed correctly and that it is running properly.

2. Contractor shall cause subject manufacturer's representative to accept, in writing, (as well as all other levels of the Contractor's procurement organization from manufacturer through supplier through sub-contractor and contractor) that the equipment, materials, and systems have been properly installed and are functioning properly, and that a qualified manufacturer's representative has commissioned the equipment.

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE

A. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

B. Satisfy additional requirements as described in individual specification sections.

END OF SECTION

SECTION 024119
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including Ventura County Standard Specifications (VCSS), general and supplementary conditions and other Division 01 specification sections, apply to this section.

1.02 SUMMARY

1. Section Includes: Demolition and removal of selected electrical service panels at multiple buildings.
2. Protection of existing building elements at the location of demolition.
3. Repair and patch finish materials adjacent to panel replacement.

B. Related Requirements:

1. Section 011000, "Summary of Work," for restrictions on the use of the premises and Owner-occupancy requirements
2. Section 017300, "Execution," for cutting and patching procedures.
3. Division 26, “Electrical” for electrical demolition work.

1.03 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.05 PRE-INSTALLATION MEETINGS

A. Pre-Demolition Conference: Conduct conference at project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review schedule for depowering existing buildings to be modified.

3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates and subgrade conduits exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.06 INFORMATIONAL SUBMITTALS

A. Pre-Demolition Photographs or Video: Submit before Work begins.

1.07 CLOSEOUT SUBMITTALS

A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes if necessary.

1.08 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Notify County Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Storage or sale of removed items or materials on-site is not permitted.

D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.09 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. No Known warranties.

PART 2 – PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing Environmental Protection Agency (EPA) notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with American National Standards Institute/American Society of Safety Engineers (ANSI/ASSE) A10.6 and National Fire Protection Association (NFPA) 241.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped, if necessary, before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Engineer.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and electrical systems serving areas to be selectively demolished.

1. If services/systems are required to be removed, relocated, or abandoned coordinate utility shut off timing and duration with Engineer.

3.03 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Section 01 50 00, "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

3. Cover and protect furniture, furnishings, and equipment that have not been removed.

4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00, "Temporary Facilities and Controls."

3.04 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.

4. Maintain adequate ventilation when using cutting torches.

5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

6. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19, "Construction Waste Management and Disposal."

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Comply with requirements specified in Section 01 74 19, "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.06 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.07 SELECTIVE DEMOLITION SCHEDULE

A. Existing Construction to Be Removed: Refer to electrical plans for extent of work.

B. Existing Items to Remain: Protect Existing Work to Remain and areas of No Work.

END OF SECTION

SECTION 03 00 00
CONCRETE WORK - GENERAL

PART 1 - GENERAL

1.01 APPLICABLE SECTION

A. Submit Shop Drawings, Product Data, Mill Certificates and Samples required by other portions of Contract Documents.

B. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing, and installing concrete work as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:
1. All formwork, including any special forms necessary to produce architectural details and/or to accommodate the work of others and removal of forms.
2. All concrete reinforcement, placement, bending and forming thereof.
3. All concrete and cement finishing; all surface treatment and curing, including non-slip finishes and color work.
4. Installation of all reglets, bolts, anchors, cans, sleeves, column anchor bolts, etc., whether furnished under this section or by others (except cans and sleeves required under the Electrical and Mechanical Divisions).
5. The furnishing of all items required to be or shown on the drawings as embedded in concrete, which are not specifically required under other sections.
6. Setting headers and screeds. Curing and protecting concrete.
7. Grouting of column bases.
8. Inserts, sleeves, cans, etc. required under the Plumbing, Mechanical, and Electrical Divisions 22, 23, and 26 respectively.
9. Routing out cracks and sawcutting control joints as required by waterproofing.

PART 2 - PRODUCTS - see other portions of specifications.

PART 3 - EXECUTION

3.01 DEFECTIVE WORK

A. General: Work considered to be defective may be ordered by the Architect to be replaced in which case the Contractor shall remove the defective work at his expense. Work considered to be defective shall include, but not be limited to, the following:

Reinforcing:
1. Kinks and bends therein which are not scheduled or indicated on the

drawings; reinforcing improperly placed, or previously heated, or excessively cold worked reinforcing.

Concrete:

1. Concrete in which defective or inadequate reinforcing steel has been placed.
2. Concrete incorrectly formed or not conforming to details and dimensions on the drawings or with the intent of these documents, or concrete the surfaces of which are out of plumb or level.
3. Concrete below specified strength.
4. Concrete not meeting the maximum allowable drying shrinkage requirements.
5. Concrete containing wood, cloth, or other foreign matter, rock pockets, voids, honeycombs, cracks or cold joints not scheduled or indicated on the drawings.

3.02 CORRECTION OF DEFECTIVE WORK

A. The Contractor shall, at his expense, make all such corrections and alleviation measures as directed by the Engineer.

B. Concrete work containing rock pockets, voids, honeycombs, cracks or cold joints not scheduled or indicated on the drawings, shall be chipped out until all unconsolidated material is removed.

C. Secure approval of chipped-out areas before patching. Patch per ACI 301.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMWORK

PART 1 - GENERAL

1.01 APPLICABLE SECTION

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing, installing, and removing form work as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:
1. Design of Formwork, Shoring and Falsework
2. Construction and removal of all forms.
3. Installation of items furnished under other sections but indicated therein to be installed under this section.
4. Accuracy of installation is responsibility of section furnishing item.

C. Related Work Specified Elsewhere:
1. Structure Excavation and Backfill; Section 02 22 00
2. Concrete Reinforcement; Section 03 20 00
3. Cast-in-Place concrete; Section 03 30 00
4. Shotcrete; Section 03 36 00

1.03 REFERENCE STANDARDS

A. The following is a list of Reference Standards referred to in this portion of the Specification:
1. W.C.L.I.B.; "Standard Grading and Dressing Rules No. 17"
2. American Concrete Institute Standard ACI 347 "Guide to Formwork for Concrete" and ACI 318 "Building Code Requirements for Reinforced Concrete", Latest edition.
3. California Building Code, current governing edition.
4. American Plywood Association, "U.S. Product Standard PS1-09"

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with all Federal, State and Local Codes and Safety Regulations. In addition, comply with the provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.
1. California Building Code, current governing edition.
2. ACI-347 "Guide to Formwork for Concrete", current edition.

3. State of California Department of Transportation Standard Specifications, current governing edition.

B. Qualifications: Design and detailing of formwork shall be by a person experienced in the design of formwork and familiar with the principles of engineering mechanics. Design and detailing of formwork over 12' in height, shoring, and falsework shall be prepared by a registered Civil/Structural Engineer of the State of California.

1.05 SUBMITTALS

A. General Requirements
1. Submittals shall be made to Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
2. Construction, and fabrication or ordering of materials for formwork shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work as required in these specifications.

B. Shop Drawings:
1. Formwork: Submit shop drawings for fabrication and erection of forms for portions of the concrete surfaces, as indicated below:
a. Formwork over 12' in height
b. Show general construction of forms including size of members, bracing, jointing, special form joint or reveals, location and pattern of form tie placement, and other items that affect the structural integrity of formwork or exposed concrete visually. Formwork over 12' in height shall be designed, detailed, and stamped by a registered Civil/Structural Engineer of the State of California.
2. Falsework and Shoring Shop Drawings: The Contractor shall submit shop drawings and calculations of any required falsework or shoring. Shop drawings and calculations shall be prepared, stamped, and signed by a registered Civil/Structural Engineer of the State of California. Shop drawings and calculations shall be prepared in accordance with the requirements of the State of California Department of Transportation Standard Specifications, Section 51-1.06A, “Falsework Design and Drawings.”

1.06 SEQUENCING AND SCHEDULING

A. The Contractor shall obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete.

PART 2 - PRODUCTS

2.01 FORMS

A. Plywood shall be 5/8" Exterior "B.B." Plyform Class I. Each sheet shall be grade stamped with an APA stamp.

B. Sheathing shall be Douglas Fir "Standard" grade per Grading Rules #17, W.C.L.I.B., Paragraph 118-c. 1x6 shiplap S4S.

C. Hardboard shall be 1/8" tempered.

2.02 SPREADERS

A. Spreaders shall be of metal type that will give positive tying and accurate spreading.

2.03 STUDS, WALES AND SHORING

A. Studs, wales, and shoring shall be Douglas Fir "Construction" grade per Grading Rules #17, W.C.L.I.B. Paragraph 122-b or "No. 2" grade, Paragraph 123-c.

2.04 MANUFACTURED ASSEMBLIES

A. Manufactured assemblies may be used as forms provided that maximum loadings and deflections used on jacks, brackets, columns, joists and other manufacturer devices does not exceed the manufacturer's recommendations.

PART 3 - EXECUTION

3.01 GENERAL

A. Furnish and install all forms, clamps, accessories, etc., required for all poured-in-place concrete below grade and unexposed portions above grade. Where sides of excavations have been cut neat and accurate to size for pouring of concrete directly against the excavation, forms for footings will not be required. Where the face of excavation is more than 3 inches wider than the specified width formwork shall be used.

B. Furnish and install all forms, clamps, sealer, accessories, etc., required for all poured-in-place concrete above grade that will be exposed.

C. Provide crack control and keyed cold joint forms.

3.02 DESIGN AND CONSTRUCTION OF FORMWORK

A. Forms shall be constructed of sound material, of the correct shape and dimension, mortar tight, and of sufficient strength, and so braced and tied together that the movement of equipment, men, materials, or placing and vibrating the concrete will not throw them out of line or position. Construct so that they may be easily removed without damage to the concrete. Any movement or bellying of forms during construction shall be considered just cause for their removal and, in addition, the concrete work so affected. All formed joints on concrete surfaces to be exposed shall be taped and shall align so joints will not be apparent on the concrete surfaces. All dirt, chips, sawdust and other foreign matter shall be completely removed before concrete is placed.

B. Before concrete is placed in forms, all inside surfaces of the forms shall be thoroughly coated with an approved form sealer. The form sealer shall be of high penetrating quality leaving no film on the surface of the forms that can be absorbed by the concrete.

C. Form supports shall be placed on adequate foundations and have sufficient strength and bracing to prevent settlement or distortion from the weight of the concrete or other cause. Support shall rest on double wedged shim, or other approved means, so that the forms will be maintained at the proper grade.

D. Form Ties: Bolts, rods, or other approved devices shall be used for internal form ties and shall be of sufficient quantities to prevent spreading of the forms. The ties shall be placed at least 1 inch away from the finished surface of the concrete. The use of ties consisting of twisted wire loop will not be permitted. Bolts and rods that are to be completely withdrawn shall be coated with grease.

E. Form Stakes: Where used, form stakes shall be smooth metal, coated as required to allow for removal from hardened concrete. Wood form stakes are not permitted. Fill voids left by form stake removal with non-shrink grout.

3.03 PLUMBING, LEVELING, REPAIRING AND MAINTAINING FORMS

A. Before concrete is placed in any form, the horizontal and vertical position of the form shall be carefully verified and all inaccuracies corrected. All wedging and bracing shall be completed in advance of placing of concrete.

B. Boards or other form materials that have been damaged or checked or warped prior to placing of concrete shall be removed from the forms and replaced with approved materials or otherwise corrected to the satisfaction of the engineer.

C. Assign a sufficient number of men to keep watch on and maintain the forms during placing of concrete. Satisfactorily remedy any displacement or looseness of forms or reinforcement before placing of concrete. No form shall be moved or altered except as may be specifically directed.

D. Wall forms shall be set to account for movement of post-tensioned slabs that will occur due to long term shortening of slabs. The Engineer will establish the offsets at each level after the Contractor has submitted a detailed pour schedule.

3.04 FIELD QUALITY CONTROL

A. The Contractor shall hire the Engineer responsible for the design of formwork over 12' in height, falsework or shoring to inspect the work as detailed on the reviewed shop drawings.

B. The Engineer responsible for design of formwork over 12' in height, falsework or shoring shall write a letter to the Architect certifying construction is in accordance with the reviewed shop drawings and meets his/her approval prior to the Contractor placing any concrete.

C. The Contractor shall verify accuracy of items, furnished under other sections of these specifications and installed under this section.

3.05 REMOVAL OF FORMWORK, FALSEWORK AND SHORING

A. Formwork, falsework, and shoring shall not be removed until the concrete members have acquired sufficient strength to support their weight and the loads to be superimposed thereon safely.

B. The contractor is solely responsible for the design, installation, and removal of temporary bracing and construction supports required to complete the project. No portion of the structure shall be considered to be self supporting until the entire vertical and lateral load resisting system is in place.

C. Vertical forms shall remain on columns, walls, pilasters, etc., for at least seven (7) days, and formwork over 12' in height shall not be removed until the Engineer responsible for design of the formwork has approved removal.

D. Shoring and falsework under beams, girders, slabs, etc. shall remain in place for at least 14 days and until the Engineer responsible for design of shoring and falsework has approved removal.

E. The Contractor shall request to have field cured compression test specimens taken for any concrete where it is planned to remove formwork, falsework, or shoring sooner than indicated above.

F. In removing plywood forms, no metal pinch bars shall be used and special care to be taken in stripping. Start at top edge or vertical corner where it is possible to insert wooden wedges. Wedging shall be done gradually and shall be accompanied by light tapping of the plywood panels to crack them loose. Do not remove forms with a single jerk after it has been started at one end.

G. Forms shall be left in place as long as possible to permit shrinkage away from concrete and plywood forms shall be left in place until all other forms around are stripped and until there is no danger of damaging the architectural concrete due to other work in the vicinity.

H. Nothing herein shall be construed as relieving the contractor of any responsibility of the safety of the structure.

I. After stripping, properly protect all concrete to be exposed in the finish work from damage with boards and building paper to prevent staining, spoiled edges, chips, etc.

J. Whenever the formwork is removed during the curing period, the exposed concrete shall be cured by one of the methods specified in Section 03300.

3.06 CLEAN UP

A. Clean up shall be per special conditions. Failure to perform clean up within 24 hours notice by the Architect shall be considered adequate grounds for having the work done by others at the contractor's expense.

END OF SECTION 03 10 00

This Page Left Blank Intentionally

SECTION 03 20 00
REINFORCING STEEL

PART 1 - GENERAL

1.01 APPLICABLE SECTION

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing and installing all reinforcing bars, ties, spacing devices, inserts, and all other material required to complete installation, as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom.

B. Work Included:
1. Fabricating and installing all reinforcing steel for cast in place concrete and unit masonry.
2. Fabrication and installing all reinforcing steel for shotcrete.
3. Fabrication of reinforcing steel dowels to be embedded in existing concrete and existing masonry.
4. Fabrication and installing all reinforcing steel for tilt-up precast concrete.

C. Related Work Specified Elsewhere:
1. Concrete Formwork; Section 03 10 00
2. Cast-in-Place Concrete; Section 03 30 00
3. Shotcrete; Section 03 36 00
4. Tilt-up Precast Concrete; Section 03 47 00
5. Post-tensioning Concrete; Section 03 36 50
6. Post Installed Anchors; Section 03 70 10
7. Concrete Unit Masonry; Section 04 22 00

1.03 REFERENCE STANDARDS

A. The following is a list of Reference Standards referred to in this portion of the specifications:
1. ASTM A184/A184M, Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A615, "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement".
3. ASTM A706, "Specification for Deformed and Low-Alloy Steel Bars for Concrete Reinforcement".
4. ASTM A970, “Specification for Headed Steel Bars for Concrete Reinforcement”.
5. ASTM A1064, "Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plan and Deformed, for Concrete".

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with all applicable Federal, State and Local Code and Safety Regulations. In addition, comply with the provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
   1. ACI 315R, "Guide to Presenting Reinforcing Steel Design Details", latest edition.
   2. ACI 318, "Building Code Requirements for Structural Concrete", latest edition.
   3. AWS D1.4, "Structural Welding Code- Steel Reinforcing Bars", latest edition.

B. Mill Certificates: The Contractor shall provide Mill Certificates for reinforcing steel in accordance with the requirements of Part 1.05,, "Submittals" of this specification section. When Mill Certificates cannot be provided, laboratory test reports shall be provided in accordance with the requirements of Part 1.05,, "Submittals" of this specification section.

C. Sampling, Testing, and Inspection:
   1. General
      a. All materials and work shall be subject to inspection at the mill, the fabrication shop, and at the building site. Material or workmanship not complying fully with the drawings, and/or specifications will be rejected.
      b. If the Owner's agent, through oversight or otherwise, has accepted material or work which is defective or contrary to specifications, this material or work, regardless of state of completion, may be rejected.
   2. Owner: The Owner shall employ an independent testing laboratory or the Engineer as the Owner's agent to perform the sampling, testing and inspections shown on the contract drawings, and submit certified test results.
   3. Contractor:
      a. The Contractor shall cooperate with and notify Owner's agent at least 24 hours in advance of inspections required and shall provide samples, test pieces, and facilities for inspection without extra charge.
      b. The Contractor shall identify each lot of fabricated reinforcing steel to be shipped to the site by assigning an individual lot number that identifies steel by heat number and shall be tagged in such a manner that each such lot can be accurately identified at the job site.
      c. The Contractor shall remove all unidentified reinforcing steel, anchorage assemblies and bar couplers received at the site.

1.05 SUBMITTALS

A. General Requirements:
   1. Submittals shall be made to Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
   2. Construction, fabrication, or ordering of materials shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work.

B. Shop Drawings:
1. Shop Drawings shall be submitted that show diagrammatic elevations of all walls, footings, columns, beams, slabs, etc., at a scale sufficiently large to show clearly the positions and erection marks of reinforcing bars, their dowels, and splices.
2. Use same bar marks on diagrammatic elevations as used on the bar schedule.
3. Shop drawings shall also show details for congested areas and connections.
4. Shop Drawings used in field must be reviewed copies.
5. Contract drawings shall not be reproduced in whole or in part. Contract drawings modified into shop drawings will be returned without review.
6. Revised submittals shall have clear indications of revised or new information. Clouding is an acceptable form of identification.

C. Product Data: Manufacturer's catalog sheets including instructions for use and description of application shall be provided on each of the following items intended for use on project:
1. Mechanical anchorage devices for butt splices.

D. Mill Certificates:
1. The Contractor shall provide Mill Certificates for each size of bar for each heat to be used on project.
2. Mill Certificates shall include name of mill, date of rolling, date of shipping to fabricator and shall be signed by fabricator certifying that each material complies with or exceeds the specified requirements. A Mill Certificate shall be furnished with each lot of material delivered to the project and the lot shall be clearly identified in the Certificate.
3. When Mill Certificates cannot be provided, the Contractor shall hire a professional testing laboratory to verify compliance and provide laboratory test reports. The Contractor shall pay for the cost of testing.

E. Laboratory Test Reports:
1. Laboratory test reports shall show the name of testing agency; date of testing, types of tests performed and shall be signed by a principal of the testing agency who is a registered Civil Engineer in the State of California.
2. When required by other portions of these specifications, laboratory test reports shall be submitted for each size of bar tested for each heat to show compliance with appropriate ASTM Standards and these specifications.

1.06 STORAGE OF MATERIALS

A. Store reinforcement during fabrication and at site to avoid excessive rusting or coating with grease, oil, dirt, or other objectionable materials.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate work with all trades so as not to interfere with the work of other trades. Bring interferences between trades to Architect's attention and resolve before any concrete is placed.

PART 2 - PRODUCTS

2.01 REINFORCING BARS

A. Bars for reinforcement listed below shall conform to the requirements of ASTM A706, Grade 60, except as allowed in ACI 318 Section 20.2.2.5.
   1. Chord Bars
   2. Vertical Bars, Columns
   3. Vertical Bars, Pilasters
   4. Vertical and Horizontal Bars in Shear Walls, Coupling Beams, and Footings
   5. All Reinforcing Bars to be Welded or Field Bent
   6. All elements identified in ACI 318 Table 20.2.2.4a

B. Bars for reinforcement not noted above shall conform to the requirements of ASTM A615, Grade 60.

2.02 WIRE

A. All wire for concrete reinforcement shall conform to "Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement," ASTM A1064.

B. Holding wire for fusion welding shall conform to ASTM A1064.

2.03 MESH

A. All wire fabric mesh shall conform to "Specifications for Wire Fabric for Concrete Reinforcement," ASTM A1064.

2.04 WELDING ELECTRODES

A. Welding electrodes shall be per Table 5-1 of AWS D1.4.

2.05 MECHANICAL COUPLING DEVICES

A. Mechanical coupling devices shall develop 125 percent of the minimum yield strength of the bars spliced.

2.06 OTHER MATERIALS

A. All other materials, not specifically described by these specifications but required for complete and proper placement of reinforcement shall be new, first quality of their respective kinds, and subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. Prior to all work of the section, carefully inspect the installed work of other trades and verify that all work is sufficiently complete to permit the start of work under this section and that the completed work of this section will be in complete accordance with the original design and the reviewed shop drawings. In the event of discrepancy, immediately notify the Architect/Engineer in writing.

B. In the event conduits, pipes, inserts, sleeves, or any other items interfere with placing the reinforcement as indicated on the drawings or approved shop drawings, or as otherwise required, immediately notify the Architect/Engineer and obtain approval on procedure before placement of reinforcement is started.

3.02 FABRICATION

A. Bends for reinforcing steel shall be made in accordance with ACI 318 latest edition. Bend all bars cold. Do not field bend reinforcing steel in a manner that will injure material, cause the bars to be bent on too tight a radius, or that is not indicated as allowed on drawings or permitted by Engineer. Do not straighten bent or kinked bars for use on project without permission of Engineer. Replace bars with kinks or bends not shown on the drawings.

B. The use of fusion welding for attaching carrying wires to the foundation rebar work is acceptable with the following provisions:
1. Fusion welding shall be to the stirrups and is not allowed to longitudinal reinforcing steel.
2. Fusion welding of holding wires shall not occur on a bent portion of a reinforcing bar. After holding wire has been fusion welded to a reinforcing bar, that bar may not be bent where the fusion weld occurs.
3. All reinforcing steel to be welded shall comply with ASTM A706.
4. The welding process shall be as outlined in ASTM A1064.
5. The contractor shall submit a complete shop welding program outlining the type of the specific fusion welding machine.
6. Fusion welding shall have periodic special inspection of the in-plant welding, including review of the setup of the machine prior to the start of welding and testing of samples.

3.03 PLACING

A. All reinforcement shall be placed in strict conformity with the requirements of the engineering drawings, both as to location, position and spacing of members. It shall be supported and secured against displacement by the use of adequate and proper wire supporting and spacing devices, tie wires, etc. so that it will remain in its proper position in the finished structure.

B. Preserve clear space between parallel bars of not less than 1 1/2 times the nominal diameter of round bars and in no case let the clear distance be less than 1 1/2 inches nor less than 1-1/3 times the maximum size of aggregate for concrete. Bars placed in shotcrete shall have a minimum clearance between bars of 2 1/2" for No. 5 and smaller and 6 bar diameters for bars larger than No. 5.

C. Lap splices shall be contact lap splices in accordance with ACI 318 unless noted otherwise on the Contract Drawings. Bars shall be wired together at laps. Wherever possible, stagger splices in adjacent bars. Make all splices in wire fabric at least 1 1/2 meshes wide or 12", which ever is greater. When splicing in areas to receive shotcrete, lap splices shall be non-contact with at least 2" clearance between bars.

D. Butt splices shall be accomplished by mechanical anchorage devices.

3.04 CLEANING REINFORCEMENT

A. Take all means necessary to ensure that steel reinforcement, at the time concrete is placed around it, is completely free from rust, dirt, loose mill scale, oil, paint and all coatings which will destroy or reduce the bond between steel and concrete.

3.05 FIELD QUALITY CONTROL

A. Inspection: The Owner's agent will perform the inspections shown on the contract drawings.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 APPLICABLE SECTION

A. Drawings and general provisions of the contract, including Ventura County Standard Specifications (VCSS), general and supplementary conditions and other Division 01 specification sections, apply to this section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing, and installing cast-in-place concrete work as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:
1. Design of Concrete Mixes.
2. All concrete and cement finishing; all surface treatment and curing, including non-slip finishes and color work.
3. Installation of all reglets, bolts, anchors, cans, sleeves, column anchor bolts, etc., whether furnished under this section or by others (except cans and sleeves required under the Electrical and Mechanical Divisions).
4. The furnishing of all items required to be or shown on the drawings as embedded in concrete, which are not specifically required under other sections.
5. Setting headers and screeds. Curing and protecting concrete.
6. Grouting of column bases and post-tensioning anchor recesses.
7. Routing out cracks and sawcutting control joints as required by waterproofing.
8. Grouting between bearing plates, channels, etc. and bearing surfaces.
9. Drilling of existing concrete and masonry for placement of bars, dowels, and rods.
10. Grouting of bars, dowels, and rods in existing concrete and existing masonry.

C. Related Work Specified Elsewhere:
1. Concrete Formwork; Section 03 10 00
2. Reinforcing Steel; Section 03 20 00
3. Structural Steel and Miscellaneous Iron; Section 05 12 00
4. Inserts, sleeves, cans etc. required under Plumbing, Mechanical, and Electrical Divisions 22, 23, and 26 respectively.

1.03 REFERENCE STANDARDS

A. The following is a list of Reference Standards referred to in this portion of the Specification:
1. ASTM C31 " Standard Practice for Making and Curing Concrete Test Specimens in the Field"
2. ASTM C33 "Standard Specification for Concrete Aggregates "

3. ASTM C39 " Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens"
4. ASTM C42 " Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete"
5. ASTM C94 "Standard Specification for Ready Mixed Concrete"
6. ASTM C143 "Standard Test Method for Slump of Hydraulic-Cement Concrete"
7. ASTM C150 "Standard Specification for Portland Cement"
8. ASTM C157 " Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete"
9. ASTM C171 " Standard Specification for Sheet Materials for Curing Concrete"
10. ASTM C172 " Standard Practice for Sampling Freshly Mixed Concrete"
11. ASTM C173 " Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method"
12. ASTM C231 " Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method"
13. ASTM C260 " Standard Specification for Air-Entraining Admixtures for Concrete"
14. ASTM C309 " Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete"
15. ASTM C330 " Standard Specification for Lightweight Aggregates for Structural Concrete"
16. ASTM C494 " Standard Specification for Chemical Admixtures for Concrete"
17. ASTM C618 " Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete"
18. ASTM C881 " Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete"

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with all Federal, State and Local Codes and Safety Regulations. In addition, comply with the provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. ASTM C94, "Specifications for Ready Mixed Concrete".
2. ACI 117, Standard Specifications for Tolerances for Concrete Construction and Materials.
3. ACI 121R, Quality Management System for Concrete Construction.
4. ACI 201.2R, Guide to Durable Concrete.
5. ACI 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
6. ACI 214R, Recommended Practice for Evaluation of Strength Test Results in Concrete.
7. ACI 301, Specifications for Structural Concrete.
8. ACI 302.1R, Guide for Concrete Floor and Slab Construction.
9. ACI 304.2R, Placing Concrete by Pumping Methods.
10. ACI 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
11. ACI 305R, Guide to Hot Weather Concreting.
12. ACI 306.1, Standard Specification for Cold Weather Concreting.
13. ACI 308R, Guide to Curing Concrete.
14. ACI 309R, Guide for Consolidation of Concrete.
15. ACI 311.4R, Guide for Concrete Inspection.
16. ACI 318, Building Code Requirements for Structural Concrete.

17. ACI SP-15, Field Reference Manual: Standard Specifications for Structural Concrete with Selected ACI and ASTM References.
18. ACI SP-2, ACI Manual of Concrete Inspection.
19. ACI SP-66, ACI Detailing Manual.
20. California Building Code, current edition.

B. Certificates of Compliance: The Contractor shall provide Certificates of Compliance for concrete materials in accordance with the requirements of Part 1.05, "Submittals", of these specifications. When Certificates of Compliance cannot be provided, laboratory test reports shall be provided in accordance with the requirements of Part 1.05, "Submittal" of these specifications.

C. Engineer's Review: The Engineer will review the mix designs prepared by the testing laboratory hired by the Contractor.

D. Sampling, Testing and Inspection:
1. General:
   a. All materials and work shall be subject to inspection at the batch plant, and at the building site. Material or workmanship not complying fully with the drawings, and/or specifications will be rejected.
   b. If the Owner's agent, through oversight or otherwise, has accepted material or work which is defective or contrary to specifications, this material or work, regardless of state of completion, may be rejected.
2. Owner: The Owner shall employ an independent testing laboratory or the Engineer as the Owner's agent to perform the sampling, testing, and inspections shown on the contract drawings, and submit certified test results.
3. Contractor:
   a. The Contractor shall cooperate with and notify Owner's agent at least 24 hours in advance of inspection required and shall provide samples and facilities for inspection without extra charge.
   b. The Contractor shall hire a professional testing laboratory to provide concrete mix designs for each type of concrete on the job. Each mix design shall be verified by trial batch tests or laboratory test reports and certified to by a principal of the laboratory who is a registered Civil Engineer in the State of California and submitted to the Architect for review. Laboratory test reports, in order to be acceptable, must indicate that not less that 90 percent of at least 20 consecutive 28-day tests exceed the specified strength, and none of said tests are less than 95 percent of specified strength.

E. Mock-up: Before casting structural concrete slabs, provide samples to demonstrate representative typical joints, surface finish, texture, tolerances and standard of fabrication and installation. Samples shall comply with the following requirements, using materials indicated for the completed Work:
1. Size: Create two (2) sample slab panels with minimum dimensions of 4 ft. x 4 ft and 8" minimum thickness.
2. Include the following typical items:
   a. Forming, including form joints and corners.
   b. Reinforcing of same complexity as job requirements.
   c. Form coating and its application.
   d. Concrete mix, including placing techniques, i.e., pumping.
   e. Method of placing and vibrating concrete.
   f. Curing of concrete.

g. Form removal.
h. Surface finish, sealant, and color.

3. Locate samples at construction site as directed by Architect. Samples shall remain accessible throughout the concrete installation and during continuing construction activities.
4. Contractor is responsible for all required supporting structure for placement of mockup.
5. Demonstrate methods of erection, placing, curing, cleaning, finishing, sealers, and coatings, and contraction joints, as applicable, using same procedures as proposed for the Work.
6. Include all embedded items detailed to be installed in concrete construction.
7. In presence of Architect demonstrate techniques proposed for repair of tie holes and surface blemishes to match adjacent undamaged surfaces.
8. Obtain Architect's approval of samples before casting architectural concrete.
9. Accepted sample(s) establish minimum standard of quality, fabrication, and installation for special concrete finishing.
10. Maintain samples during construction in an undisturbed condition as a standard for judging the completed Work.
11. Demolish and remove field sample panels when directed.

1.05 SUBMITTAL

A. General Requirements:
1. Submittals shall be made to Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
2. Construction and fabrications or mixing of materials shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work.

B. Mix Designs:
1. Mix designs shall be submitted for each class of concrete on the job and shall show names and brands of all materials, proportions, slump, strength, gradation of coarse and fine aggregates, and location to be used on job.
2. Mix designs for concrete designated by compressive strength shall be proportioned on the basis of field experience or trial mixtures, as described in ACI 301.
3. Drying shrinkage data should be provided in the test histories or trial mixtures for suspended slabs and slabs on grade.

C. Concrete Placement Schedule: The Contractor shall submit a concrete placement schedule which shall show all proposed construction joint locations, limits of each placement sequence, order of placement and type of joint proposed at each joint location.

D. Product Data: Manufacturer's catalog sheets including instructions for use and description of application shall be provided on each of the following materials:
1. Epoxies
2. Grout
3. Admixtures
4. Curing Compounds
5. Chemical Hardener
6. Moisture Barriers
7. Waterstops

E. Shop Drawings:
1. Construction Joints: Submit drawings of proposed construction joint locations in concrete for slab-on-grade, mat foundations, structural floors, roofs and walls. Submit any additional or changed reinforcing that is required at construction joints that differs from that shown on the drawings.
2. Openings, Sleeves, and Cores: Submit drawings of all openings to be formed, sleeved, cored, or sawcut in cast-in-place elements. Drawings shall indicate size and location of openings, sleeves, or cores.
3. Penetrations in Beams and Joists: Submit drawings locating all horizontal and vertical penetrations in beams and joists. Drawings shall indicate location, size, orientation, and type of penetrations.
4. Embedded Items: Submit drawings showing all items to be embedded in concrete elements, including plates, angles, bolts, and any non-structural items, such as pipe and conduit. Drawings shall indicate location, size, orientation, and type of embedded item.

F. Samples: Submit samples of materials as specified and as otherwise required by Architect, including names, sources and descriptions.

G. Certificates of Compliance:
1. The Contractor shall provide Certificate of Compliance for each type of aggregate, cement and admixture to be used in each class of concrete or a Certificate of Compliance for each class of concrete.
2. Certificates of Compliance shall include the name, source, and description of all materials used in each class of concrete and shall be signed by the concrete supplier certifying that each material item complies with, or exceeds the specified requirements. Certificates of Compliance shall be furnished 60 days in advance of any concrete pours.
3. When Certificates of Compliance cannot be provided, the Contractor shall hire a professional testing laboratory to verify compliance of each type of material to be used in each Class of Concrete. The cost of testing shall be paid for by the Contractor.

H. Laboratory Test Reports:
1. Laboratory test reports shall show the name of testing agency, date of testing, types of tests performed and shall be signed by a principal of the testing agency who is a registered Civil Engineer in the State of California. Laboratory tests shall not be older than eight (8) months and shall certify that the tested materials meet the specified standards.
2. Laboratory test reports for concrete mix designs shall clearly identify each material or mix number of each mix tested to verify the correlation between the tested mix designs and the proposed mix designs.
3. When required by other portions of these specifications, laboratory test reports shall be submitted for each material to be used in each class of concrete, or for each mix design and shall show compliance with appropriate ASTM Standards and these specifications.

I. Weight and Batch Tags:
1. Weight and batch tags will be supplied to the engineer upon request.

J. Engineering Analysis: Prepared by a California-licensed Civil or Structural Engineer; justifying construction-imposed loads on slabs, beams, and walls which exceed those allowed by CBC for the specified use.
   1. 2,000 lbs maximum allowable construction load without analysis
   2. 10,000 lbs maximum allowable construction load with analysis

1.06 SEQUENCING AND SCHEDULING

A. Obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so provision for their work can be made without delaying the project.

B. Do any cutting and patching made necessary by failure or delay in complying with these requirements, at no cost to Owner.

PART 2 - PRODUCTS

2.01 CEMENTITIOUS MATERIALS

A. Portland Cement
   1. Portland cement shall conform to ASTM C150 for Type II cement. Use a single, approved standard brand throughout work.
   2. Note that fly ash and calcium chloride are not permitted to be used.

B. Ground Granulated Blast Furnace Slag (GGBFS)
   1. Slag shall conform to ASTM C989, Grade 100 or 120.
   2. Slag shall substituted for cement on an equivalent weight basis up to 30%.

2.02 CONCRETE AGGREGATES

A. Aggregates for hardrock concrete shall conform to ASTM C33.

B. Aggregates for light-weight concrete shall conform to ASTM C330.

C. Fine Aggregate: Use washed natural sand of hard, strong particles and not more than 1% of deleterious materials. Not more than 2.5% shall pass the No. 200 sieve. Fineness modulus - 2.65 to 3.05.

D. Coarse Aggregate: Use clean, sound-washed gravel or crushed rock. Not more than 1% deleterious material or 5% flat, thin, elongated or laminated material allowed. Cleanness value shall not be less than 75 when tested in accordance with California Test 227.

2.03 WATER

A. Mixing Water for concrete shall be clean and free from deleterious amounts of acids, alkalis or organic materials.

2.04 NONSHRINK GROUT

A. Nonshrink grout shall be pre-mixed, high strength, flowable grout which does not shrink as it cures. Nonshrink grout shall attain a minimum compressive strength of 5000 psi at 7 days. Subject to compliance with requirements provide one of the following:
   1. Metallic
      a. Embeco 636; BASF.
      b. Sikagrout 212; Sika Chemical Company.
      c. Burke Metallic Spec Grout; Dayton Superior Corporation.
   2. Non-Metallic
      a. Masterflow 928; BASF.
      b. Sonogrout 10K; BASF.
      c. Sure-Grip Grout; Dayton Superior Corporation.

2.05 CURING PRODUCTS

A. Liquid membrane curing compounds: Liquid membrane curing compounds shall conform to the requirements of ASTM C309.

B. Waterproofing Paper: Waterproofing paper for curing concrete shall conform to the requirements of ASTM C171.

2.06 AIR-ENTRAINING ADMIXTURE

A. Air-entraining admixtures shall conform to the requirements of ASTM C260. Subject to that compliance, provide one of the following:
   1. Sika Aer; Sika Corporation.
   2. MB-VR or MB-AE; BASF.
   3. Dorex AEA; W.R. Grace.

2.07 WATER-REDUCING ADMIXTURE

A. Water-reducing admixtures shall conform to the requirements of ASTM C494, Type A, and contain not more than 0.1% chloride ions. Subject to compliance with requirements, provide one of the following:
   1. Eucon WR-75; Euclid Chemical Company.
   2. MasterPozzolith 322; BASF.
   3. Plastocrete 160; Sika Chemical Corporation.

2.08 HIGH-RANGE WATER-REDUCING ADMIXTURE (SUPER PLASTICIZER)

A. Super Plasticizer shall conform to the requirements of ASTM C494, Type F or Type G and contain not more than 0.1% chloride ions. Subject to compliance with requirements, provide one of the following:
   1. ADVA 190; W.R. Grace.
   2. Sikament; Sika Chemical Corporation.
   3. Pozzolith 400; BASF.

2.09 WATER-REDUCING, RETARDING ADMIXTURE

A. Water-reducing, retarding admixtures shall conform to the requirements of ASTM C494, Type D, and contain not more than 0.1% chloride ions. Subject to compliance with requirements, provide one of the following:
1. Pozzolith 300-R; BASF.
2. Daratard; W.R. Grace.
3. Plastiment; Sika Chemical Corporation.

2.10 WATERSTOPS

A. General: Provide flat, dumbbell type or centerbulb type waterstops at construction joints and other joints as indicated. Size to suit joints.

B. Rubber Waterstops: Rubber Waterstops shall conform to the requirements of Corps of Engineers CRD-C513. Subject to compliance with requirements, provide one of the following:
1. Dayton Superior Corporation
2. Progress Unlimited
3. Williams Products

2.11 LIQUID FLOOR TREATMENT

A. Penetrating Liquid Floor Treatment: Chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless, colorless; that penetrates, hardens, and densifies concrete surfaces.

2.12 SEALING COAT

A. Sealing coat shall be clear, solvent borne or waterborne, membrane-forming curing and sealing compound conforming to ASTM C 1315, Type 1, Class A.

2.13 CONCRETE

A. Concrete Mix Requirements: See plans for concrete mix design requirements and specifications.

B. Slumps noted on the plans are for concrete without admixtures to be consolidated using vibration. Formwork constraints, congestion of rebar, and pumping of concrete may require increased slump beyond the slump listed on the plans. The contractor shall adjust the slump up to 8” max using admixtures as necessary to provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed without segregation or excessive bleeding. All admixtures shall be noted in the submitted mix design and are subject to the Engineer’s review. Slump shall not exceed 3" for any concrete placement where top of surface slopes more than 2%.

C. At Contractor's option, an air entraining agent conforming to the latest revision of ASTM Specification C260 may be added to the concrete to provide entrained air. Air-entraining shall not exceed 3% ± 1.5% without the approval of the engineer.

D. Drying Shrinkage: The average “Drying Shrinkage” of the concrete after 21 days of drying shall not exceed 0.040 in suspended slabs and 0.048 percent for slabs on grade.

2.14 CONTROL JOINTS

A. Control joints shall be sawcut using SOFF-CUT International or equal.

2.15 UNDERSLAB VAPOR BARRIER/RETARDER

A. Vapor barrier/retarder membrane including installation accessories, for installation under concrete slabs-on-grade for floors of interior spaces as follows:
1. Minimum 15-mil-thick polyolefin geomembrane for superior barrier performance and for tear strength and puncture resistance, manufactured from ISO certified virgin resins.
2. Acceptable Manufacturers:
   a. Stego Wrap (15-mil) Vapor Barrier as manufactured by Stego Industries LLC, San Juan Capistrano, CA, 949-493-5460, website: www.stegoindustries.com.
   b. Ecosheild-E15 (15-mil) Vapor Barrier as manufactured by Epro, Derby, KS.
   c. Griffolyn Vaporguard as manufactured by Reef Industries, Houston, TX.
3. Physical Properties:
   a. Tensile Strength: ASTM E-175, minimum 45.0-lbf/in.
   b. Water Vapor Barrier: ASTM E-1745, meets or exceeds Class B.
   c. Water transmission Rate: ASTM E-96, 0.006-gr/ft^2/hr or lower.
   d. Permeance Rating: ASTM E-96, 0.01-gr/ft^2/hr or lower.
   e. Puncture Resistance: ASTM E-1745, minimum 1970 grams.
4. Installation Accessories:
   a. Seam Tape and Vapor Proofing Mastic: Water Vapor Transmission Rate shall be 0.3-perms or lower per ASTM E 96.
   b. Pipe Boots: Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer’s instructions.
   c. Vapor Stakes: Provide Density of 0.0289-lb/in^3 per ASTM D 1505: and Specific Gravity of 0.0477 per ASTM D 792.

B. Vapor barrier/retarder membrane shall be installed in accordance with manufacturer’s printed instructions and ASTM E 1643-04. The following shall serve as a general outline for preparation and installation:
1. Preparation: Ensure that subsoil is approved by architect or geotechnical firm. Level and tamp or roll aggregate, sand or tamped earth base as applicable.
2. Schedule preconstruction meeting/conference at the site with field representative of the vapor barrier/retarder membrane prior to installation. Provide minimum one week notice to manufacturer’s representative and the Architect.
3. Unroll vapor barrier/retarder with the longest dimension parallel with the direction of the pour. Lap vapor barrier/retarder over footings and seal to foundation walls. Seal to interior/perimeter footings using specified mastic. Overlap joints 6 inches and seal with manufacturer’s seam tape.

4. Seal all penetrations (including pipes) per manufacturer's instructions, and as follows:
   a. Seal single pipe penetrations using pipe boot constructed from the product:
      1) Cut a piece of vapor barrier membrane; minimum 12-inches wide and length of 1-1/2 times the circumference of the pipe.
      2) Cut slits half the width of the film using scissors.
      3) Wrap boot around pipe; tape onto pipe and completely tape the base to the vapor barrier/retarder membrane.
5. Multiple pipe penetrations in close proximity and very small pipes may be sealed using specified vapor proofing mastic.
   a. Cut out a small area around pipes.
   b. Cut a patch of vapor barrier/retarder membrane extending at least 6 inches past the cut-out portion in all directions.
   c. Cut X's or small circles in the patch and install over pipes.
   d. Overlap at least 6 inches and tape.
   e. Build up 40-60 mils of mastic, or as needed to completely fill all voids between the pipe and the vapor barrier/retarder membrane.
6. No penetration of the vapor barrier/retarder membrane is allowed except for reinforcing steel and permanent utilities.
7. In the case that forms must be used vapor stakes should be used to hold forms in place:
   a. Penetrate plastic with stake.
   b. Treat stake as pipe penetrations(See above, 3.a. - 3.e.).
   c. Leave stakes permanently in concrete.
   d. Using a power saw, cut the stake off above the seal, but below the surface of the finished concrete.
   e. The lower portion of the vapor stake remains in place, permanently plugging the penetration.
8. Repair damaged areas by cutting patches of vapor barrier/retarder membrane, overlapping damaged area 6-inches and taping all four sides with tape.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Produce concrete of required consistency and strength to present appearance satisfactory to Architect.

B. Use only one brand of cement unless otherwise authorized by Architect.

C. Store materials delivered to the job and protect from foreign matter and exposure to any elements which would reduce the properties of the material.

D. When concrete is cast against existing concrete the surface shall be cleaned and roughened by sandblasting, grinding, bush hammering or other suitable means. Wet the surface until it is damp, but without visible free water.

3.02 EXISTING CONCRETE SURFACE PREPARATION

A. Where concrete is to be cast against existing concrete, prepare the surface of existing concrete as follows, unless noted otherwise:

1. Chip or scarify surface as required to remove all spalled, severely cracked, deteriorated, loose or unsound material.
2. Chip or scarify any area as required to remove offsets which would cause an abrupt change in thickness of the new concrete. Taper edges to leave no square shoulders at the perimeter of a cavity.
3. Sand-blast or water-blast all surfaces to receive new concrete to remove all dirt, paint, grease, fractured concrete, oil, or other substances that could interfere with the bond of the newly placed concrete. Clean forms and reinforcing of drippings. Clear away debris by compressed air.
4. Wet the surface until it is damp, but without visible free water.

B. Where noted on the drawings to ‘intentionally roughen’ surface, prepare the surface of existing concrete as follows:
1. Chip or scarify surface as required to remove all spalled, severely cracked, deteriorated, loose or unsound material.
2. Chip or scarify any area as required to remove offsets which would cause an abrupt change in thickness of the new concrete. Taper edges to leave no square shoulders at the perimeter of a cavity.
3. Sand-blast using coarse sand or water-blast to clean and roughen to 1/4" amplitude all surfaces to receive new concrete, exposing coarse aggregate solidly embedded in mortar matrix. Clean forms and reinforcing of drippings. Clear away debris by compressed air.
4. Wet the surface until it is damp, but without visible free water.

3.03 EMBEDDED ITEMS

A. General: Place all pipe sleeves, inserts, anchors bolts, angle frames, ties and other embedded items required for adjoining work or for its support prior to concreting. Embedded items shall be positioned accurately and supported against displacement.

1. Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete.
2. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto unless directed otherwise by these specifications.
3. Install reglets to receive top edge of foundation sheet waterproofing where specified by the Architect, and to receive thru-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles and other conditions.
4. Voids in sleeves, inserts and anchor bolt slots shall be filled temporarily with a readily removable material to prevent entry of concrete into the voids.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

C. Do not install sleeves in any concrete member except where shown on the structural drawings or approved by the Architect and Engineer.

D. Securely fasten embedded plates, angles, anchor rods and other items to be built into the concrete to the formwork or hold in place with templates. Insertion of these items into concrete after concrete placement is prohibited.

3.04 MIXING

A. Use ready-mixing concrete complying with ASTM C94 and with the requirements of Contract Documents. Mix for a period of not less than ten (10) minutes; at least three (3) minutes of mixing period shall be immediately prior to discharging at the job.

B. Introduction of additional water after initial mixing not permitted.

3.05 WEATHER REQUIREMENTS

A. Do not mix or place when atmospheric temperature is below 40 degrees F. or when conditions indicate temperature will fall below 40 degrees within 72 hours. Reinforcement, forms, and ground which concrete will contact shall be completely free of frost. Keep concrete and formwork at a temperature not less than 50 degrees F. for not less than 72 hours after pouring.

B. When temperature is above 80 degrees F. Contractor shall take precautions to insure that rebar temperature does not exceed ambient temperature.

C. Temperature of concrete at time of placing shall not be less than 50 degrees F. and not more than 85 degrees F.

3.06 JOINTS IN CONCRETE

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Structural Joints (Construction/Cold Joints): Location and details of construction joints shall be as indicated on drawings, specified, or as approved by the Architect/Engineer. Locate so as not to impair the strength of the structure. Submit drawings with construction joints clearly defined, and schedule of pouring operations for approval in accordance with Part 1.05 "Submittals" of this specification section, prior to starting concreting.

1. Keyways: Provide keyways with a depth of one tenth of the member thickness (1 1/2" minimum or as shown on the drawings) in construction joints only where shown on the drawings.
2. Joint Construction:
   a. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise shown on the drawings. Do not continue reinforcement through sides of strip placements of floors and slabs.
   b. Locate construction joints in the middle third of suspended spans and grade beams and as shown on the drawings for slabs-on-grade and walls unless shown otherwise. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   c. Locate horizontal joints in walls and columns at underside of slabs and at top of footings and floor slabs

d. Space vertical joints in walls as indicated on the drawings. Locate joints besides piers integral with walls, near corners, and in concealed locations where possible.

e. Dowels that cross construction joints shall be supported during concreting operations so as to remain parallel with the slab or wall surface and at right angles to the joint.

f. Sandblast all construction joints using coarse sand or waterblast to clean and roughen entire surface of joint, exposing coarse aggregate solidly embedded in mortar matrix. Clean forms and reinforcing of drippings. Clear away debris by compressed air.

3. Waterstops: Provide waterstops in construction joints as indicated on the Architectural and Structural Drawings. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions. Waterstops shall be installed with a minimum of 3” of concrete cover.

C. Control Joints in Slabs-on-Grade and Unbonded Topping Slabs: Install control joints at locations and spacings as indicated on the drawings or if not shown on drawings, located so as not to impair strength and appearance of the structure, as acceptable to Architect/Engineer. Maximum joint spacing shall be per the drawings and be perpendicular to the slab surface. Use one of the two following methods (sawed or formed) to create the joints. Do not use the formed joint in areas subject to vehicular traffic or in industrial slabs.

1. Sawed Joints

a. Primary Method: Early-Entry, dry-cut method, using Soff-Cut saws. Finisher must have documented successful experience in the use of this method prior to this project. Install cuts within one to four hours, depending on air temperature, after final finish as soon as the concrete surface is firm enough to not be torn or damaged by the blade at each saw cut location. Use 1/8 inch thick blade, cutting to a depth of one quarter of the slab thickness but not less than one inch. Cut to a depth of one third of the slab thickness for slabs reinforced with steel fibers or synthetic fibers.

b. Optional Method (where Soff-Cut System method equipment is not available, subject to limitations): This method may not be used when there is no dowel passing through the contraction joint. Use a conventional saw to cut joints within four to 12 hours after finishing as soon as the concrete has hardened sufficiently to prevent aggregates from being dislodged by the saw. Complete cutting before shrinkage stresses become sufficient to produce cracking. Use 1/8 inch thick blade, cutting to a depth of one quarter of the slab thickness but not less than one inch. Cut to a depth of one third of the slab thickness for slabs reinforced with steel fibers.

2. Formed Joints: Form contraction joints by inserting premolded plastic hardboard or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. The depth is to be one quarter of the slab thickness, but not less than one inch. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.

3. Joint Filler: Provide in both control and saw-cut construction joints when specified.

a. Remove dirt and debris from the joint by vacuuming immediately prior to filling joint. Clean the joint of curing compounds and sealers.

b. Filler material shall be applied to the joints when the building is under permanent temperature control, but no less than 90 days after slab construction.

c. Follow the manufacturer's recommended procedure for installing filler material. The joint filler must be flush with the adjacent concrete. A concave profile on the top of the joint filler is unacceptable and will be grounds for removal and replacement.

4. The Contractor shall protect the joints from damage caused by wheeled traffic or other sources during construction until a joint-filler material (if specified) has been installed.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, Construct isolation joints (without dowels) in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, only where specifically detailed on the drawings. Install joint-filler strips at joints where indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated on the drawings.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
4. Provide construction joints with dowels at all locations unless isolation joints are detailed.

3.07 CONVEYING AND PLACING

A. All concrete shall be mixed and delivered in accordance with the requirements of ASTM C94. All concrete shall be placed, finished and cured and all other pertinent construction practices shall be in accordance with the requirements of ACI 301.

B. It is the contractor’s responsibility to provide a concrete mix suitable for the job site conditions. Workability and pumpability may be increased by methods noted in Section 2.11.

C. Notify Architect at least 48 hours before placing any concrete.

D. Before placing, clean mixing and conveying equipment, clean forms and space to be occupied by concrete and wet forms. Remove ground water until completion of work.

E. Place no concrete in any unit of work until all formwork has been completely constructed, all reinforcements secured in place, all items to be built into concrete are in place, and form ties at constructions joints tightened.

F. Concrete shall be placed so that a uniform appearance of surfaces will be obtained. The concrete will be free of all rock pockets, honeycombs and voids. Deposit as nearly as practical in its final position.

G. The subgrade must be moist when the concrete is placed for floor slab to prevent excessive loss of water from the concrete mix.

H. Carry on concreting, once started, as a continuous operation until the section of

approved size and shape is completed. Make pour cut-offs of approved detail and location.

I. Handle concrete as rapidly as practicable from mixer to place of deposit by methods which prevent separation or loss of ingredients. Deposit as nearly as practicable in final position to avoid rehandling or flowing. Do not drop concrete freely where reinforcing bars will cause segregation, nor drop freely more than four feet. Deposit to maintain a plastic surface approximately horizontal. In walls, deposit in horizontal layers not over eighteen inches deep. In pouring columns, walls or thin sections of considerable heights, use openings in forms, elephant trunks, tremies or other approved devices which permit concrete to be placed without segregation or accumulation of hardened concrete on forms or metal reinforcement above the level of the concrete. Install so concrete will be dropped vertically.

J. Concrete that has partially hardened shall not be deposited in the work.

K. All concrete floors except sloping to drains shall be brought to a level not exceeding one-eighth inch (1/8") in a 10'-0" measured with a straight edge.

L. Vibrating: Employ as many vibrators and tampers as necessary to secure the desired results. Minimum: one per each 20 cubic yards of concrete placed per hour. Eliminate the following practices: Pushing of concrete with vibrator; external vibration of forms; allowing vibrator to vibrate against reinforcing steel where steel projects into green concrete; allowing vibrator to vibrate contact faces of forms. Vibrators shall function at a minimum frequency of 3600 cycles per minute when submerged in concrete. Supplement vibration by forking and spading along the surfaces of the forms and between reinforcing whenever flow is restricted.

M. Tremie Concrete: Tremie concrete is a special procedure for placing concrete underwater. Tremie concrete shall be placed by pump or a gravity feed pipe. If a gravity feed pipe is used it shall be 8" minimum diameter and shall be affixed with a shutoff device at the bottom that will allow filling of the pipe with concrete without allowing water to enter. The trunk of the pump or gravity pipe shall be placed at the bottom of caisson prior to placing any concrete. The pump trunk or gravity pipe shall be removed slowly as the caisson is filled insuring that the end of pump trunk or gravity pipe is embedded in concrete a minimum of 1 foot.

3.08 CURING

A. General: Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures and shall be maintained with minimum moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete.

B. Initial Curing:
1. Initial curing shall immediately follow the finishing operation. Concrete shall be kept continuously moist at least overnight. One of the following material or methods shall be used: Ponding or continuous sprinkling; absorptive mat or fabric kept continuously wet.
2. Curing compounds conforming to ASTM C309. Such compounds shall be applied in accordance with the recommendations of the manufacturer and shall not be used on any surface against which additional concrete or other cementitious finishing materials are to be bonded, where epoxy flooring is

called for, where concrete topping is to receive waterproofing membrane, nor on surfaces where such curing is prohibited by the project specifications.

C. Final Curing:
1. Immediately following the initial curing and before the concrete has dried, additional curing shall be accomplished by one of the following materials or methods:
   a. Continuing the method used in initial curing.
   b. Waterproofing paper conforming to the requirements of ASTM C171.
   c. Other moisture-retaining coverings as approved.

D. Duration of Curing: The final curing shall continue until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of the air in contact with the concrete is above 50 degrees F. has totaled seven days. If high-early-strength concrete has been used, the final curing shall continue for a total of three days. Rapid drying at the end of the curing period shall be prevented.

E. Formed Surfaces: Steel forms heated by the sun and all wood forms in contact with the concrete during the final curing period shall be kept wet. If forms are to be removed during the final curing period, one of the above curing materials or methods shall be employed immediately. Such curing shall be continued for the remainder to the curing period.

F. Exposed Interior Slabs:
1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operations by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

3.09 LIQUID FLOOR TREATMENTS

A. Penetrating liquid floor treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and Complete surface repairs.
2. Do not apply to concrete that is less than seven days old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if the surface is rough or pourous.

B. Sealing coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.10 CONCRETE FINISHES

A. Finishes:

Element:	Finish
Exposed foundation surfaces	Rough troweled finish
Permanently exposed formed surfaces	Grout cleaned and sacked
Slabs	Smooth troweled finish

B. Grout Cleaned Finish: After the concrete still freshly hardened has been pre-dampened, a slurry consisting of one part cement and one and one-haft parts sand passing the No. 16 sieve, by damp loose volume, shall be spread over the surface with clean burlap pads or sponge rubber floats. Any surplus shall be removed by scraping and then rubbing with clean burlap. The finish shall be cured in an approved manner. Sample to be approved by Architect.

C. Troweled Finish: Where a troweled finish is specified, the surface shall be finished first with power floats, then with power trowels, and finally with hand trowels. The first troweling after power floating shall be done by a power trowel and shall produce a smooth surface which is relatively free of defects but which may still contain some trowel marks. Additional troweling shall be done by hand after the surface has hardened sufficiently. The final troweling shall be done when a ringing sound is produced as the trowel is moved over the surface. The surface shall be free of any trowel marks, uniform in texture and appearance.

D. Broom or Belt Finish: Slabs shall be given a coarse traverse scored texture by drawing a broom or burlap belt across the surface. Slabs with less than 6% slope shall receive a medium broom finish. Slabs with greater than 6% slope shall receive a heavy broom finish. This operation shall follow immediately after troweling.

3.11 PROTECTION

A. Protect from injurious action of elements and defacement of any nature during operations.

3.12 PATCHING AND CLEANING

A. After forms are removed, remove projecting fins, bottles, form ties, nails, etc. not necessary for the work or cut back one inch from the surface. Joint marks and fins in exposed work shall be smoothed off and cleaned as directed by the Architect.

B. Repair defects in concrete work as directed by the Engineer. Chip voids and stone pockets to a depth of one inch or more as required to remove all loose material. Voids, surface irregularities, chipped areas, etc., shall be filled by patching, gunite or rubbing, as directed by the Architect. Repaired surfaces shall duplicate appearance of unpatched work.

C. Clean exposed concrete surfaces and adjoining work stained by leakage of concrete to approval of Architect.

3.13 CLEANUP

A. In addition to the requirements of Supplementary General Conditions, clean up all concrete and cement work on completion of this portion of the work, except protective coatings or building papers shall remain until floors have completely cured or until interior partitions are to be installed.

3.14 GROUTING

A. Column base plates: The grout shall be mixed and placed in strict accordance with manufacturer's instructions. Care shall be taken in the grouting to ensure that there are no voids or air pockets, and that there is full bearing between the base plates and the grout.

B. Bearing plates and channels: The space between plates and channels bearing against masonry or concrete shall be filled with grout when required by the Engineer. The grout shall be mixed and placed in strict accordance with manufacturer's instructions. Care shall be taken in the grouting to ensure that there are no voids or air pockets, and that there is full bearing between the bearing plates and channels and the grout.

3.15 CONCRETE SURFACE REPAIRS

A. Inspect all concrete surfaces immediately upon formwork removal. Notify Architect/Engineer of identified minor defects. Repair all minor defects as directed.

B. Surface and Finish Defects: Repair as directed by the Architect/Engineer, at no added expense to the Owner. Repairs include all necessary materials; reinforcement grouts, dry pack, admixtures, epoxy and aggregates to perform required repair.
   1. Repair minor defective surface defects by use of drypack and surface grinding. Specific written approval of Architect/Engineer is required. Submit proposed patching mixture and methods for approval prior to commencing work.
   2. Slabs-on-Grade, Elevated Slabs and on Slabs on Metal Deck: Review for "curled" slab edges and shrinkage cracks prior to installation of other floor finishes. Grind curled edges flush, fill cracks of 1/16 inch and greater with cementitious grout.
   3. Grind high spots, fins or protrusions caused by formwork; Fill-in pour joints, voids, rock pockets, tie holes and other void not impairing structural strength. Provide surfaces flush with surrounding concrete.

3.16 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required compressive strength, lines, details, dimensions, tolerances, finishes or specified requirements; as determined by the Architect/Engineer.

B. Repair or replacement of defective concrete will be determined by the Architect/Engineer who may order additional testing and inspection at his option. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

C. Specific Defects:
1. "Low-Strength" concrete not meeting specified compressive strength after 28 days:
   a. Test remaining cylinder(s) at 56 days. If strength requirements are met, concrete strength is acceptable.
2. Concrete not meeting the maximum allowable drying shrinkage requirements: Complete removal and replacement of defective concrete, as directed by the Architect/Engineer.
3. Excessive Shrinkage, Cracking, Crazing or Curling; Defective Finish: Remove and replace if repair to acceptable condition is not feasible.
4. Lines, Details, Dimensions, Tolerances: Remove and replace if repair to acceptable condition is not feasible.
5. Slab sections not meeting specified tolerances for trueness/flatness or lines/levels: Remove and replace unless otherwise directed by the Architect/Engineer. Minimum area for removal: Fifteen square feet area unless directed otherwise by the Architect/Engineer.
6. Defective work affecting the strength of the structure or the appearance: Complete removal and replacement of defective concrete, as directed by the Architect/Engineer.
7. Concrete in which defective or inadequate reinforcing steel has been placed: Complete removal and replacement of defective concrete, as directed by the Architect/Engineer.

3.17 FIELD QUALITY CONTROL

A. Inspections: The Owner's agent will perform inspections shown on the contract drawings.

B. Engineer Review: The Engineer shall inspect the surfaces between plates and channels, bearing on masonry and concrete to determine if grouting of space is necessary. If grouting of space is necessary, the Owner's agent shall inspect the grouting procedure.

C. Sampling and Testing: The Owner's agent will perform sampling and testing shown on the contract drawings.

D. Test Results: Test results shall be reported in writing to Engineer and Contractor within 7 days after tests are made. Test results of less than .5 fc' at 7 days and less than fc' at 28 days shall be reported in writing to the Engineer and Contractor within 48 hours after tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing services, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests. Strength level of concrete will be considered satisfactory if the averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below the specified compressive strength by more than 500 psi. Concrete batch plant weight tags shall be collected at the site and submitted to the Engineer.

When the strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing in-place concrete.

E. Additional Tests: The Owner's agent will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Owner's agent may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, other additional testing as may be required, and cost of repairing areas of structure tested when unacceptable concrete is verified.

3.18 Water Drainage Test: The Owner's agent will perform testing of all sloped concrete slabs as indicated below:

1. Sloped concrete slabs shall be subject to additional testing requirements. The ability of the concrete slabs to efficiently and completely shed water is critical to the performance of the buildings.
2. Upon completion of each sloped concrete slab (elevated or on grade), a water drainage test shall be performed to ensure that water is shed from the sloped slabs completely without ponding and to the satisfaction of the Owner and the Architect.
3. Failure of the sloped slab to shed water completely without ponding will result in the complete removal of the concrete slab by the concrete contractor at no additional cost to the owner.
4. The concrete slab shall then be re-installed at no additional cost to the Owner and the test shall performed again. Removal and re-installation shall continue until the slab sheds water completely without ponding.
5. Concrete patching or topping slabs shall not be acceptable.

3.19 IMPORTANT MATERIALS NOTE

A. THE FOLLOWING MATERIALS WILL NOT BE ALLOWED FOR USE IN THE CONCRETE MIX.

1. FLY ASH
2. CALCIUM CHLORIDE
3. IF THESE MATERIALS ARE USED, THE CONTRACTOR WILL BE REQUIRED TO REMOVE THE CONCRETE FROM THE PROJECT AND REPLACE IT AT HIS OWN EXPENSE.

END OF SECTION 03 30 00

SECTION 03 70 11
POST INSTALLED ANCHORS

PART 1 - GENERAL

1.01 APPLICABLE SECTIONS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing and installing dowels in existing concrete, and masonry as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:
1. Installation of adhesive anchors in existing concrete and masonry.
2. Installation of expansion anchors in existing concrete and masonry.
3. Installation of threaded anchors in existing concrete and masonry.

C. Related Work Specified Elsewhere:
1. Reinforcing Steel; Section 03 20 00
2. Cast-in-Place Concrete; Section 03 30 00
3. Shotcrete; Section 03 36 00
4. Concrete Unit Masonry; Section 04 22 00

1.03 QUALITY ASSURANCE

A. Codes and Standards: Comply with all Federal, State and local codes and safety regulations. In addition, comply with the provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. ACI 318, "Building Code Requirements of Reinforced Concrete", current edition.
2. California Building Code, current edition.

B. Testing and Inspection: The Owner shall employ an independent testing laboratory or the Engineer as the Owner's agent to perform the inspections and tests, shown on the contract drawings and submit certified test results. The Contractor will cooperate with and notify the Owner's Agent at least 24 hours in advance of inspections required.

1.04 SUBMITTALS

A. General Requirements:
1. Submittals shall be made to the Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
2. Construction and fabrication shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work.

B. Product Data: Manufacturer's catalog sheets including instruction for use and description of application shall be provided on each of the following materials:
   1. Adhesive Anchors - In addition to Manufacturer's catalog sheets the Contractor shall provide a written description of where each adhesive material will be used for each different application and an explanation of why the particular material was selected.
   2. Expansion Anchors - In addition to Manufacturer's catalog sheets the Contractor shall provide a written description of where each anchor will be used for each different application and an explanation of why the particular material was selected.
   3. Threaded Anchors - In addition to Manufacturer's catalog sheets the Contractor shall provide a written description of where each anchor will be used for each different application and an explanation of why the particular material was selected.

PART 2 - PRODUCTS

2.01 ADHESIVE ANCHORING SYSTEMS FOR CONCRETE

A. Adhesive anchoring systems shall have current ICC or IAPMO reports for shear and tension in cracked concrete per the requirements of the California Building Code. Adhesive anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
   1. HIT-RE 500 V3; Hilti [ICC ESR 3814].
   2. HIT HY 200; Hilti [ICC ESR 3187].
   3. SET-XP; Simpson Strong Tie [ICC ESR 2508].
   4. AT-XP; Simpson Strong Tie [IAPMO UES ER 263].
   5. PURE 110+; DeWalt\Powers Fasteners [ICC ESR 3298].
   6. AC100+ GOLD; DeWalt\Powers Fasteners [ICC ESR 2582].
   7. Approved Equal.

2.02 ADHESIVE ANCHORING SYSTEMS FOR GROUTED CONCRETE BLOCK

A. Adhesive anchoring systems shall have current ICC or IAPMO reports for shear and tension in grouted concrete block per the requirements of the California Building Code. Adhesive anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
   1. HIT HY 70; Hilti [ICC ESR 2682].
   2. SET-XP; Simpson Strong Tie [IAPMO UES ER 265].
   3. AT-XP; Simpson Strong Tie [IAPMO UES ER 281].
   4. AC100+ Gold, DeWalt\Powers Fasteners [ICC ESR 3200]
   5. Approved Equal.

2.03 ADHESIVE ANCHORING SYSTEMS FOR UNREINFORCED MASONRY

A. Adhesive anchoring systems shall have current ICC or IAPMO reports for shear and tension in unreinforced masonry per the requirements of the California Building Code. Adhesive anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
   1. HIT HY 70; Hilti [ICC ER 3342].

2. SET; Simpson Strong Tie [ICC ER 1772].
3. Approved Equal.

2.04 EXPANSION ANCHORING SYSTEMS FOR CONCRETE

A. Expansion anchoring systems shall have current ICC or IAPMO reports for shear and tension in cracked concrete per the requirements of the California Building Code. Expansion anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
1. Kwik Bolt TZ; Hilti [ICC ESR 1917].
2. Strong Bolt 2 Wedge Anchors; Simpson Strong Tie [ICC ESR 3037].
3. Power-Stud+ SD2; DeWalt\Powers Fasteners [ICC ESR 2502].
4. Approved equal.

2.05 EXPANSION ANCHORING SYSTEMS FOR GROUTED CONCRETE BLOCK

A. Expansion anchoring systems shall have current ICC or IAPMO reports for shear and tension in grouted concrete block per the requirements of the California Building Code. Expansion anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
1. Kwik Bolt 3; Hilti [ICC ESR 1385].
2. Wedge All Anchors; Simpson Strong Tie [ICC ESR 1396].
3. Power-Stud+ SD1; DeWalt\Powers Fasteners [ICC ESR 2966].
4. Approved equal.

2.06 THREADED ANCHORING SYSTEMS FOR CONCRETE & GROUTED CONCRETE BLOCK

A. Threaded anchoring systems shall have current ICC or IAPMO reports for shear and tension in cracked concrete and grouted concrete block per the requirements of the California Building Code. Threaded anchors shall be used in strict accordance with manufacturer's recommendations. Subject to compliance with requirements provide one of the following:
1. Kwik HUS-EZ; Hilti [ICC ESR 3027].
2. Titen HD; Simpson Strong Tie [ICC ESR 2713].
3. Titen Concrete & Masonry Screw; Simpson Strong Tie.
4. Screwbolt+; DeWalt\Powers Fasteners [ICC ESR 3889-Concrete].
5. Approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation of post installed anchors, including drilling and cleaning of holes, shall be in accordance with the current ICC or IAPMO report and the manufacturer’s recommendations.

B. Holes shall be drilled by methods that will not shatter or damage the concrete adjacent to the holes. Holes drilled through members or into thin elements such as walls or slabs shall utilize rotary drills to avoid impact damage to the opposite side of the member.

C. Holes in which longitudinal or transverse reinforcement is encountered during drilling before the specified depth is attained shall be rejected. A new hole, which does not strike reinforcement, shall be drilled adjacent to the rejected hole to the depth shown on the plans. Abandoned holes shall be patched with high strength grout or other material approved by the engineer.

D. The contractor shall use non-destructive methods to locate existing reinforcement prior to drilling where designated on the plans at no additional cost.

E. Any dowels which fail to bond or are damaged before new concrete is placed shall be removed and replaced at the contractor's expense.

F. Adhesive anchors shall be installed in concrete having a minimum age of 21 days at the time of anchor installation.

G. Installation of adhesive anchors that are to be under sustained tension loading in horizontal to vertically overhead orientation shall be done by a certified adhesive installer (AAI) as certified through ACI and in accordance with ACI 318 section D.9.2.2. Proof of current certification shall be submitted to the Engineer for approval prior to the commencement of installation.

3.02 FIELD QUALITY CONTROL

A. Testing and Inspections: The Owner's Agent will perform the inspections shown on the contract drawings for the placement of post installed anchors.

B. Test Results: Test results shall be reported in writing to the Architect and Contractor on a weekly basis, but no later than 5 working days after the end of the week in which the tests were performed.

C. Additional Tests: Additional testing required due to failure of post installed anchors to achieve the specified requirements shall be performed by the Owner's Agent at the Contractor's expense.

END OF SECTION 03 70 10

SECTION 04 20 00
UNIT MASONRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Concrete masonry units.
2. Firebox brick (pavers).
3. Mortar and grout.
4. Steel reinforcing bars.
5. Ties and anchors.
6. Embedded flashing.
7. Miscellaneous masonry accessories.
8. Masonry-cell fill.

B. Products Installed but not Furnished under This Section:
1. Steel lintels in unit masonry.
2. Steel shelf angles for supporting unit masonry.
3. Cavity wall insulation.

C. Related Requirements:
1. Section 07 19 00 "Water Repellents" for water repellents applied to unit masonry assemblies.

1.03 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.

C. Samples for Initial Selection:
1. Colored mortar.
2. Weep holes/cavity vents.

D. Samples for Verification: For each type and color of the following:
1. Exposed CMUs.
2. Weep holes and cavity vents.
3. Accessories embedded in masonry.
4. Firebox brick pavers.

1.06 INFORMATIONAL SUBMITTALS

A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

B. Qualification Data: For testing agency.

C. Material Certificates: For each type and size of the following:
1. Masonry units.
   a. Include material test reports substantiating compliance with requirements.
   b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
   c. For exposed brick, include test report for efflorescence according to ASTM C67.
   d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Integral water repellent used in CMUs.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Mortar admixtures.
5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Joint reinforcement.
9. Anchors, ties, and metal accessories.

D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.

F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.07 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
   1. Build mockups for typical exterior and interior walls in sizes approximately 60 inches long by 72 inches high by full thickness, including face and backup wythes and accessories.
      a. Include a sealant-filled joint at least 16 inches long in each mockup.
      b. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
      c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
   2. Clean one-half of exposed faces of mockups with masonry cleaner as indicated.
   3. Protect accepted mockups from the elements with weather-resistant membrane.
   4. Approval of mockups is for tooling of joints; and aesthetic qualities of workmanship.
      a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
      b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.09 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
   1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
   2. Protect sills, ledges, and projections from mortar droppings.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.02 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
   1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.03 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
   1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.04 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
   1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
   2. Provide bullnose units for outside corners and jambs unless otherwise indicated.

B. Integral Water Repellent: Provide units made with integral water repellent for exposed units.
   1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E514/E514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) BASF Corp. – Construction Chemicals.
         2) Euclid Chemical Company (The); an RPM company.

C. CMUs: ASTM C90.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi.
   2. Density Classification: Medium weight.
      a. Units shall be blended with expanded shale, clay, or slate produced by the rotary kiln process and shall conform to ASTM C331 and ASTM C33. Units shall be graded to assure consistent texture with total mix weight not more than 115 lbs/CF..
   3. Size (Width): Manufactured to dimensions 3/8-inch less than nominal dimensions.
   4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

D. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.05 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
   1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
   2. Provide special shapes for applications where units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
   3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
   4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Firebox Brick Flooring Pavers: ASTM C 155
   1. Where indicated on the drawings, provide Fire Clay and High Alumina Refractory Brick; shall be manufactured in accordance with ASTM C 27-98.
   2. Unit Compressive Strength: Provide units with minimum average net area compressive strength of 8000 psi.
   3. Size: Each unit shall be 2-1/2 x 4.5 x 9 inches and comply with standard size variations. Unit materials shall be in compliance to withstand 1000 degree Celsius constant temperature. Units shall conform to ASTM C 16 for size and maximum deformation.
   4. Testing: ASTM C 210 for method of Reheat Change of Firebrick
   5. Certification: The manufacturer shall certify that the firebrick supplied will meet all standards as required for the job site conditions and intended use.

2.06 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
   1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of Portland cement and hydrated lime containing no other ingredients.

D. Colored Cement Products: Packaged blend made from Portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.
   1. Colored Portland Cement-Lime Mix:
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) Holcim (US) Inc.
         2) Lafarge North America Inc.
         3) Lehigh Hanson; Heidelberg Cement Group.
   2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.

E. Aggregate for Mortar: ASTM C144.
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
   2. For joints less than 1/4-inch-thick, use aggregate graded with 100 percent passing the No. 16 sieve.
   3. White-Mortar Aggregates: Natural white sand or crushed white stone.
   4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: 3/8” maximum size and in accordance with ASTM C404 “Standard Specification for Aggregates for Masonry Grout”.

G. Refractory Mortar Mix: Ground fireclay or nonwater-soluble, calcium aluminate, medium-duty refractory mortar that passes ASTM C199 test; or an equivalent product acceptable to authorities having jurisdiction.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. BASF Corp. – Construction Chemicals.
      b. Euclid Chemical Company (The); an RPM company.

I. Water: All water used for mortar and grout shall be clean and free from deleterious amounts of acids, salts, alkali, and organic materials.

2.07 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

2.08 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
   1. Stainless Steel Wire: ASTM A580/A580M, Type 316.
   2. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304 Type 316.
   3. Stainless Steel Bars: ASTM A276 or ASTM A666, Type 304.

C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.109-inch- thick, stainless steel sheet.

2. Tie Section: Triangular-shaped wire tie made from 0.187-inch – 0.25-inch-diameter, stainless steel wire.

D. Partition Top Anchors: 0.105-inch-thick metal plate with a 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from stainless steel.

E. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4-inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.

2.09 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016-inch thick.
2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.
   a. Manufacturers: Subject to compliance with requirements.
4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
5. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2-inch out from wall, with outer edge bent down 30 degrees and hemmed.
6. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.
7. Solder metal items at corners.

B. Flexible Flashing: Use the following unless otherwise indicated:
1. Copper-Laminated Flashing: 7-oz./sq.ft. copper sheet bonded between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
   a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Advanced Building Products Inc.
      2) Hohmann & Barnard, Inc.
      3) Wire-Bond.
      4) York Manufacturing, Inc.

C. Application: Unless otherwise indicated, use the following:
1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a drip edge .
4. Where flashing is fully concealed, use metal flashing or flexible flashing.

D. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Mortar Net Solutions.

E. Solder and Sealants for Sheet Metal Flashings:
   1. Solder for Stainless Steel: ASTM B32, Grade Sn96, with acid flux of type recommended by stainless steel sheet manufacturer.

F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

G. Termination Bars for Flexible Flashing: Stainless steel sheet 0.019 inch by 1-1/2 inches with a 3/8 inch sealant flange at top.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

D. Weep/Cavity Vent Products: Use one of the following unless otherwise indicated:
   1. Wicking Material: Absorbent rope, made from cotton UV-resistant synthetic fiber, 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity. Use only for weeps.
   2. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD by 4 inches long.
   3. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches long.
   4. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) Advanced Building Products Inc.
         2) Heckmann Building Products, Inc.
         3) Hohmann & Barnard, Inc.
         4) Wire-Bond.

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Advanced Building Products Inc.

b. CavClear/Archovations, Inc.
c. Heckmann Building Products, Inc.
d. Hohmann & Barnard, Inc.
e. Mortar Net Solutions.
f. Wire-Bond.

2. Configuration: Provide one of the following:
   a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.

2.11 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
      b. EaCo Chem, Inc.
      c. PROSOCO, Inc.

2.12 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Use portland cement-lime mortar unless otherwise indicated.
   3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
   1. For masonry below grade or in contact with earth, use Type M.
   2. For reinforced masonry, use Type S.
   3. For mortar parge coats, use Type S.
   4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type S.

D. Pigmented Mortar: Use colored cement product.
   1. Pigments shall not exceed 10 percent of portland cement by weight.
   2. Mix to match Architect's sample.

E. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 10 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Verify that foundations are within tolerances specified.
   2. Verify that reinforcing dowels are properly placed.
   3. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

3.03 TOLERANCES

A. Dimensions and Locations of Elements:
   1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
   2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.

3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:
1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.

C. Joints:
1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
   1. Install compressible filler in joint between top of partition and underside of structure above.
   2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
   3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.

3.05 MORTAR BEDDING AND JOINTING

A. Lay CMUs as follows:
   1. Bed face shells in mortar and make head joints of depth equal to bed joints.
   2. Bed webs in mortar in all courses of piers, columns, and pilasters.
   3. Bed webs in mortar in grouted masonry, including starting course on footings.
   4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
   5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush where indicated to receive waterproofing cavity wall insulation air barriers unless otherwise indicated.

3.06 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as follows:
   1. Walls shall have vertical control joints at a spacing approximately 1.5 times the wall height, but no greater than 20 feet on center.
   2. Install preformed control-joint gaskets designed to fit standard sash block.

C. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 07 92 00 "Joint Sealants," but not less than 3/8 inch.
   1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.07 LINTELS

A. Install steel lintels where indicated.

B. Provide concrete masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.08 FLASHING, WEEP HOLES, AND CAVITY VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.

B. Install flashing as follows unless otherwise indicated:
   1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
   2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches on interior face.
   3. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
   4. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 07 92 00 "Joint Sealants" for application indicated.
   5. Install metal drip edges with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 07 92 00 "Joint Sealants" for application indicated.
   6. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
   7. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
   8. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

E. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
   1. Use specified weep/cavity vent products to form weep holes.
   2. Space weep holes 24 inches o.c. unless otherwise indicated.

F. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

3.09 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
   1. Reinforcing steel shall be placed in accordance with the requirements of Section 03200, "Reinforcing Steel" of these Specifications and the requirements of this Specification Section.
   2. Reinforcing steel shall have contact lap splices that are wired tight together. Where dowels are allowed on the structural drawings, reinforcing steel shall be wired tight to dowels.
   3. Vertical bars shall have intermediate support brackets or shall be wired tight to horizontal steel at a spacing to not exceed 192 bar diameters.
   4. Reinforcing steel shall be coordinated with the control joint layout to provide additional reinforcing as shown on the drawings
   5.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Fill all cells with grout.
   2. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   3. Limit height of vertical grout pours to not more than 5’-0” lifts.
   4. High lift grouting may be used to a height of 12’-8” when approved by the Engineer. Requests for the use of high lift grouting shall be submitted to the Engineer and shall include construction methodology and alternate grout mix designs.

D. Mortar Mixing
   1. Perform all measurements of materials for mortar accurately using suitable calibrated devices. Shovel measurements will not be acceptable. 94 pounds of Portland Cements (1 sack) shall be considered as 1 cubic foot.

2. Use mixers of at least 1 sack capacity. Batches requiring fractional sacks will not be permitted unless the cement is weighted for each such batch.
3. Place the sand, cements and water in the mixer in that order for each batch of mortar and mix for a period of at least 2 minutes. Add the lime and continue mixing for as long as needed to secure a uniform mass, but in no case less than 10 minutes.
4. Retempering of mortar by dashing water over the mortar will not be permitted. Retemper mortar only by adding water into a basin made with the mortar and then carefully working the water into the mortar.
5. Mix the mortar and maintain it on the boards to a slump of 2-3/4 inches plus or minus 1/4 inch using a truncated cone 4 inches by 2 inches, 6 inches high. All mortar which is unused within 1 hour after the initial mixing shall be removed from the work.

3.10 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Testing Frequency: One set of tests for each 5000 sq.ft. of wall area or portion thereof.

C. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C67 for compressive strength.

D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.

E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.

F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

G. Prism Test: For each type of construction provided, according to ASTM C1314 at 7 days and at 28 days.

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
   1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
   2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
   3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
   4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
   5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
   6. Clean stone trim to comply with stone supplier's written instructions.

3.12 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 04 20 00

This Page Left Blank Intentionally

SECTION 05 12 00
STRUCTURAL STEEL AND MISCELLANEOUS IRON

PART 1 - GENERAL

1.01 APPLICABLE SECTION

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all material, supplies, equipment, tools, transportation, and facilities, and performing all labor and services necessary for, required in connection with or properly incidental to furnishing, fabricating, priming, and erecting structural steel and miscellaneous iron complete in place, as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:
1. All structural steel indicated on the drawings.
2. Furnishing all column anchor bolts and base assemblies with nuts and washers.
3. Supervision of the placement of anchor bolt assemblies

C. Related Work Specified Elsewhere:
1. Cast-in-place Concrete; Section 03 30 00
2. Grouting of Column Bases; Section 03 30 00
3. Placement of Anchor Bolts, Assemblies, and Embeds; Section 03 30 00, and Section 04 22 00

1.03 REFERENCE STANDARDS

A. The following is a list of reference standards referred to in this portion of the specification:
1. ASTM A36, "Specification for Carbon Structural Steel"
2. ASTM A53, "Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless"
3. ASTM A307, "Specification for Carbon Steel Bolts and Studs"
4. ASTM A500, "Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes"
5. ASTM A572, “Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel”
6. ASTM A992, “Specification for Steel for Structural Shapes for use in Building Framing”
7. ASTM F1554 “Specification for Anchor Bolts, Steel”
8. ASTM F3125 “Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated”
9. SSPC, "Systems and Specifications, Steel Structures Painting Manual Volume 2" by Steel Structures Painting Council.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with all Federal, State, and Local codes and safety regulations. In addition, the fabrication, priming, and erection of structural steel shall comply with all the applicable provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
   1. "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings" by the American Institute of Steel Construction, current edition.
   2. "Codes of Standard Practice for Steel Buildings and Bridges" by said AISC, current edition.
   3. A.W.S. "Structural Welding Code – Steel," D1.1, current edition.
   4. A.W.S. "Structural Welding Code – Seismic Supplement," D1.8, current edition.
   5. "Specifications for Structural Joints using ASTM A325 or A490 bolts," current edition as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, and endorsed by the AISC.

B. Qualifications: Welding processes and welding operators shall be qualified in accordance with AWS "Standard Qualification Procedure". Welders to be employed are to provide AWS certification for the type of welding necessary.

C. Mill Certificates: The Contractor shall provide Mill Certificates for structural steel and miscellaneous iron in accordance with the requirements of Part 1.05, "Submittals", of this specification section. When Mill Certificates cannot be provided, laboratory test reports shall be provided in accordance with the requirements of Part 1.05, "Submittals", of this specification section.

D. Sampling, Testing, and Inspection:
   1. General:
      a. All materials and work shall be subject to inspection at the mill, the fabricating shop, and at the building site. Material or workmanship not complying fully with the drawings, and/or specifications will be rejected.
      b. If the inspector, through oversight or otherwise, has accepted material or work which is defective or contrary to specifications, this material or work, regardless of state of completion, may be rejected.
   2. Owner: The Owner shall employ an independent testing agency or the Engineer as the Owner's agent to perform sampling, testing, and inspections as shown on the contact drawings and submit certified test results.
   3. Contractor:
      a. The Contractor shall cooperate with and notify Owner's agent at least 24 hours in advance of inspections required and shall supply samples, test pieces, and facilities for inspection without extra charge.
      b. The Contractor shall identify and tag each lot of fabricated steel to be shipped to the site by heat numbers in such a manner that it can be accurately identified at the job site.
      c. The Contractor shall remove all unidentified steel received at the site.

1.05 SUBMITTALS

A. General Requirements
   1. Submittals shall be made to Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
   2. Construction, and fabrication or ordering of materials shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work.

B. Shop Drawings:
1. Shop drawings for steel fabrications shall be submitted for review.
2. Submittals shall include anchor bolt setting plans, erection drawings and fabrication drawings. Information shown on the shop drawings shall include, but not be limited to, the following:
   a. Anchor bolt setting plans shall show layout, anchor bolts sizes and grades, embedment, and template construction.
   b. Erection Drawings shall show layout, marking and position of each member, and field connections.
   c. Fabrication Drawings shall show details of members, including sizes, grades, connections, spacing of bolts and welds, designation of Architecturally Exposed Structural Steel, and the limits of paint applications.
3. Partial submittals shall be clearly identified by the contractor.
4. The omissions from the shop and installation drawings of any materials shown on the Specifications shall not relieve the contractor of the responsibility of furnishing and installing such materials, even though such drawings may have been returned and reviewed.
5. Shop drawings and calculations for temporary shoring and bracing shall be submitted for review. The shop drawings shall show layout, size of members and connection details. Calculations shall show all stresses in members and connections, from dead, live, and lateral loads in accordance with the requirements of the C.B.C. current governing edition. Shop drawings and calculations for temporary shoring and bracing shall be stamped and signed by a civil engineer registered in the State of California.
6. Contract drawings shall not be reproduced in whole or in part. Contract drawings modified into shop drawings will be returned without review.
7. Revised submittals shall have clear indications of revised or new information. Clouding is an acceptable form of identification.

C. Mill Certificates:
1. The Contractor shall provide Mill Certificates for each grade of steel for each heat to be used on project.
2. Mill Certificates shall meet the requirements of AISC 360 and all applicable ASTM standards.
3. Mill Certificates shall be furnished with each lot of material shipped to the site and shall be signed by the Contractor which will serve to certify that all structural steel materials installed comply with specified requirements.
4. When Mill Certificates cannot be provided, the Contractor shall hire a professional testing laboratory to verify compliance of each type of material to be used and provide laboratory test reports. The cost of testing shall be paid for by the Contractor.

D. Laboratory Test Reports:
1. Laboratory test reports shall show the name of testing agency, date of testing, types of tests performed and shall be signed by a principal of the testing agency who is a registered civil engineer in the State of California.
2. When required by other portions of these specifications, laboratory test reports shall be submitted for each type of steel for each heat to show compliance with appropriate ASTM Standards and these specifications.

E. Welding Procedure Specifications:
1. Welding procedure specifications for all prequalified joints shall be submitted per AWS D1.1, 5.1.2 to the Engineer and reviewed prior to beginning fabrication. Non prequalified joints shall be qualified per AWS requirements.

1.06 DEFINITIONS

A. Architecturally Exposed Structural Steel: Structural steel designated as "architecturally exposed structural steel" or "AESS" in the Contract Documents.
   1. Provide “AESS” as follows: Exposed structural steel that is within 16 feet vertically and 10 feet horizontally of a walking surface and is visible to a person standing on that walking surface.

PART 2 - PRODUCTS

2.01 MATERIAL

A. Structural Steel Wide Flange and Tee Shapes: Shall be new and shall conform to the requirements of ASTM A992.

B. Structural Steel Channels and Angles: Shall be new and shall conform to the requirements of ASTM A36.

C. Structural Steel Plate: Shall be new and shall conform to the requirements of ASTM A572.

D. Structural Steel Tubes: Shall be new and shall conform to the requirements of ASTM A500, Grade B.

E. Steel Pipe: ASTM A53, Types E or S, Grade B, with sulphur not exceeding .05%.

F. Arc-welding Electrodes: Arc-welding electrodes shall be E70 series electrodes for A36, A572 and A992 material, E80 Series for A706 reinforcing steel and E90 series for A615 reinforcing steel. Electrodes shall be as recommended by their manufacturers for the positions and conditions of actual use. All welds used in members and connections in the seismic Force Resisting System shall be made with filler metals meeting the requirements specified in AWS D1.8 clause 6.3.

G. High Strength Bolts: High strength bolts (HSB) shall conform to ASTM F3125 Grade A325.

H. Machine Bolts: Machine bolts (MB) and sag rods shall conform to ASTM A307, manufactured to American Standard Bolt and Nut dimensions with "Free Fit - Class 2" threads. All unfinished bolts shall have an approved lock washer under nut.

I. Prime Coat: Prime coat for interior members shall meet the requirements of SSPC-Paint 25 or acceptable equal. Prime coat for exterior members shall meet the requirements of SSPC-Paint 20 or acceptable equal.

J. Smooth Rods: Smooth Rods shall conform to ASTM A36.

K. Anchor Bolts: Anchor bolts shall conform to ASTM F1554 grade 36.

L. Headed Studs, Deformed Bar Anchors, and Threaded Studs: Headed Studs shall be H4L or S3L; Deformed Bar Anchors shall be D2L and Threaded Studs shall be CPL as manufactured by TRW Nelson Stud or equal.

M. High Strength Rods: High strength rods shall conform to ASTM F1554 grade 55, unless noted otherwise.

N. Nuts shall be as shown below and finish shall match fastener.

	Fastener Grade & Size	Nut Class	Nut Style
Bolts:			
ASTM F3125 Gr A325	Type 1, Uncoated	ASTM A563-C,C3,D,DH, DH3	Heavy Hex
	Type 1, Zinc Coated	ASTM A563-DH	Heavy Hex
	Type 3, Uncoated	ASTM A563-C3,DH3	Heavy Hex
ASTM F3125 Gr A490	Type 1, Uncoated	ASTM A563-DH,DH3	Heavy Hex
	Type 3, Uncoated	ASTM A563-DH3	Heavy Hex
Rods:			
ASTM A1554	¼" to 1½" Uncoated	ASTM A563-A	Heavy Hex
	Over 1½" to 3" Uncoated	ASTM A563-DH	Heavy Hex
	¼" to 3" Zinc Coated	ASTM A563-DH	Heavy Hex

O. Washers shall be flat circular, rectangular or square beveled washers and shall conform to ASTM F436 Type 1. Finish shall match nut. Washers shall be installed under the element being turned for A325 bolts and under both the head and the nut for A490 bolts.

2.02 FABRICATION

A. Welding: Welding shall be by operators who are qualified by test as per AWS "Standard Qualification Procedure" to perform type of work required.

B. High Strength Bolting: All high strength bolted connections shall be bearing type connections unless otherwise noted on the plans. Where noted on the plans, high strength bolted connections shall be slip critical type connections.

C. Bolts, rods, washers and nuts exposed to weather shall be hot dipped galvanized steel in compliance with ASTM A153.

D. Straightness (camber and sweep) Tolerance:
1. Unless otherwise noted, straightness tolerances shall be per ASTM A6.
2. Sweep tolerance for channels and angles: Maintain a maximum variation of 1/8” times the number of feet of total length divided by 5, unless alternate criteria is approved by the Engineer.

E. Painting:
1. Priming: Painting under this section is limited to priming.
   a. The prime coat shall be applied in the shop and touched up after erection. Anchor bolts and column assemblies 2 inches and more below finish floor shall be left unpainted. High strength bolted connections shall be left unpainted within 3" of connection.
   b. Paint shall be delivered to shop in original sealed containers marked with manufacturer's name and brand identification.
   c. Use paint as prepared by the manufacturer without thinning or other admixture unless so stated by the manufacturer. Execute painting on a dry clean surface, free from rust, loose scale or grease. Do not do any painting in temperatures lower than 45 degrees F.

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. The workmanship shall be in accordance with AISC Standard Specifications, and shall be of the highest quality found in contemporary structural work.

B. All exposed gaps or bolt holes as a result of slotted gusset plates or erection bolts shall be filled and ground smooth. Erection bolts shall be removed after welding. Exposed ends of pipes and hollow sections shall be sealed with a cap plate and ground smooth unless noted otherwise on the architectural drawings.

C. For Architecturally Exposed Structural Steel (AESS) shop fabricate and assemble AESS to the maximum extent possible. Locate field joints at concealed locations if possible. Detail assemblies to minimize handling and to expedite erection. Handle and fabricate AESS with special care including the following:

1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.
2. Grind sheared, punched, and flame-cut edges of AESS to remove burrs and provide smooth surfaces and edges.
3. Fabricate AESS with exposed surfaces free of mill marks, including rolled trade names and stamped or raised identification.
4. Fabricate AESS with exposed surfaces free of seams to maximum extent possible.
5. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.
6. Fabricate with piece marks fully hidden in the completed structure or made with media that permits full removal after erection.
7. Fabricate AESS to the tolerances specified in AISC 303 Section 10.2 for steel that is designated AESS.
8. Seal-weld open ends of hollow structural sections with 5/16-inch closure plates for AESS.
9. Ease exposed edges to a radius of approximately 1/32 inch radius, unless otherwise shown on the drawings. Miter exposed corner joints and machine fit to a hairline joint.
10. Coping and Blocking Tolerance: Maintain a uniform gap of 1/8”+/- 1/32” at all copes and blocks.
11. Joint gap Tolerance: Maintain a uniform gap of 1/8”+/- 1/32”.
12. Straightness (camber and sweep) Tolerance: Maintain one half the standard camber and sweep tolerances for rolled shapes in ASTM A6, per AISC 303 Section 10.2.2.

3.02 ERECTION

A. The Contractor will be responsible to erect the complete structural frame plumb and true to line and grade, in conformance with the AISC Code of Standard Practice.

B. Temporary Bracing and Shoring:

1. The Contractor shall temporarily brace the frame in both directions and shall maintain columns plumb until the final connections of the framework and construction of diaphragms are complete.
2. The Contractor shall provide such temporary shoring and additional bracing of steel frame as required to adequately and safely support any or all loads imposed upon the structure during construction.

3. Submit shop drawings for temporary bracing and shoring in accordance with the requirements of Part 1.05 "Submittals", of this specification section.

C. Field Painting:
1. After erection, all field welds, field bolts and abraded or scratched surfaces shall be cleaned and given an additional spot coat of the same paint used for the shop coat. The entire work shall be left in a neat, clean and acceptable condition.

3.03 FIELD QUALITY CONTROL

A. Inspections: The Owner's agent will perform the inspections shown on the contract drawings.

B. Contractor:
1. The Contractor shall hire the Engineer responsible for the design of temporary bracing and shoring to inspect the work as detailed on the reviewed shop drawings.
2. The Engineer responsible for design, temporary bracing and shoring shall write a letter to the Architect certifying construction of temporary bracing and shoring is in accordance with the reviewed shop drawings, prior to start of construction requiring temporary bracing or shoring.

END OF SECTION 05 12 00

This Page Left Blank Intentionally

SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Slotted channel framing.
4. Metal ladders.
5. Ladder safety cages.
6. Alternating tread devices.
7. Metal ships' ladders.
8. Miscellaneous steel trim including steel angle corner guards steel edgings.
9. Metal bollards.
10. Abrasive metal nosings treads and thresholds.
11. Miscellaneous fabricated training props:
    a. Burn Doors, Double Burn Doors, Shutters.
    b. Removable Panel and Components.
    c. Cage Props.
    d. Rappelling Tie-offs.
    e. Mock Cabinets.
    f. Burn Racks.
    g. Miscellaneous Burn Accessories, Vents, and Scuppers.

B. Products furnished, but not installed, under this Section include the following:
1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:
1. Section 03 30 00 "Cast-in-Place Concrete" for installing anchor bolts, steel pipes sleeves, slotted channel inserts, wedge type inserts, and other items cast into concrete.
2. Section 04 20 00 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
3. Section 05 12 00 "Structural Steel and Miscellaneous Iron" for steel framing, supports, elevator machine beams, hoist beams, divider beams, door frames, and other steel items attached to the structural-steel framing.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.04 ACTION SUBMITTALS

A. Product Data: For the following:
1. Nonslip aggregates and nonslip-aggregate surface finishes.
2. Fasteners.
3. Shop primers.
4. Shrinkage-resisting grout.
5. Slotted channel framing.
6. Manufactured metal ladders.
7. Ladder safety cages.
8. Alternating tread devices.
9. Metal ships' ladders.
10. Metal bollards.
11. Pipe Downspout guards.
12. Abrasive metal nosings treads and thresholds.
13. Metal downspout boots.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
1. Steel framing and supports for overhead doors.
2. Steel framing and supports for mechanical and electrical equipment.
3. Steel framing and supports for applications where framing and supports are not specified in other Sections.
4. Shelf angles.
5. Metal ladders.
6. Ladder safety cages.
7. Alternating tread devices.
8. Metal ships' ladders.
9. Metal floor plate and supports.
10. Structural-steel door frames.
11. Miscellaneous steel trim including steel angle corner guards steel edgings.
12. Metal bollards.
13. Loose steel lintels.

C. Delegated-Design Submittal: For ladders alternating tread devices, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.

B. Mill Certificates: Signed by stainless steel manufacturers, certifying that products furnished comply with requirements.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

E. Research Reports: For post-installed anchors.

1.06 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
1. AWS D1.1/D1.1M "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M "Structural Welding Code - Aluminum."
3. AWS D1.6/D1.6M "Structural Welding Code - Stainless Steel."

1.07 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements" to design ladders alternating tread devices.

B. Structural Performance of Alternating Tread Devices: Alternating tread devices shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Uniform Load: 100 lbf/sq.ft. (4.79 kN/sq.m.).
2. Concentrated Load: 300 lbf (1.33 kN) applied on an area of 4 sq.in. (2580 sq.m.).
3. Uniform and concentrated loads need not be assumed to act concurrently.
4. Alternating Tread Device Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
5. Comply with applicable railing loadings in Section 05 52 13 "Pipe and Tube Railings."

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
   1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.02 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Stainless Steel Bars and Shapes: ASTM A276/A276M, Type 316L.

D. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.

E. Rolled-Stainless Steel Floor Plate: ASTM A793.

F. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

G. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

H. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
   1. Size of Channels: 1-5/8 by 1-5/8 inches (41 by 41 mm).
   2. Material: Galvanized steel, ASTM A653/A653M, structural steel, Grade 33 (Grade 230), with G90 (Z275) coating; 0.108-inch (2.8-mm) nominal thickness.
   3. Material: Cold-rolled steel, ASTM A1008/A1008M, structural steel, Grade 33 (Grade 230); 0.0677-inch (1.7-mm) minimum thickness; unfinished.

I. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

J. Aluminum Plate and Sheet: ASTM B209 (ASTM B209M), Alloy 6061-T6.

K. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T6.

2.03 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
   1. Provide stainless steel fasteners for fastening aluminum stainless steel.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with hex nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325 (Grade A325M), Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, (ASTM A563M, Class 10S3) heavy-hex carbon-steel nuts; and where indicated, flat washers.

D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593 (ASTM F738M); with hex nuts, ASTM F594 (ASTM F836M); and, where indicated, flat washers; Alloy Group 1 (A1) Group 2 (A4).

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.
   1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
   1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
   2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches (41 by 22 mm) by length indicated with anchor straps or studs not less than 3 inches (75 mm) long at not more than 8 inches (200 mm) o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.04 MISCELLANEOUS MATERIALS

A. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

D. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

E. Concrete: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa).

2.05 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Fabricate seams and other connections of metal fabrications within, on, or used in conjunction with training buildings, structures, or props in a manner to exclude water. Provide weep holes where water may accumulate or water vapor/steam may be trapped.

I. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

J. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

K. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches (3.2 by 38 mm), with a minimum 6-inch (150-mm) embedment and 2-inch (50-mm) hook, not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c., unless otherwise indicated.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
   1. Fabricate units from slotted channel framing where indicated.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.07 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch (19-mm) bolts, spaced not more than 6 inches (150 mm) from ends and 24 inches (600 mm) o.c., unless otherwise indicated.
   1. Provide mitered and welded units at corners.
   2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches (50 mm) larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize shelf angles located in exterior walls.

D. Prime shelf angles located in exterior walls with zinc-rich primer.

E. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.08 METAL LADDERS

A. General:
   1. Comply with ANSI A14.3.

B. Steel Ladders:
   1. Space siderails 18 inches (457 mm) apart unless otherwise indicated.
   2. Siderails: Continuous, 1/2 by 2-1/2-inch (12.7 by 64-mm) steel flat bars, with eased edges.
   3. Rungs: 1-inch- (25-mm) diameter, steel bars.
   4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.

5. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung.
   a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Harsco Industrial IKG, a division of Harsco Corporation.
      2) Ross Technology Corp.
      3) W.S. Molnar Company.
6. Source Limitations: Obtain nonslip surfaces from single source from single manufacturer.
7. Support each ladder at top and bottom and not more than 60 inches (1500 mm) o.c. with welded or bolted steel brackets.
8. Galvanize ladders, including brackets.

2.09 LADDER SAFETY CAGES

A. General:
   1. Fabricate ladder safety cages to comply with ANSI A14.3. Assemble by welding or with stainless steel fasteners.
   2. Provide primary hoops at tops and bottoms of cages and spaced not more than 20 feet (6 m) o.c. Provide secondary intermediate hoops spaced not more than 48 inches (1200 mm) o.c. between primary hoops.
   3. Fasten assembled safety cage to ladder rails and adjacent construction by welding or with stainless steel fasteners unless otherwise indicated.

B. Steel Ladder Safety Cages:
   1. Primary Hoops: 1/4 by 4-inch (6.4 by 100-mm) flat bar hoops.
   2. Secondary Intermediate Hoops: 1/4 by 2-inch (6.4 by 50-mm) flat bar hoops.
   3. Vertical Bars: 3/16 by 1-1/2-inch (4.8 by 38-mm) flat bars secured to each hoop.
   4. Galvanize ladder safety cages, including brackets and fasteners.

2.10 ALTERNATING TREAD DEVICES

A. Alternating Tread Devices: Fabricate alternating tread devices of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Lapeyre Stair Inc.
      b. Precision Ladders, LLC.
   2. Tread depth shall be not less than 8-1/2 inches (216 mm) exclusive of nosing or less than 10-1/2 inches (267 mm) including the nosing, tread width shall be not less than 7 inches (178 mm), and riser height shall be not more than 8 inches (203 mm).
   3. Fabricate from steel and assemble by welding or with stainless steel fasteners.

B. Galvanize steel alternating tread devices, including treads, railings, brackets, and fasteners.

2.11 METAL SHIPS' LADDERS

A. Provide metal ships' ladders where indicated. Fabricate of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.
   1. Treads shall be not less than 5 inches (127 mm) exclusive of nosing or less than 8-1/2 inches (216 mm) including the nosing, and riser height shall be not more than 9-1/2 inches (241 mm).
   2. Fabricate ships' ladders, including railings from steel .
   3. Fabricate treads and platforms from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than 1/2 inch (12 mm) in least dimension.

B. Galvanize exterior steel ships' ladders, including treads, railings, brackets, and fasteners.

2.12 METAL FLOOR PLATE

A. Fabricate from rolled-steel floor plate of thickness indicated below:
   1. Thickness: As indicated.

B. Provide grating sections where indicated, fabricated from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than 1/2 inch (12 mm) in least dimension.

C. Provide steel angle supports as indicated.

D. Include steel angle stiffeners, and fixed and removable sections as indicated.

E. Provide flush steel bar drop handles for lifting removable sections, one at each end of each section.

2.13 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
   1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize exterior miscellaneous steel trim.

2.14 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 80 steel pipe.
   1. Cap bollards with 1/4-inch- (6.4-mm-) thick, steel plate with domed top.

B. Fabricate bollards with 3/8-inch- (9.5-mm-) thick, steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch (19-mm) anchor bolts.

1. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.

C. Prime steel bollards with zinc-rich primer.

2.15 PIPE DOWNSPOUT GUARDS

A. Fabricate pipe downspout guards from 3/8-inch- (9.5-mm-) thick by 12-inch- (300-mm-) wide, steel plate, bent to fit flat against the wall or column at both ends and to fit around pipe with 2-inch (50-mm) clearance between pipe and pipe guard. Drill each end for two 3/4-inch (19-mm) anchor bolts.

B. Galvanize steel pipe downspout guards.

2.16 METAL DOWNSPOUT BOOTS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. J.R. Hoe & Sons Inc.
2. Neenah Foundry Company.

B. Provide downspout boots made from cast iron in heights indicated with inlets of size and shape to suit downspouts. Provide units with flanges and holes for countersunk anchor bolts.

2.17 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize bearing and leveling plates.

C. Prime plates with zinc-rich primer.

2.18 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches (200 mm) unless otherwise indicated.

C. Galvanize loose steel lintels located in exterior walls.

2.19 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.20 GENERAL FINISH REQUIREMENTS

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.21 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
   1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
   1. Shop prime with universal shop primer unless zinc-rich primer is indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3 "Commercial Blast Cleaning."

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.02 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for overhead doors securely to, and rigidly brace from, building structure.

C. Anchor shelf angles securely to existing construction with anchor bolts.

3.03 INSTALLATION OF METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.
1. Do not fill removable bollards with concrete.

B. Anchor bollards to existing construction with anchor bolts. Provide four 3/4-inch (19-mm) bolts at each bollard unless otherwise indicated.
1. Embed anchor bolts at least 4 inches (100 mm) in concrete.

C. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches (75 mm) above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

3.04 INSTALLATION OF PIPE GUARDS

A. Provide pipe guards at exposed vertical pipes in at locations indicated on Drawings where not protected by curbs or other barriers. Install by bolting to wall or column with expansion anchors. Provide four 3/4-inch (19-mm) bolts at each pipe guard. Mount pipe guards with top edge 26 inches (660 mm) above driving surface.

3.05 INSTALLATION OF BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with shrinkage-resistant grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.06 REPAIRS

A. Touchup Painting:
   1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
      a. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 50 00

This Page Left Blank Intentionally

SECTION 05 51 19
METAL GRATING STAIRS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Industrial Class stairs with steel-grating treads.
2. Steel railings and guards attached to metal stairs.
3. Steel handrails attached to walls adjacent to metal stairs.

1.03 COORDINATION

A. Coordinate installation of anchorages for metal stairs, railings, and guards.

1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails, and items with integral anchors, that are to be embedded in concrete or masonry.
2. Deliver such items to Project site in time for installation.

B. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.

C. Schedule installation of railings and guards so wall attachments are made only to completed walls.

1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.04 ACTION SUBMITTALS

A. Product Data: For metal grating stairs and the following:

1. Gratings.
2. Shop primer products.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachment to other work.

2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.
4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.

1.05 INFORMATIONAL SUBMITTALS.

A. Mill Certificates: The Contractor shall provide Mill Certificates for structural steel and miscellaneous iron in accordance with the requirements of Part 1.05, "Submittals", of this specification section. When Mill Certificates cannot be provided, laboratory test reports shall be provided in accordance with the requirements of Part 1.05, "Submittals", of this specification section.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.06 QUALITY ASSURANCE

A. Qualifications: Welding processes and welding operators shall be qualified in accordance with AWS "Standard Qualification Procedure". Welders to be employed are to provide AWS certification for the type of welding necessary

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.
3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.

a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.01 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.

D. Steel Bars for Grating Treads: ASTM A36/A36M or steel strip, ASTM A1011/A1011M or ASTM A1018/A1018M.

E. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed).

1. Provide galvanized finish for all installations.

F. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

G. Provide galvanized finish unless indicated otherwise.

2.02 FASTENERS

A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls.

1. Select fasteners for type, grade, and class required.

B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated[and capable of withstanding design loads].

C. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be galvanized.

2.03 MISCELLANEOUS MATERIALS

A. Welding Electrodes: Comply with AWS requirements.

B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780/A780M and compatible with paints specified to be used over it.

D. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior exterior use; noncorrosive and non staining; mixed with water to consistency suitable for application and a 30-minute working time.

2.04 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, railings, guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Assemble stairs, railings, and guards in shop to greatest extent possible.

1. Disassemble units only as necessary for shipping and handling limitations.
2. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Weld exposed corners and seams continuously unless otherwise indicated.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that are exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.05 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Industrial Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers of steel channels.

a. Stringer Size: As indicated on drawings.
b. Provide closures for exposed ends of channel stringers.

c. Finish: Galvanized.

2. Construct platforms and tread supports of steel channel headers and miscellaneous framing members

a. Provide closures for exposed ends of channel framing.
b. Finish: Galvanized.

3. Weld stringers to headers; weld framing members to stringers and headers.
4. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Bar-Grating Stairs: Form treads and platforms to configurations shown from metal bar grating; fabricate to comply with NAAMM MBG 531, "Metal Bar Grating Manual."

1. Fabricate treads and platforms from welded steel grating with 1-by-3/16-inch bearing bars at 11/16 inch o.c. and crossbars at 4 inches o.c.

D. Risers: Open.

E. Toe Plates: Provide toe plates around openings and at edge of open-sided floors and platforms, and at open ends and open back edges of treads.

1. Material and Finish: Steel plate to match finish of other steel items.

2.06 FABRICATION OF STAIR RAILINGS AND GUARDS

A. Comply with applicable requirements in Section 05 52 13 "Pipe and Tube Railings."

2.07 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedment’s for compliance with requirements.

1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF METAL STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
3. Comply with requirements for welding in "Fabrication, General" Article.

3.03 REPAIR

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 51 19

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Steel pipe and tube railings.

B. RELATED SECTIONS
   1. Section 05 51 19 "Metal Grate Stairs" for steel tube railings associated with metal grate stairs.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Manufacturer's product lines of mechanically connected railings.
   2. Railing brackets.
   3. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Verification: For each type of exposed finish required.
   1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
   2. Fittings and brackets.
   3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.
      a. Show method of finishing and connecting members at intersections.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

B. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E894 and ASTM E935.

1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M "Structural Welding Code – Steel."

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.07 COORDINATION AND SCHEDULING

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.01 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.02 STEEL AND IRON

A. Tubing: ASTM A500 (cold formed).

B. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A36/A36M.

2.03 FASTENERS

A. General: Provide the following:
   1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329 for zinc coating.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:
   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
   2. Provide Phillips tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488, conducted by a qualified independent testing agency.
   1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, unless otherwise indicated.
   2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

2.04 STEEL RAILING SYSTEM

A. Rails:
   1. Extra heavy weight 2-3/8 inches o.d. steel pipe, welded jointing; locations as indicated on drawings.
   2. Extra heavy weight 1-1/2 inches o.d. steel pipe welded jointing; locations as indicated on drawings.

B. Posts:
   1. Extra heavy weight 2-3/8 inches o.d. steel pipe, welded jointing; locations as indicated on drawings.
   2. Extra heavy weight 1-1/2 inches o.d. steel pipe welded jointing; locations as indicated on drawings.

C. Fitting: Elbows, Tees, wall brackets, escutcheons; machined steel

D. Mounting: Brackets and flanges, with steel inserts for casting in concrete with steel brackets for embedding in masonry or concrete.

E. Splice Connectors: Steel welding collars.

F. Brackets: Wall handle rail equal to Julius Blum and Co. malleable iron No. 306 or approved equivalent.

G. Hot Dipped galvanizing : 1.25 oz/sq.ft. zinc coating in accordance with ASTM A386.

2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.06 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Form changes in direction as follows:
   1. By radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.

J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of railing members with prefabricated end fittings.

L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4-inch (6-mm) or less.

M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
   1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

O. For railing posts set in concrete, provide steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2-inch (13 mm) greater than outside dimensions of post, with metal plate forming bottom closure.

P. For removable railing posts, fabricate slip-fit sockets from steel tube or pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of post height. Provide socket covers designed and fabricated to resist being dislodged.
   1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

2.07 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.08 STEEL AND IRON FINISHES

A. Galvanized Railings:
1. Hot-dip galvanize steel and iron railings, including hardware, after fabrication.
2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
4. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16-inch in 3 feet (2 mm in 1 m).
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4-inch in 12 feet (5 mm in 3 m).

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.02 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.03 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4-inch (20 mm) larger than o.d. of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.

C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

D. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.04 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends or connected to railing ends using nonwelded connections.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.

C. Attach railings to wall with wall brackets. Provide brackets with 1-1/2-inch (38 mm) clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets and railing end flanges to building construction as follows:
1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For hollow masonry anchorage, use toggle bolts.

3.05 ADJUSTING AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

3.06 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 05 52 13

SECTION 05 53 13
BAR GRATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Metal bar gratings.
2. Grating frames and supports.

B. Related Requirements:

1. Section 05 12 00 "Structural Steel Framing" for structural-steel framing system components.
2. Section 05 51 19 "Metal Grating Stairs" for grating treads and landings of steel-framed stairs.
3. Section 05 52 13 "Pipe and Tube Railings" for metal pipe and tube handrails and railings.

1.03 ACTION SUBMITTALS

A. Product Data:

1. Metal bar gratings.

2. Clips and anchorage devices for gratings.

B. Shop Drawings:

1. Include plans, sections, and attachment details.
2. Signed and sealed by the qualified professional engineer responsible for their preparation.

1.04 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

B. Certificates:

1. Mill Certificates: Signed by manufacturers of stainless-steel certifying that products furnished comply with requirements.
2. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.
3. Welding certificates.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

a. AWS D1.1/D1.1M.
b. AWS D1.2/D1.2M.
c. AWS D1.3/D1.3M.
d. AWS D1.6/D1.6M.

1.06 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

1.07 COORDINATION

A. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. All American Grating.
2. Grating Pacific, Inc.
3. Ohio Gratings, Inc.

2.02 METAL BAR GRATINGS

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531 and NAAMM MBG 532.

B. Welded Steel Grating:

1. Bearing Bar Spacing: 1-3/16 inches o.c.
2. Bearing Bar Depth: 1 inch.
3. Bearing Bar Thickness: 3/16 inch.
4. Crossbar Spacing: 2 inches o.c.
5. Traffic Surface: Plain.
6. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. of coated surface.

2.03 GRATING FRAMES AND SUPPORTS

A. Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.

1. Unless otherwise indicated, fabricate from same basic metal as gratings.
2. Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4 inch thick by 8 inches long.

B. Galvanize steel frames and supports in the following locations:

1. Exterior.
2. Interior.

2.04 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for both interior and exterior use where gratings are used within, or or in conjunction with training buildings, structures, and/or props.

B. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, nuts, and, where indicated, flat washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 1 Group 2.

C. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563, and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

2.05 MISCELLANEOUS MATERIALS

A. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.06 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Steel Bars for Bar Gratings: ASTM A36/A36M or steel strip, ASTM A1011/A1011M or ASTM A1018/A1018M.

2.07 FABRICATION

A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

D. Fit exposed connections accurately together to form hairline joints.

E. Welding: Comply with AWS recommendations and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.

1. Fabricate toeplates to fit grating units and weld to units in shop unless otherwise indicated.
2. Fabricate toeplates for attaching in the field.
3. Toeplate Height: 4 inches unless otherwise indicated.

G. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.

1. Provide no fewer than four weld lugs for each heavy-duty grating section, with each lug shop welded to two bearing bars.
2. Provide no fewer than four saddle clips for each grating section containing rectangular bearing bars 3/16 inch or less in thickness and spaced 15/16 inch or more o.c., with each clip designed and fabricated to fit over two bearing bars.

3. Provide no fewer than four weld lugs for each grating section containing rectangular bearing bars 3/16 inch or less in thickness and spaced less than 15/16 inch o.c., with each lug shop welded to three or more bearing bars. Interrupt intermediate bearing bars as necessary for fasteners securing grating to supports.
4. Provide no fewer than four flange blocks for each section of aluminum I-bar grating, with block designed to fit over lower flange of I-shaped bearing bars.
5. Furnish threaded bolts with nuts and washers for securing grating to supports.

H. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.

1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.

I. Do not notch bearing bars at supports to maintain elevation.

2.08 STEEL FINISHES

A. Finish gratings, frames, and supports after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.

D. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

E. Attach toeplates to gratings by welding at locations indicated.

F. Field Welding: Comply with AWS recommendations and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

G. Corrosion Protection: With a heavy coat of bituminous paint, coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals.

3.02 INSTALLATION OF METAL BAR GRATINGS

A. Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.

B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.

C. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.03 REPAIR

A. Repair Painting:

1. Wire brush and clean rust spots, welds, and abraded areas on prime-painted gratings immediately after installation and apply repair paint with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

   a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

2. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."

B. Repair of Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Framing with dimension lumber.
   2. Wood blocking and nailers.
   3. Plywood backing panels.
   4. Plywood panels:
      a. Plywood backing panels:
      b. Plywood maze panels:
      c. Plywood cutout panels:

1.03 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater size but less than 5 inches nominal (114 mm actual) size in least dimension.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
   3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.

1.05 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:
   1. Preservative-treated wood.
   2. Fire-retardant-treated wood.
   3. Power-driven fasteners.
   4. Post-installed anchors.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 WOOD PRODUCTS, GENERAL

A. Lumber: In accordance with West Coast Lumber Inspection Bureau (WCLIB) “Standard Grading and Dressing Rules” No. 17, latest edition, and Western Wood Products Association (WWPA) “Western Lumber Grading Rules,” latest edition.
   1. All wood shall be “DRY” and having moisture content of less than 19 percent at the time of installation, in accordance with WWPA.
   2. Provide wood of S4S unless otherwise noted.
   3. Factory mark each piece of lumber with grade stamp of the grading agency.

2.02 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.
   1. Water-borne, non-arsenic, non-chromium type complying with AWPA Standard U1. Preservative treatment shall not contain pentachlorophenol, arsenic compounds, or creosote. In addition, the preservative treatment shall comply with the following:
      a. Material: Paintable.
      b. Comply with CARB limit on VOCs of 350 g/L using EPA Test Method 24.
      c. Retreat all field cut ends and surfaces.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:
   1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
   2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.03 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat all miscellaneous carpentry unless otherwise indicated.
1. Concealed blocking.
2. Plywood backing panels.

2.04 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade of any of the following species:
1. Douglas Fir-Larch; WCLIB or WWPA.

B. Other Framing: Construction or No. 2 grade of any of the following species.
1. Douglas Fir-Larch; WCLIB or WWPA.

2.05 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
2. Nailers.
3. Furring.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of the following species:
   1. Douglas Fir-Larch; WCLIB or WWPA.

C. Concealed Boards: 15 percent maximum moisture content of any of the following species and grades:
   1. Douglas Fir-Larch, Construction or No. 2 Common grade; WCLIB or WWPA.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.06 PLYWOOD PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

B. Maze and Cutout Panels: Plywood, DOC PS 1, Exterior, A-C, non-treated plywood panels not less than 3/4 inches nominal thickness; Maze and Cutout panels are for temporary use. Where panels are to be installed permanently, panels shall be fire-retardent treated.
   1. Cutout Panels include plywood panels or plywood sheathing/decking installed within various training props that are utilized for practicing breaching, venting, cutting, chopping, or similar purposes. Props may include but are not limited to roof props.

2.07 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
   1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

C. Screws for Fastening to Metal Framing: ASTM C1002, length as recommended by screw manufacturer for material being fastened. Screw length shall be of sufficient length to penetrate and secure multiple plies to framing and not just previous ply/layer.

D. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193, or ICC-ES AC308 as appropriate for the substrate.
   1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.

2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Grade A1 or A4).

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

D. Do not splice structural members between supports unless otherwise indicated.

E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
   1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

F. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
   1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
   2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
   3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq.ft. (9.3 sq.m.) and to solidly fill space below partitions.
   4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

G. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
   1. Use inorganic boron for items that are continuously protected from liquid water.

I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

J. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. Table 2304.9.1 "Fastening Schedule" in ICC's International Building Code.
   2. ICC-ES evaluation report for fastener.

K. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.02 INSTALLATION OF WOOD BLOCKING AND NAILER

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.03 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.04 PROTECTION

A. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 53

SECTION 07 18 00
TRAFFIC COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes traffic coatings and pavement markings for the following applications:

1. Pedestrian traffic.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product, including installation instructions.

B. Shop Drawings: For traffic coatings.

1. Include details for treating substrate joints and cracks, flashings, deck penetrations, and other termination conditions.
2. Include plans showing layout of pavement markings, lane separations, and defined parking spaces. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.

C. Samples for Initial Selection: For each type of exposed finish.

D. Samples for Verification: For each type of exposed finish, prepared on rigid backing.

1. Provide stepped Samples on backing to illustrate buildup of traffic coatings.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranty: For special warranty.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For traffic coatings to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1. Certification: Written approval or license of applicator by traffic coating manufacturer.

B. Mockups: Build mockups to set quality standards for materials and execution.

1. Build mockup for each traffic coating and substrate to receive traffic coatings.
2. Size: 36 sq. ft. of each substrate to demonstrate surface preparation, joint and crack treatment, thickness, texture, color, and standard of workmanship.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 FIELD CONDITIONS

A. Environmental Limitations: Apply traffic coatings within the range of ambient and substrate temperatures recommended in writing by manufacturer. Do not apply traffic coatings to damp or wet substrates, when temperatures are below 40 deg F, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F above dew point.

1. Do not apply traffic coatings in snow, rain, fog, or mist, or when such weather conditions are imminent during the application and curing period. Apply only when frost-free conditions occur throughout the depth of substrate.

B. Do not install traffic coating until items that penetrate membrane have been installed.

1.09 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace traffic coating that fails in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Adhesive or cohesive failures.
b. Abrasion or tearing failures.
c. Surface crazing or spalling.
d. Intrusion of water, oils, gasoline, grease, salt, deicer chemicals, or acids into deck substrate.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Material Compatibility: Provide primers; base-, intermediate-, and topcoat; and accessory materials that are compatible with one another and with substrate under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Source Limitations:

1. Obtain traffic coatings from single source from single manufacturer.

2.02 TRAFFIC COATING

A. Traffic Coating: Manufacturer's standard, traffic-bearing, seamless, high-solids-content, cold liquid-applied, elastomeric, waterproofing membrane system with integral wearing surface for pedestrian traffic; according to ASTM C 957.

1. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:

a. Carlisle Coatings & Waterproofing Inc.; CCW-5123
b. Neogard; Division of Jones-Blair.; Auto-Gard F
c. Sonneborn, Div. of Chem Rex, Inc.; Sonoguard Heavy Duty Traffic

B. Primer: Liquid waterborne or solvent-borne primer recommended for substrate and conditions by traffic coating manufacturer and that complies with the requirements of the authority having jurisdiction.

1. Material: Urethane

C. Preparatory and Base Coats: Aromatic urethane.

1. Thicknesses: Minimum dry film thickness as recommended in writing by manufacturer for substrate and service conditions indicated.

D. Intermediate Coat: Aromatic urethane.

1. Thicknesses: Minimum dry film thickness as recommended in writing by manufacturer for substrate and service conditions indicated, measured excluding aggregate.

E. Topcoat: Aromatic urethane with UV inhibitors.

1. Thicknesses: Minimum dry film thickness as recommended in writing by manufacturer for substrate and service conditions indicated, measured excluding aggregate.
2. Aggregate Content: 8 to 10 lb/100 sq. ft..
3. Color: As selected by Architect from manufacturer's full range.

F. Aggregate: Manufacturer's standard aggregate for each use indicated Uniformly graded, washed silica sand of particle sizes, shape, and minimum hardness recommended in writing by traffic-coating manufacturer.

G. Low-Emitting Materials: Traffic coating shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.03 ACCESSORY MATERIALS

A. Joint Sealants: ASTM C 920.

B. Sheet Flashing: Nonstaining , uncured neoprene sheet.

1. Thickness: Minimum 60 mils.

C. Adhesive: Contact adhesive recommended in writing by traffic-coating manufacturer.

D. Reinforcing Strip: Fiberglass mesh recommended in writing by traffic-coating manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for surface smoothness, surface moisture, and other conditions affecting performance of traffic-coating work.

B. Verify that substrates are visibly dry and free of moisture.

1. Test for moisture content by method recommended in writing by traffic-coating manufacturer.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of traffic-coating work.

D. Proceed with installation only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

1. Begin coating application only after minimum concrete-curing and -drying period recommended in writing by traffic-coating manufacturer has passed and after substrates are dry.

3.02 PREPARATION

A. General: Before applying traffic coatings, clean and prepare substrates according to ASTM C 1127 and manufacturer's written instructions to produce clean, dust-free, dry substrate for traffic-coating application. Remove projections, fill voids, and seal joints if any, as recommended in writing by traffic-coating manufacturer.

B. Schedule preparation work so dust and other contaminants from process do not fall on wet, newly coated surfaces.

C. Mask adjoining surfaces not receiving traffic coatings to prevent overspray, spillage, leaking, and migration of coatings. Prevent traffic-coating materials from entering deck substrate penetrations and clogging weep holes and drains.

D. Concrete Substrates: Mechanically abrade surface to a uniform profile acceptable to manufacturer, according to ASTM D 4259. Do not acid etch.

1. Remove grease, oil, paints, and other penetrating contaminants from concrete.
2. Remove concrete fins, ridges, and other projections.
3. Remove laitance, glaze, efflorescence, curing compounds, concrete hardeners, form-release agents, and other incompatible materials that might affect coating adhesion.
4. Remove remaining loose material to provide a sound surface, and clean surfaces according to ASTM D 4258.

3.03 TERMINATIONS AND PENETRATIONS

A. Prepare vertical and horizontal surfaces at terminations and penetrations through traffic coatings and at expansion joints, drains, and sleeves according to ASTM C 1127 and manufacturer's written instructions.

B. Provide sealant cants at penetrations and at reinforced and nonreinforced, deck-to-wall butt joints.

C. Terminate edges of deck-to-deck expansion joints with preparatory base-coat strip.

D. Install sheet flashings at deck-to-wall expansion and dynamic joints, and bond to deck and wall substrates according to manufacturer's written recommendations.

3.04 JOINT AND CRACK TREATMENT

A. Prepare, treat, rout, and fill joints and cracks in substrates according to ASTM C 1127 and manufacturer's written recommendations. Before coating surfaces, remove dust and dirt from joints and cracks according to ASTM D 4258.

1. Comply with recommendations in ASTM C 1193 for joint-sealant installation.

B. Apply reinforcing strip in traffic-coating system where recommended in writing by traffic-coating manufacturer.

3.05 TRAFFIC-COATING APPLICATION

A. Apply traffic coating according to ASTM C 1127 and manufacturer's written instructions.

B. Start traffic-coating application in presence of manufacturer's technical representative.

C. Verify that wet film thickness of each coat complies with requirements every 100 sq. ft..

D. Uniformly broadcast aggregate on coats specified to receive aggregate. Embed aggregate according to manufacturer's written instructions. After coat dries, sweep away excess aggregate.

E. Apply traffic coatings to prepared wall terminations and vertical surfaces to height indicated; omit aggregate on vertical surfaces.

F. Cure traffic coatings. Prevent contamination and damage during application and curing stages.

3.06 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform the following field tests and inspections:

1. Materials Testing:

a. Samples of material delivered to Project site shall be taken, identified, sealed, and certified in presence of Owner and Contractor.
b. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
c. Testing agency shall verify thickness of coatings during traffic-coating application.

2. If test results show traffic coating does not comply with requirements, remove and replace or repair the membrane as recommended in writing by traffic-coating manufacturer and make further repairs after retesting until traffic-coating installation passes.

B. Final Traffic-Coating Inspection: Arrange for traffic-coating manufacturer's technical personnel to inspect membrane installation on completion.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.07 PROTECTING AND CLEANING

A. Protect traffic coatings from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 18 00

SECTION 07 19 00
WATER REPELLENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes penetrating clear film-forming MPI-approved water-repellent treatments for the following vertical and non-traffic horizontal surfaces:
   1. Cast-in-place concrete.
   2. Concrete unit masonry.

B. Related Sections:
   1. Section 04 20 00 "Unit Masonry" for integral water-repellent admixture for unit masonry assemblies.

1.03 PERFORMANCE REQUIREMENTS

A. General Performance: Water repellents shall meet performance requirements indicated without failure due to defective manufacture, fabrication, or installation.

B. Water Absorption: Minimum 90 percent reduction of water absorption after 24 hours in comparison of treated and untreated specimens.
   1. Cast-in Place Concrete: ASTM C642.
   2. Concrete Masonry Units: ASTM C140.

C. Water Penetration and Leakage through Masonry: Minimum 90 percent reduction in leakage rate in comparison of treated and untreated specimens, according to ASTM E514.

D. Durability: Maximum 5 percent loss of water-repellent properties after 2500 hours of weathering according to ASTM G154 in comparison to water-repellent-treated specimens before weathering.

E. Chloride-Ion Intrusion in Concrete: NCHRP Report 244, Series II tests.
   1. Reduction of Water Absorption: 80 percent.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include manufacturer's printed statement of VOC content.
   2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.

B. Samples: For each type of water repellent and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

1.05 INFORMATIONAL SUBMITTALS

A. Preconstruction Testing Reports: For water-repellent-treated substrates.

B. Warranty: Special warranty specified in this Section.

1.06 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

B. Mockups: Apply water repellent to each type of substrate required.
1. Locate each test application as directed by Architect.
2. Size: 10 sq.ft.
3. Final approval by Architect of water-repellent application will be from test applications.

C. Preinstallation Conference: Conduct conference at Project site.

1.07 PROJECT CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:
1. Concrete surfaces and mortar have cured for not less than 28 days.
2. Building has been closed in for not less than 30 days before treating wall assemblies.
3. Ambient temperature is above 40 deg F and below 100 deg F and will remain so for 24 hours.
4. Substrate is not frozen and substrate-surface temperature is above 40 deg F and below 100 deg F.
5. Rain or snow is not predicted within 24 hours.
6. Not less than 24 hours have passed since surfaces were last wet.
7. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.08 WARRANTY

A. Special Warranty: Manufacturer's standard form in which Applicator agree(s) to repair or replace materials that fail to maintain water repellency due to materials and/or workmanship as specified within specified warranty period. Warranty does not include deterioration or failure of coating due to unusual weather phenomena, failure of prepared and treated substrates, and new substrate cracks in excess of 1/16 inch wide, fire, vandalism, or abuse by maintenance equipment.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PENETRATING WATER REPELLENTS

A. Proprietary-Blend, Penetrating Water Repellent: Clear, consisting of one or several different resins (silanes or siloxanes or acrylics), polymers, stearates, or oils plus other compounds or products of components; and with 400 g/L or less of VOCs.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASF Construction Chemicals, LLC; Enviroseal 20.
      b. PROSOCO, Inc.; Weatherseal H40Stain Barrier.
      c. Diedrich Technologies Inc.; Diedrich 303 WB
      d. Sonneborn Building Products; White Roc 10 WB.
      e. Euclid Chemical; Chemstop WB Heavy Duty.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
   1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in number of representative locations recommended by manufacturer and by method recommended by manufacturer.
   2. Inspect for previously applied treatments that may inhibit penetration or performance of water repellents.
   3. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
   4. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions and as follows:
   1. Cast-in-Place Concrete and Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents.

B. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.

C. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

D. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.03 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply a heavy-saturation coating of water repellent, on surfaces indicated for treatment, using 15 psi- pressure spray with a fan-type spray nozzle to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.
   1. Precast Concrete: At Contractor's option, first application of water repellent on units may be completed before installing them. Mask mortar and sealant bond surfaces to prevent water repellent from migrating onto joint surfaces.

C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.04 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 07 19 00

SECTION 07 42 13
METAL SOFFIT PANELS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes metal soffit panels.

B. Related Sections:

1. Section 07 92 00 "Joint Sealants."

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.08 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.09 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/240 of the span.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.02 METAL SOFFIT PANELS

A. General: Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.

B. Metal Soffit Panels: Match profile and material of metal roof panels.

1. Finish: Match finish and color of metal roof panels.
2. Sealant: Factory applied within interlocking joint.

C. Flush-Profile Metal Soffit Panels: Solid panels formed with vertical panel edges and a flat pan between panel edges; with flush joint between panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide PAC CLAD Flush Soffit Panel or comparable product by one of the following:

   a. AEP Span; a BlueScope Steel company.
   b. ATAS International, Inc.
   c. CENTRIA Architectural Systems.
   d. Petersen Aluminum Corporation.

2. Material: Same material, finish, and color as metal roof panels.
3. Panel Coverage: 12 inches.
4. Panel Height: 1.0 inch.

2.03 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inchthick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.04 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.05 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.
2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

1. Soffit Framing: Wire tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

3.03 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
2. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
3. Copper Panels: Use copper, stainless-steel, or hardware-bronze fasteners.
4. Stainless-Steel Panels: Use stainless-steel fasteners.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.

3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.04 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 70 00
THERMAL LINING SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes requirements for the thermal lining system.

B. The Work under this Section shall include the furnishing of all items necessary for a complete and properly operational Thermal Lining System as specified including:

1. Burn room insulation system
2. Temperature monitoring system

1.03 DEFINITIONS

A. The high temperature lining system shall be used to protect the structure from the effects of training fires during training for firefighters in a controlled simulated environment, which is commensurate with actual fire conditions. All class A burn rooms shall include thermocouples and temperature monitoring system. **Conduit shall be provided by General Contractor**. The requirements within this Section shall be coordinated with the drawings for dimensions, features and exact configuration of the lining system.

1.04 REFERENCES

A. National Fire Protection Association (NFPA)

1. NFPA 1402 - Guide to Building Fire Training Centers
2. NFPA 1403 - Standard on Live Fire Training Evolutions

B. American Society for Testing and Materials (ASTM)

C. Occupational Safety and Health Standards (OSHA)

1. 29 CFR 1910.23 - Guarding Wall and Floor Openings
2. 29 CFR 1910.24 - Fixed Industrial Stairs
3. 29 CFR 1910.27 - Fixed ladders

1.05 QUALITY ASSURANCE

A. Supplier shall have a minimum of 10 years experience in the design, engineering, and fabrication of thermal lining systems and must offer these turn key services to complete this Section of Work.

B. Installer shall be qualified by the supplier and have a minimum of 5 years experience installing thermal lining projects and a minimum of 25 completed projects of similar size and scope.

1.06 SUBMITTALS

A. General: Submit each item in this Article according to the General Conditions of the Contract and Division 1 Specification Sections.

B. Submit drawings showing panel layouts, structural frame layouts, locations of openings, building attachment details, and all other erection and miscellaneous system details required for installation.

C. Submit cut sheet information on the burn room liner.

D. Submit MSDS reports on all applicable materials to be used as burn room liner.

E. Submit (3) 2"x2" samples of burn room liner material

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver thermal lining system materials in manufacturer's original unopened containers or wrapped with labels intact and legible.

B. Store and protect materials from damage and weather in accordance with the manufacturer's instructions. Keep materials clean and dry at all times.

C. During storage, space surfaces of materials to permit free circulation of air.

D. Handle materials in accordance with manufacturer's recommendations.

E. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

F. All components and accessories necessary for the proper installation of the thermal lining system rooms shall arrive at the project site by over-the-road trailer. Other small items including, fasteners, instruments, and instrumentation shall be delivered separately.

1.08 WARRANTY

A. Supplier shall provide a fifteen (15) year limited warranty from the date of Substantial Completion warranting the thermal liner panels to be free from defects in materials and workmanship under normal use and service.

PART 2 - PRODUCTS

2.01 SUPPLIERS

A. Basis of Design Product: Subject to compliance with requirements, provide Super Padgenite HD thermal lining panels as supplied by WHP Training Towers.

1. WHP Training Towers; 9130 Flint , Overland Park, KS 66214. Phone: 800-351-2525 or 913-385-3663. Fax: 913-385-7078. www.trainingtowers.com

B. Substitutions: As approved per Owner/Architect. Must be submitted (14) calendar days prior to bid date.

1. Include full set of drawings with submittal prior to bid.
2. Include cut sheets and/or samples of all products included in the package including but not limited to burn room liner, framing and attachment devices prior to bid.
3. Provide and itemize list, specifically referencing each item of this specification section where the proposed substitution deviates from the specified product.
4. Provide a letter indicating whether the manufacturer, installer and/or vendor of the proposed product has, within the past 10 years, been involved in or is currently involved in or named as a defendant in litigation pertaining to the use of the proposed product. If the manufacturer, installer and/or vendor of the proposed product has been or is currently involved in or named as a defendant in litigation pertaining to the use of the proposed product, provide a brief explanation of the nature of the litigation and if the case has concluded describe any judgement or agreement issued. In addition, provide contact information for the Owners representative of the projects litigated or being litigated.

C. Failure to comply with any of the above requirements shall be caused for rejection.

2.02 MATERIALS

A. Conform to applicable ASTM specifications

2.03 FASTENERS

A. Provide fasteners of sufficient strength to support connected members and loads, and develop full strength of parts fastened or connected.

2.04 BURN ROOM LINING SYSTEM

A. High temperature insulating panels and attachments materials shall be provided for the interior walls and ceilings of the burn rooms as specified.

B. Panels in burn rooms shall be supported by a system of 18-gauge galvanized mounting channels mounted both horizontally and vertically and fastened to the building wall using proper screws. The horizontal mounting channels shall be 48" center-to-center and the vertical mounting channels shall be 24 inches center-to-center. Mounting channels shall be a nominal 6" in width and 1" in depth.

C. Panels shall be pre-cut to size and shall be 1" thick. Panels shall be pre-treated with a two part chemical system to be water resistant/repellent. Panels shall allow for live fires in temperature ranges of 1200 to 2000 degree F maximum. Seams and joints shall be backed with 1" thick battens of similar material. Panels shall be fastened by 3" Tek screws with ¼" x 1 ¼" washers through oversized 5/16"diameter field drilled holes, six per 2' x 4' panel. Use of "speed clips," insulating clips or building insulation washers is prohibited. Panels shall be installed with a ½" gap between panels and the panel perimeter shall be screwed to the channels. Fasteners shall be left with the washers being able to be turned with moderate pressure on the board.

D. Super Padgenite HD insulating panels and accessories shall be capable of protecting the wall and ceiling surfaces of masonry or concrete from damage due to enclosed fires. Insulating materials shall be a minimum of: 1" thick, 77.9 PCF density, 3558 psi flex strength, possess a "K" factor of 1.96 or less at a mean temperature of 800 degrees F., and be capable of continuous service at temperature ranges to 2000 degrees F. System shall withstand repeated exposure to heat and the application of water to heated surfaces without the breakdown of insulating properties. Insulating materials shall not require "drying out' periods following the application of water nor be subject to "spalling" due to heat/moisture conditions. There shall be no restrictions placed upon use due to atmospheric conditions or ambient temperatures. There shall be no restrictions imposed upon the nature of the Class A fuel source, the fire location within neither the room nor any requirement of "special" precautions prior to ignition. A full set of installation drawings shall be prepared by the panel supplier and submitted for approval, which clearly shows the panel layout, sub-framing system and attachment layout. Materials proposed as equal to the "Super Padgenite HD" panels shall be approved seven (7) days prior to bid due date. The contractor shall provide a sample of the material, written specifications, engineered drawings showing a typical installation with hardware and sub-framing system clearly shown, and a MSDS.

E. An air gap a minimum of 2" shall be provided between the cold face of the thermal lining system and all walls and ceilings. The air gap shall provide a free flow of air throughout the entire cold face of the insulating envelope and be vented to the exterior of the building on all outside walls. This shall allow the release of hot air and gases from the structure and prevent any damage to the lining system during freeze/thaw cycles.

F. Accessories shall be furnished and installed for temperature sensing and indicating system and shall include two thermocouples for each burn room with high temperature wire to a pyrometer. A weatherproof box shall be mounted to building. One portable pyrometer for temperature monitoring (ranges of -199 to +1999 degree F with, LED display with battery power), a minimum of ten receptacles with male plugs, and a selector switch for ten circuit monitoring shall be included. Thermocouples shall be mounted at two different elevations within the burn rooms with wire from each run to box location. Boxes shall be mounted per the direction of the owner.

G. Upon substantial completion of the burn building, the contractor shall supply a quantity of twenty (20) 2' x 4' Super Padgentite HD panels for maintenance purposes. The contractor shall also supply one hundred (100) fasteners and washers for maintenance purposes.

H. Complete layout drawings shall show all elevations, views, and details the location of the mounting channels, battens, and cut pieces of panels.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that installation is in compliance with drawings. Verify that all attachments are provided and properly adjusted.

3.02 INSTALLATION

A. Comply with the respective manufacturer's recommendations for preparation of building components.

B. Install thermal lining system and all accessories in accordance with the manufacturer's written instructions.

3.03 ADJUSTING and CLEAN UP

A. Repair and replace any components damaged prior to Substantial Completion.

B. Remove all debris, scraps, containers, and any other trash resulting from the installation of the thermal lining system.

END OF SECTION

This Page Left Blank Intentionally

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Exterior joints in vertical surfaces and non-traffic horizontal surfaces as indicated below:

   a. Control and expansion joints in unit masonry.
   b. Joints between materials
   c. Perimeter joints between materials and frames of doors and windows.
   d. Other joints as indicated.

2. Exterior joints in horizontal traffic surfaces as indicated below:

   a. Control, expansion and isolation joints in cast-in-place concrete slabs.
   b. Joints between different materials
   c. Other joints as indicated

3. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:

   a. Control, expansion joints on exposed interior surfaces of exterior walls
   b. Perimeter joints of exterior openings where indicated.
   c. Joints between tops of non-load bearing unit masonry and concrete walls and partitions.
   d. Expansion joints
   e. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
   f. Perimeter joints between interior wall surfaces and frames of interior doors and windows.

1.03 DEFINITIONS

A. Joint Sealants- caulk, caulking or joint sealers are synonymous and mean joint sealants as herein described.

B. Exterior- joints at exterior surfaces of the building, whether or not directly exposed to the weather.

C. Interior- joints at interior surfaces of the building but not exposed to the weather in any manner.

D. Paving- Joints in floor slabs, sidewalks, steps, ramps, and curbs.

E. SYSTEM PERFORMANCE REQUIREMENTS

1. Provide elastomeric joint sealants that have been produced and installed to establish and maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
2. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

F. Related Sections:

1. Section 04 20 00 "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
2. Section 08 84 00 "Plastic Glazing" for plastic glazing sealants.

1.04 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

a. Perform tests under environmental conditions replicating those that will exist during installation.

2. Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:

a. Each kind of sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.05 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.06 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

1. Certification by joint sealant manufacturer that sealants manufacturer that sealants plus primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.
2. Certificates from the manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for use indicated.

B. Material Safety Data Sheets: indicating that the VOC levels of the products provided under this Section do not exceed the specified allowable levels.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

E. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Field-Adhesion Test Reports: For each sealant application tested.

G. Warranties: Sample of special warranties.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.08 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.09 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

B. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors: Joint sealant colors shall be chosen by Architect from manufacturer's full range of colors. Multiple sealant colors may be chosen by Architect to achieve aesthetic value. Vertical or horizontal joints may consist of multiple sealant colors transitioning at differing materials.

C. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

2.02 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dow Corning Corporation; 795.
b. GE Advanced Materials - Silicones; UltraPruf II SCS2900.
c. Pecora Corporation; 895.

B. Single-Component, Nonsag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use T.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dow Corning Corporation; 790.
b. May National Associates, Inc.; Bondaflex Sil 728 NS.

c. Pecora Corporation; 311 NS.
d. Tremco Incorporated; Spectrem 800.

C. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dow Corning Corporation; 786 Mildew Resistant.
b. GE Advanced Materials - Silicones; Sanitary SCS1700.
c. Tremco Incorporated; Tremsil 200 Sanitary.

2.03 URETHANE JOINT SEALANTS

A. Multicomponent, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems; Sonolastic NP 2.
b. Pecora Corporation; Dynatred.
c. Tremco Incorporated; Vulkem 227.

2.04 POLYSULFIDE JOINT SEALANTS

A. Immersible, Multicomponent Nonsag, Traffic-Grade, Polysulfide Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T and Use I.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Pecora Corporation; Synthacalk GC-2+.

2.05 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, provide one of the following:

a. BASF Building Systems; Sonolac.
b. Pecora Corporation; AC-20+.
c. Tremco Incorporated; Tremflex 834.

2.06 PREFORMED JOINT SEALANTS

A. Preformed Foam Joint Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. EMSEAL Joint Systems, Ltd.; Emseal 25V.
   b. Sandell Manufacturing Co., Inc.; Polyseal.
   c. Willseal USA, LLC; Willseal 150 or Willseal 250.

2.07 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.08 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Remove laitance and form-release agents from concrete.
3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

   a. Metal.
   b. Glass.
   c. Porcelain enamel.
   d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Latex Sealant Installation Standard: Comply with requirements of ASTM C 290 for use of latex sealants.

D. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
    b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.06 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.07 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Interior and Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

   a. Joints at tops and sides of sloped concrete slabs abutting or supporting CMU walls. No Sealant shall be applied where weeps are indicated through CMU walls.

2. Urethane Joint Sealant: Immersible, multicomponent, nonsag, traffic grade.

B. Joint-Sealant Application: Exterior and Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

   a. Construction joints in cast-in-place concrete.
   b. Control and expansion joints in unit masonry.
   c. Joints between metal panels.
   d. Joints between different materials listed above.
   e. Perimeter joints between materials listed above and frames of doors windows and louvers.
   f. Control and expansion joints in ceilings and other overhead surfaces.
   g. Control and expansion joints on exposed interior surfaces of exterior walls.
   h. Perimeter joints of exterior openings where indicated.
   i. Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions
   j. Other joints as indicated.

2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 50.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00

This Page Left Blank Intentionally

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes hollow-metal work.

B. Related Requirements:

1. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.

1.03 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ceco Door Products; an Assa Abloy Group company.
2. Curries Company; an Assa Abloy Group company.
3. Daybar.
4. Republic Doors and Frames.
5. Steelcraft; an Ingersoll-Rand company.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.02 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

B. Fire-Rated, Borrowed-Light Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.03 INTERIOR DOORS AND FRAMES

A. All doors and frames within training buildings shall comply with Exterior Doors and Frames Article.

2.04 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Maximum-Duty Doors and Frames: SDI A250.8, Level 4. .

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches
c. Face: Metallic-coated steel sheet, minimum thickness of 0.067 inch, with minimum A40 coating.
d. Edge Construction: Model 2, Seamless.
e. Core: Polyisocyanurate Vertical steel stiffener.

1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

3. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch, with minimum A40 coating.
b. Construction: Full profile welded.

4. Exposed Finish: Prime.

2.05 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup wire anchors not less than 0.177 inch thick.
2. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.06 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

C. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

G. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

H. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

I. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.07 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
2. Fire Door Cores: As required to provide fire-protection ratings indicated.
3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.

4. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
6. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
7. Astragals: Provide overlapping astragal on one leaf of pairs of doors. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
5. Jamb Anchors: Provide number and spacing of anchors as follows:

   a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:

      1) Three anchors per jamb from 60 to 90 inches high.
      2) Four anchors per jamb from 90 to 120 inches high.

   b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

      1) Four anchors per jamb from 60 to 90 inches high.
      2) Five anchors per jamb from 90 to 96 inches high.

   c. Compression Type: Not less than two anchors in each frame.
   d. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

6. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide loose stops and moldings on inside of hollow-metal work.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.08 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with SDI A250.3.

2.09 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch- thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
2. Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.
3. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.

B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

a. At fire-rated openings, install frames according to NFPA 80.
b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
c. Install frames with removable stops located on secure side of opening.
d. Install door silencers in frames before grouting.

e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.

a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.

3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
4. In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
c. At Bottom of Door: [3/4 inch] [5/8 inch] plus or minus 1/32 inch.
d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.04 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

This Page Left Blank Intentionally

SECTION 08 7100
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior and exterior finish hardware as indicated in Door Schedule and Hardware Schedule on the Drawings.
2. Types of finish hardware include, but is not limited to:

    a. Hinges / butts
    b. Lockset, latchset and bolts
    c. Cylinders and keys
    d. Door closers
    e. Door silencers
    f. Door stops
    g. Door trim units
    h. Protection and kick plates
    i. Weatherstripping / door gasketing
    j. Door seals
    k. Door thresholds

3. All necessary trim, fastening, miscellaneous attachments and accessories to provide a complete installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
    1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: For each exposed product in each finish specified, in manufacturer's standard size.
    1. Tag Samples with full product description to coordinate Samples with door hardware schedule.

C. Samples for Verification: For each type of exposed product, in each finish specified.
    1. Sample Size: Full-size units or minimum 2-by-4-inch (51-by-102-mm) Samples for sheet and 4-inch (102-mm) long Samples for other products.

a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

2. Tag Samples with full product description to coordinate Samples with door hardware schedule.

D. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:
   a. Identification number, location, hand, fire rating, size, and material of each door and frame.
   b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
   c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
   d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
   e. Fastenings and other installation information.
   f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
   g. Mounting locations for door hardware.
   h. List of related door devices specified in other Sections for each door and frame.

E. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and Architectural Hardware Consultant.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protection:

1. Hardware to be stored at the jobsite in a safe, dry place with all labels intact and legible at time of installation.
2. Use all means to protect hardware before, during, and after installation. Do not allow product to become wet or damp.

B. Replacements – In the event of damage, including water intrusion, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

C. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

D. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

F. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedule.
2. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Structural failures including excessive deflection, cracking, or breakage.
   b. Faulty operation of doors and door hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
   a. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of door hardware from single manufacturer.
   1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

2.3 SCHEDULED DOOR HARDWARE

A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.

   1. Door hardware and hardware sets are scheduled on the Drawings.

2.4 HINGES

A. Burn Building / Multi-purpose Building Hinges: ANSI A5111.

   1. Basis of Design Product: Subject to compliance with requirements, provide Stanley Commercial Hardware model IHTCB199 or comparable product by another manufacturer.
   2. Type: Five-knuckle, full mortise, concealed bearing.
   3. Size: 5 x 5-1/4 inches.
   4. Base metal: Stainless Steel; 0.19 gauge
   5. Description: Institutional type hinge fabricated from wrought stainless steel. Dimensions shall comply with ANSI A156.7 "Standard For Template Hinge Dimensions." Lateral and vertical loads shall be accommodated by bearings with anti-friction self-lubricating materials. Pins shall be non-removable. Hinges shall be tested to cycle a 300 lb. door a minimum of 2,500,000 times.
   6. Finish: US32D, Satin Stainless Steel

2.5 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
   1. Mortise Locks: Minimum 3/4-inch latchbolt throw.

C. Lock Backset: 2-3/4 inches, unless otherwise indicated.

D. Lock Trim:

1. Description: ADA accessible, "L" shaped lever consisting of a round spindle and rectangular profile lever, with hooked end returning to within 1/2 inch of door face; and a flat profile, square edged, rectangular escutcheon plate 1-3/4 inches wide by 8-1/2 inches high, with concealed fasteners, prepared for key cylinder.
2. Levers: Cast.
   a. Stainless Steel.
   b. Schlage; "Longitude"
3. Escutcheons (Roses): Solid Stainless Steel.
4. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.

F. Mortise Locks: BHMA A156.13; Grade 1; stamped steel case with steel or brass parts; Series 1000.
1. Function as indicated in Hardware Schedule for each unit.
2. Base Metal: Stainless steel for all exposed parts
3. Finish: BHMA 32D Satin Stainless Steel
4. Basis-of-Design Product: Subject to compliance with requirements, provide Schlage Commercial Lock Division; an Allegion company; L Series (Mortise); or comparable products by one of the following:

   a. Adams Rite Manufacturing Co; an ASSA ABLOY Group company.

2.6 MANUAL FLUSH BOLTS

A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.

1. Finish: US 26D Satin Chrome Plated.
2. Strikes: Provide mortise strike for head, and spring-loaded, flanged dust-proof strike for floor.

3. Manufacturers: Subject to compliance with requirements, provide products by the following:

   a. Adams Rite Manufacturing Co; an ASSA ABLOY Group company.
   b. Allegion plc.

2.7 LOCK CYLINDERS

A. Lock Cylinders: Furnish Schlage Primus, with 6 pin, interchangeable core cylinders, and will all necessary blocking rings, cams, and other attachments. Coordinate with specified entrance locking mechanisms and other keyed locks. Owner to provide Primus side bitting code for ordering.

B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.8 KEYING

A. Master Keying: Key all cylinders and locks as directed by the Owner

B. Number of Keys: Furnish three keys for each level of keying, as directed by the Architect.

C. Construction Keying: Furnish a construction master key system with 15 keys for locks and cylinders. Use only the construction keys during construction.

D. Identification and Delivery: Factory stamp permanent keys as directed by Architect. Identify permanent keys with tags and delivery directly to the Owner.

2.9 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Key Boxes and Cabinets.
b. GE Security, Inc.
c. HPC, Inc.
d. Lund Equipment Co., Inc.
e. MMF Industries.
f. TelKee; Oasis International.

2. Wall-Mounted Cabinet: Grade 1 cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

2.10 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

B. Provide Surface Closers of configuration and arm type for mounting on interior and room-side of doors, unless specifically indicated otherwise.

1. For push side closer mounting, provide parallel arm option.
2. For pull side closer mounting, provide track arm option.

C. Provide full metal cover option.

D. Provide overhead stop option where indicated in Door Hardware Sets. Stop point shall be field-adjustable.

E. Provide overhead holder option where indicated in Door Hardware Sets. Hold open point shall be field-adjustable.

F. Size closer for each door based on Manufacturer's recommendation for weight and height of door; wind conditions; and location of closer.

G. Where overhead door control items are indicated to be used on the same door leaf in conjunction with surface closers, coordinate the closer type, mounting location, and bracket types to ensure full operation and intended functionality of closer and overhead door control device.

1. Basis-of-Design Product: Subject to compliance with requirements, provide LCN; 4041 Series or comparable product by one of the following:

a. Corbin Russwin, Inc.; an ASSA ABLOY Group company.

2.11 MECHANICAL STOPS AND HOLDERS

A. Wall-Mounted Stops: BHMA A156.16.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Rockwood; #467 or comparable product by one of the following:

a. Baldwin Hardware Corporation.
b. Hager Companies.
c. Trimco.

2.12 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Pemko Manufacturing Co.
b. Reese Enterprises, Inc..
c. Zero International, Inc.

B. Maximum Air Leakage: When tested according to ASTM E283 with tested pressure differential of 0.3-inch wg (75 Pa), as follows:
1. Gasketing on Single Doors: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
2. Gasketing on Double Doors: 0.50 cfm per ft. (0.000774 cu. m/s per m) of door opening.

C. Adhesive-Backed Perimeter Gasketing: Neoprene bulb gasket material applied to frame rabbet with self-adhesive.

2.13 DOOR SWEEPS

A. Door Sweep with Drip Cap: "U" profile extruded aluminum for slip fit over bottom edger of door, with integrally-extruded outside drip edge and removable finned resilient bulb in bottom retaining track.

1. Basis-of-Design Product: Pemko 216APK.

2.14 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

B. Burn Building / Multi-purpose Building Configuration: Mill-aluminum, heavy duty saddle style threshold.

1. Basis of Design Product: Subject to compliance with requirements, provide Pemko 1716 or comparable product by another manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

E. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 07 9200 "Joint Sealants."

G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.2 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.3 DOOR HARDWARE SCHEDULE

A. Refer to Prop Drawings for hardware sets noted on drawings.

B. Gate Hardware

1. <u>Single Leaf</u>

3	Ea	Heavy Duty Hinge	POWER HINGE2		HOO
1	Ea	LOCINOX® Gate Lock	LUKYJ5 Mortise Cylinder (w/ metal box to mount on gate)	630	SCH
1	Ea	Primus Core Only	20-740	626	SCH
1	Ea	Wall Stop	WS407CCV	630	IVE

Coordinate hardware installation with gate fabrication.

2. <u>Double Leaf</u>

6	Ea	Heavy Duty Hinge	POWER HINGE2		HOO
1	Ea	LOCINOX® Gate Lock	LUKYJ5 Mortise Cylinder (w/ metal box to mount on gate). Only on one leaf.	630	SCH
1	Ea	Primus Core Only	20-740	626	SCH
2	Ea	Cane Bolts	At both gates		

END OF SECTION

This Page Left Blank Intentionally

SECTION 08 84 00

PLASTIC GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Monolithic polycarbonate glazing.

1.03 PERFORMANCE REQUIREMENTS

A. Provide plastic glazing sheets and glazing materials capable of withstanding normal temperature changes, wind, and impact loads without failure, including loss or breakage of plastic sheets attributable to the following: failure of sealants or gaskets to remain watertight and airtight, deterioration of plastic sheet and glazing materials, or other defects in materials and installation.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on plastic glazing and glazing framing members.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

1.04 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each plastic glazing type, tape sealant, gasket, glazing accessory, and glazing-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing will not be required if data are submitted based on previous testing of current sealant products and plastic glazing matching those submitted.
2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Plastic Glazing Samples: For each color and finish of plastic glazing indicated, 12 inches square and of same thickness indicated for final Work.

C. Glazing Accessory Samples: For gaskets, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

1.06 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for plastic glazing glazing sealants and glazing gaskets.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

B. Preconstruction adhesion and compatibility test report.

1.07 CLOSEOUT SUBMITTALS

A. Maintenance Data: For plastic glazing to include in maintenance manuals.

1.08 QUALITY ASSURANCE

A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

B. Source Limitations: Obtain plastic glazing from single source from single manufacturer. Obtain sealants and gaskets from single source from single manufacturer for each product and installation method.

C. Glazing Publication: Comply with published recommendations of plastic glazing manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated. Refer to this publication for definitions of glazing terms not otherwise defined in this Section or in other referenced standards.

D. Plastic Glazing Labeling: Identify plastic sheets with appropriate markings of applicable testing and inspecting agency, indicating compliance with required fire-test-response characteristics.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Protect plastic glazing materials according to manufacturer's written instructions. Prevent damage to plastic glazing and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Maintain protective coverings on plastic glazing to avoid exposures to abrasive substances, excessive heat, and other sources of possible deterioration.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

1.11 COORDINATION

A. Coordinate dimensions of plastic glazing with dimensions of construction that receives plastic glazing to ensure that glazing channels provide adequate face and edge clearance, bite, and allowance for expansion.

1.12 WARRANTY

A. Manufacturer's Special Warranty for Abrasion- and UV-Resistant, Monolithic Polycarbonate: Manufacturer's standard form, made out to Owner and signed by polycarbonate manufacturer, in which manufacturer agrees to replace polycarbonate products that break or develop defects from normal use that are attributable to manufacturing process and not to practices for maintaining and cleaning plastic glazing contrary to manufacturer's written instructions. Defects include coating delamination, haze, excessive yellowing, and loss of light transmission beyond the limits stated in plastic glazing manufacturer's standard form.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PLASTIC GLAZING, GENERAL

A. Sizes: Fabricate plastic glazing to sizes required for openings indicated. Allow for thermal expansion and contraction of plastic glazing without restraint and without withdrawal of edges from frames, with edge clearances and tolerances complying with plastic glazing manufacturer's written instructions.

2.02 MONOLITHIC POLYCARBONATE GLAZING

A. Plastic Glazing: Coated polycarbonate sheet; ASTM C 1349, Appendix X1, Type II (coated mar-resistant, UV stabilized), with coating on both sides.

1. Products: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Altuglas International, Division of Arkema Inc.; Tuffak CM-2.
   b. General Electric Company; Lexan MR 10.
   c. Sheffield Plastics Inc., a Bayer Material Science company; Makrolon AR.

2. Nominal Thickness: 0.500 inch .
3. Color: As selected by Architect from manufacturer's full range.

2.03 GLAZING SEALANTS

A. General:

1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including plastic glazing products and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Dow Corning Corporation; 799.
   b. General Electric Company, GE Advanced Materials - Silicones; UltraGlaze SSG4000.
   c. May National Associates, Inc.; Bondaflex Sil 201 FC.
   d. Polymeric Systems, Inc.; PSI-631.
   e. Schnee-Morehead, Inc., an ITW company; SM5731 Poly-Glaze Plus.
   f. Tremco Incorporated; Tremsil 600.

2.04 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

2.05 MISCELLANEOUS GLAZING MATERIALS

A. Compatibility: Provide products of material, size, and shape complying with requirements of manufacturers of plastic glazing and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: EPDM or silicone as required for compatibility with glazing sealant and plastic glazing, and of hardness recommended by plastic glazing manufacturer for application indicated.

D. Compressible Filler Rods: Closed cell of waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5- to 10-psi compression strength for 25 percent deflection.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine plastic glazing framing, with glazing Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Minimum required face or edge clearances.
3. Effective sealing between joints of plastic glazing framing members.

B. Proceed with glazing only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean glazing channels and other framing members immediately before glazing. Remove coatings not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.03 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of plastic glazing materials, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publication.

B. Glazing channel dimensions indicated on Drawings are designed to provide the necessary bite on plastic glazing, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust plastic glazing lites during installation to ensure that bite is equal on all sides.

C. Sand or scrape cut edges of plastic glazing to provide smooth edges, free of chips and hairline cracks.

D. Remove burrs and other projections from glazing channel surfaces.

E. Protect plastic glazing surfaces from abrasion and other damage during handling and installation, according to the following requirements:

1. Retain plastic glazing manufacturer's protective covering or protect by other methods according to plastic glazing manufacturer's written instructions.
2. Remove covering at border of each piece before glazing; remove remainder of covering immediately after installation where plastic glazing will be exposed to sunlight or where other conditions make later removal difficult.
3. Remove damaged plastic glazing sheets from Project site and legally dispose of off-site. Damaged plastic glazing sheets are those containing imperfections that, when installed, result in weakened glazing and impaired performance and appearance.

F. Provide edge blocking to comply with referenced glazing publication unless otherwise instructed by plastic glazing manufacturer.

G. Square cut wedge-shaped gaskets at corners and install gaskets as recommended in writing by gasket manufacturer to prevent corners from pulling away; seal corner and butt joints with sealant recommended by gasket manufacturer.

3.04 PROTECTING AND CLEANING

A. Protect plastic glazing from contact with contaminating substances from construction operations. If, despite such protection, contaminating substances do come into contact with plastic glazing, remove immediately and wash plastic glazing according to plastic glazing manufacturer's written instructions.

B. Remove and replace plastic glazing that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

C. Wash plastic glazing on both faces before date scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Wash plastic glazing according to plastic glazing manufacturer's written instructions.

END OF SECTION 08 84 00

SECTION 08 91 19

LOUVERS AND VENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Fixed, extruded-aluminum and formed-metal louvers.
2. Blank-off panels for wall louvers.

B. Related Sections:

1. Section 04 20 00 "Unit Masonry" for building wall vents (brick vents) into masonry.
2. Section 09 96 00 "High-Performance Coatings”.

1.03 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades; i.e., the axes of the blades are horizontal.

C. Vertical Louver: Louver with vertical blades; i.e., the axes of the blades are vertical.

D. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

E. Storm-Resistant Louver: Louver that provides specified wind-driven rain performance, as determined by testing according to AMCA 500-L.

1.04 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.

B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.

1. Wind Loads: Determine loads based on a uniform pressure of 30 lbf/sq. ft., acting inward or outward.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes, without buckling, opening of joints, overstressing of components, failure of connections, or other detrimental effects.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

D. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.
2. Show mullion profiles and locations.
3. Wiring Diagrams: For power, signal, and control wiring for motorized adjustable louvers.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of metal finish required.

E. Delegated-Design Submittal: For louvers indicated to comply with structural performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.06 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

1.07 QUALITY ASSURANCE

A. Source Limitations: Obtain louvers and vents from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

B. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

C. UL and NEMA Compliance: Provide motors and related components for motor-operated louvers that are listed and labeled by UL and comply with applicable NEMA standards.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use Phillips flat-head screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

D. Post installed Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.02 FABRICATION, GENERAL

A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

D. Include supports, anchorages, and accessories required for complete assembly.

E. Provide vertical mullions of type and at spacings indicated, but not more than recommended by manufacturer, or 72 inches o.c., whichever is less.

F. Provide subsills made of same material as louvers or extended sills for recessed louvers.

G. Join frame members to each other and to fixed louver blades with fillet welds concealed from view unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.03 FIXED, EXTRUDED-ALUMINUM LOUVERS

A. Horizontal Storm-Resistant Louver:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Airolite Company, LLC (The).
   b. Construction Specialties, Inc.
   c. Ruskin Company; Tomkins PLC.

2. Louver Depth: 4 inches .
3. Frame and Blade Nominal Thickness: Not less than 0.080 inch.
4. Louver Performance Ratings:

   a. Free Area: Not less than 8.0 sq. ft. for 48-inch- wide by 48-inch- high louver.
   b. Air Performance: Not more than 0.10-inch wg static pressure drop at 800-fpm free-area intake velocity.

5. Frame Type: Channel type, unless otherwise indicated.
6. Blade Profile: Blade with center baffle.
7. Blade angle: 45 degrees unless otherwise indicated.
8. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.04 LOUVER SCREENS

A. General: Provide screen at each exterior louver.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Insect screening.

B. Secure screen frames to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches from each corner and at 12 inches o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same kind and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Same finish as louver frames to which louver screens are attached.
3. Type: Rewirable frames with a driven spline or insert.

D. Louver Screening for Aluminum Louvers:

1. Insect Screening: Stainless steel, 18-by-18 mesh, 0.009-inch wire.

2.05 BLANK-OFF PANELS

A. Insulated, Blank-Off Panels: Laminated panels consisting of insulating core surfaced on back and front with metal sheets and attached to back of louver.

1. Thickness: 2 inches.
2. Metal Facing Sheets: Aluminum sheet, not less than 0.032-inch nominal thickness.
3. Insulating Core: extruded-polystyrene foam.
4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch nominal thickness, with corners mitered and with same finish as panels.
5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
6. Panel Finish: Same finish applied to louvers.
7. Attach blank-off panels with sheet metal screws.

2.06 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

2.07 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. High-Performance Organic Finish: 4-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.03 INSTALLATION

A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

F. Protect unpainted galvanized and nonferrous-metal surfaces that will be in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 "Joint Sealants" for sealants applied during louver installation.

3.04 ADJUSTING AND CLEANING

A. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units, and replace with new units.

1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 08 91 19

This Page Left Blank Intentionally

SECTION 09 96 00

HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems on the following substrates:

1. Exterior Substrates:

   a. Concrete, surfaces.
   b. Concrete masonry units (CMUs).
   c. Steel.
   d. Galvanized metal.

2. Interior Substrates:

   a. Concrete, surfaces.
   b. Concrete masonry units (CMUs).
   c. Steel.
   d. Galvanized metal.

B. Related Requirements:

1. Section 05 12 00 "Structural Steel Framing" for shop priming of structural steel with primers specified in this Section.
2. Section 05 52 13 "Pipe and Tube Railings" for shop priming pipe and tube railings with coatings specified in this Section.

1.03 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product indicated. (Color Fan)

C. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. of each material and color applied.

1.06 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Engineer will select one surface to represent surfaces and conditions for application of each coating system.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
b. Other Items: Engineer will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Engineer at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.08 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. Duron, Inc.
3. ICI Paints
4. PPG Architectural Finishes, Inc.
5. Sherwin-Williams Company (The).

2.02 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

C. VOC Content: For field applications that are inside the weatherproofing system, paints and coatings shall comply with VOC content limits of authorities having jurisdiction. Painting supplier shall verify during the bidding process that all specified paints/coverings comply. Where items do not comply with the AHJ VOC limitations, supplier shall immediately notify the Engineer by means of RFI. Where no RFI is submitted, the contractor shall provide a comparable system/item that complies with the VOC limitations of the AHJ.

D. Low-Emitting Materials: For field applications that are inside the weatherproofing system, 90 percent of paints and coatings shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

E. Color selection is often limited because some coating materials yellow or degrade under some environmental conditions.

F. Colors: As selected by Engineer from manufacturer's full range.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water. Use pressure range of 4000 to 10,000 psi at 6 to 12 inches .

E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or alkalinity of mortar joints exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches .

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 6/NACE No. 3.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

I. Aluminum Substrates: Remove loose surface oxidation.

3.03 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.04 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.
2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Engineer, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.06 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Concrete Substrates, Vertical Surfaces:

1. Pigmented Polyurethane over Epoxy System MPI EXT 3.1M:

a. Prime Coat: Epoxy, matching intermediate coat.
b. Intermediate Coat: Epoxy, gloss, MPI #77.
c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

B. CMU Substrates:

1. Pigmented Polyurethane over High-Build Epoxy System MPI EXT 4.2G:

a. Block Filler: Block filler, epoxy, MPI #116.
b. Intermediate Coat: Epoxy, high build, low gloss, MPI #108.
c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

C. Steel Substrates:

1. Epoxy System MPI EXT 5.1F:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101.
b. Intermediate Coat: Epoxy, high build, low gloss, MPI #108.
c. Topcoat: Epoxy, gloss, MPI #77.

D. Galvanized-Metal Substrates:

1. Epoxy System MPI EXT 5.3C:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101.
b. Intermediate Coat: Epoxy, matching topcoat.
c. Topcoat: Epoxy, gloss, MPI #77.

3.07 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Concrete Substrates, Vertical Surfaces:

1. Epoxy-Modified Latex System MPI INT 3.1G:

a. Prime Coat: Epoxy-modified latex, matching topcoat.
b. Intermediate Coat: Epoxy-modified latex, matching topcoat.
c. Topcoat: Epoxy-modified latex, semi-gloss (MPI Gloss Level 5), MPI #215.

B. CMU Substrates:

1. Epoxy-Modified Latex System MPI INT 4.2J:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

b. Intermediate Coat: Epoxy-modified latex, interior, matching topcoat.
c. Topcoat: Epoxy-modified latex, semi-gloss (MPI Gloss Level 5), MPI #215.

2. Clear (Two-Component) Polyurethane System MPI INT 4.2Q:

C. Steel Substrates:

1. Epoxy-Modified Latex System MPI INT 5.1K:

a. Prime Coat: Primer, rust inhibitive, water based, MPI #107.
b. Intermediate Coat: Epoxy-modified latex, interior, matching topcoat.
c. Topcoat: Epoxy-modified latex, semi-gloss (MPI Gloss Level 5), MPI #215.

D. Galvanized-Metal Substrates:

1. Epoxy over Epoxy Primer System MPI INT 5.3D:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101.
b. Intermediate Coat: Epoxy, matching topcoat.
c. Topcoat: Epoxy, gloss, MPI #77.

END OF SECTION

SECTION 22 00 00
PLUMBING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Related Documents:
1. The other Contract Documents complement the requirements of this Section and apply to this Section
2. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
3. Where requirements of this Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

B. Codes and Regulations:
1. California Plumbing Code (CPC).
2. California Mechanical Code (CMC).
3. California Building Code (CBC).
4. California Green Building Standard Code.
5. National Fire Code (NFC).
6. National Fire Protection Association (NFPA).
7. Local Building Department.
8. Local Fire Marshal.
9. Office of the State Fire Marshall.
10. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirements will govern when so directed by the Architect.

C. Scope of Work: (Plumbing Section Division 22)
1. Material and labor including rough-in for and connection to fixtures, appliances and equipment are:
   a) FIRE WATER PIPING
      1) Fire sprinkler piping distribution per plans.
   b) FUEL GAS PIPING
      1) Liquid and vapor propane gas distribution, , meters, regulators and connections to all gas fired equipment.
   c) LAYOUT AND CUTTING
      1) Holes, chases, channels, the setting and erection of bolts, inserts, stands, brackets, stanchions, supports, sleeves, escutcheon plates, thimbles, hangers, conduits, and boxes.
   d) EXCAVATION, TRENCHING AND BACKFILL
      1) In connection with plumbing and piping work shown herein
   e) PIPE HANGERS, SUPPORTS, ANCHORS, GUIDES, EXPANSION JOINTS
      1) Including:

a) Supports for equipment to which pipe is connected, such as tank supports
b) Isolators-dielectric and vibration
c) Anchors and thrust blocks of concrete, metal, etc.
d) Seismic bracing
(1) Anvil/Badger, Mason Industries, B-Line/TOLCO or approved equal.
(2) Seismic hanger system design shall comply with CBC 2013 requirements and ASCE 7-05 and 7-10.

f) SIGNS AND NOTICES
g) TESTS
1) Piping, for tightness
2) Equipment for performance
3) Operating instructions
4) Final operation

1.02 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. Welder's Qualifications: Comply with ASME B31.8. The pipe welder shall have a copy of a certified ASME B31.8 qualification test report. Contractor shall also conduct a qualification test. Submit each welder's identification symbols, assigned number, or letter, used to identify work of the welder. Affix symbols immediately upon completion of welds. Welders making defective welds after passing a qualification test shall be given a requalification test and, upon failing to pass this test, shall not be permitted to work this contract.

1.03 SUBMITTALS

A. Comply with pertinent provisions of Architectural Sections.

B. Product Data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit 6 copies of the following to the Architect for approval prior to acquisition:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications, catalog cuts, and other data needed to prove compliance with the specified requirements. All pieces of equipment shall be clearly identified on corresponding manufacturer's literature being submitted.

3. Shop Drawings or other data as required to indicate method of installing and attaching equipment, except where such details are fully shown on the Drawings.
4. All submittals for the entire project shall be submitted at the same time. Submittals shall be provided in PDF format. Incomplete or noncompliant submittals may be rejected.

1.04 DESIGN CHANGES CAUSED BY PRODUCT SUBSTITUTIONS

A. Contractor shall pay costs of design and installation for changes resulting from substitution of alternate products. Acceptance of alternate products by Architect does not change this requirement.

1.05 PRODUCT HANDLING

A. Comply with pertinent provisions of Architectural Sections.

PART 2 - PRODUCTS

2.01 FIRE SPRINKLER PIPING

A. Above Ground
1. Above grade fire protection system pipe, Schedule 40 galvanized tube and fittings shall be approved and listed for use in fire protection systems.

2.02 SPRINKLER HEADS

A. Sprinklers shall be UL listed or FMG approved, with 175-psig minimum pressure rating. Sprinklers shall have 250-psig pressure rating if sprinklers are components of high-pressure piping system.

B. Available Manufacturers:
1. Grinnell Fire Protection.
2. Reliable Automatic Sprinkler Co., Inc..
3. Victaulic.
4. Viking Corp.

2.03 FIRE DEPARTMENT CONNECTION

A. When required, appropriately lettered wall or free standing Fire Department Connection(s) shall be provided where schematically shown on the Drawings.

B. Wall-Type, Fire Department Connection: UL 405, 175- psig minimum pressure rating; with corrosion-resistant-metal body with brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads,

extension pipe nipples, and escutcheon plate with marking similar to “AUTO SPKR & STANDPIPE.”

1. Type: Flush, with two inlets and square or rectangular escutcheon plate.
2. Type: Exposed, projecting with two inlets and round escutcheon plate.
3. Finish: Polish chrome-plated, Rough chrome plated, Polished brass.

2.04 GAS PIPING

A. Below Ground
1. Schedule 40, Seamless Steel Pipe all sizes ASTM A-53 with Buttweld Steel fittings ASTM-A-234
2. Polyethylene (PE) Natural and Liquefied Petroleum Gas Yard Piping ASTM D2513 with Fusion Joints. Provide Steel Transition Risers and Detectable Warning Tape.

B. Above Ground
1. Schedule 40, Seamless Steel Pipe all sizes. ASTM A53 with Buttweld Steel fittings ASTM A 234

2.05 VALVES

A. Acceptable Manufacturers: Milwaukee, Hammond, Jomar, NIBCO, Watts, others as noted.

Type	Size Range	Part Number
Ball	2" and smaller (2 piece)	Milwaukee UPBA400 Hammond UP8301A NIBCO 585-80-LF
Ball	2-1/2" and larger (3 piece)	Milwaukee UPBA300 Hammond UP8604 NIBCO 595Y-LF
Gas Cock (ball)	2" and smaller	Milwaukee BA475B Hammond 8901 NIBCO FP600
Gas Cock (plug)	1/2” to 4”	Homestead 611/612 Walworth 1796/1797 (with wrench)

2.06 HANGERS AND SUPPORTS

A. In general, all pipe hangers and supports shall conform to the following except where special pipe hangers and supports are detailed on the Drawings. In all cases hanger and support details on the Drawings shall take precedent over the following:

Piping 6" Size and Smaller:		
Items	**TOLCO**	**Anvil**
Pipe Hanger	1; 2; 200	260
Side Beam Clamp for Wood Joist	58	207
Beam Coupling for Steel Beams	65	92
Rod Coupling for Connection	70	135

to “Hilti”		
Inserts in Concrete Decks	107; 109A; 109AF	N/A
Trapeze Hangers	Tolstrut A12	AS200
Pipe Clamp	TOLCO cush clamp	AS002OD-AS098D

B. Similar items by Anvil International, Erico-Caddy, or TOLCO/B-Line will be acceptable.

C. Hanger Rods shall conform to the following table:

Tube/Pipe Size	Rod Diameter
½” to 4”	3/8”
5” to 8”	½”
10” to 12”	5/8”

D. Trapeze hangers may be used where parallel runs of pipe occur. All rods on trapeze hangers shall be 1/2" minimum size.

E. Hanger Support Spacing shall be as follows unless shown otherwise on the Drawings:
1. Horizontal:
a) Steel, Gas: Every 6 feet for 1/2 inch, 8 feet for 3/4 inch and 1 inch, and 10 feet for 1-1/4 inch and larger.

F. Refer to the plumbing code for materials not listed above.

G. Seismic restraint devices
1. Available Manufactureres:
2. Anvil/Badger
3. Mason Industries
4. B-Line Tolco Division of Eaton
5. Seismic hanger system design shall meet the requirements of IBC, CBC and ASCE 7-05 and 7-10.

2.07 WALL AND FLOOR PENETRATIONS

A. Poured concrete walls and floors:
1. Pipes penetrating poured concrete walls and floors shall be protected by providing the following:
a) A Schedule 40 carbon steel sleeve one (1) size larger than the pipe.
b) Protection shall end flush with the wall or floor surface.

PART 3 - EXECUTION

3.01 GENERAL CONDITIONS

A. Examine the areas and conditions under which Work of this Section will be performed. Conditions detrimental to timely and proper completion of the Work shall be brought to the attention of the Architect before the installation of materials. Do not proceed until unsatisfactory conditions are corrected. Incorrectly installed materials requiring changes will be at Contractor's expense.

B. All appliances, and appurtenances furnished with manufacturer's installation instructions shall be installed per those instructions.

3.02 PLUMBING SYSTEM LAYOUT

A. Lay out the plumbing system in careful coordination with the Drawings. Determine proper elevations for all components of the system and use only the minimum number of bends to produce a satisfactorily functioning system.

B. Follow the general layout shown on the Drawings in all cases except where other Work may interfere.

C. Lay out pipes to fall within partitions, walls, or roof cavities, and to not require furring other than as shown on the Drawings.

3.03 PIPING INSTALLATION

A. Pipe sizes as shown on drawings are Nominal Pipe Size (NPS) or Iron Pipe Size (IPS). Drawings and indicate pipe sizing per the CPC and Standard Engineering Practice. Pipe sizes shall be maintained to fixtures, appliances and equipment. Approved reducing fittings shall be installed at all points of connections.

B. All Propane gas piping under structures or concrete slabs will be installed in a protective vent sleeve. Sleeves under a building will be vented to outside the building per detail on Plans. Sleeves under concrete slabs will extend a minimum of 1 foot beyond the slab. All sleeves will be sloped 1/8" per foot up toward the vented end. The vent end of sleeves under slabs will terminate under a landscaped or asphalted area.

C. Gas piping shall be tapped off the top or side of pipe and ends of mains shall be provided with dirt legs.

D. General:
1. Proceed as rapidly as the building construction will permit.
2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.
3. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
4. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.
5. Provide sufficient swing joints, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.

3.04 PIPE SUPPORT INSTALLATION

A. Support pipes from structure with assemblies specified. Provide auxiliary members, anchors, guides, and sway braces necessary to maintain pipe

alignment and prevent excessive movement or strain on piping system or components; allow for expansion and contraction of piping. Provide at least one hanger for each branch. Do not use powder driven fasteners, wire, perforated tape, nails, wood blocking, or other makeshift devices to support pipe.

B. Attach supports to structure with bolts, screws or concrete anchors, per support manufacturer's requirements.

3.05 VALVE INSTALLATION

A. Provide valves in the gas systems. Locate and arrange so as to give a complete regulation of apparatus, equipment, and fixtures.

B. Provide valves in at least the following locations:
   1. Where shown on the Drawings.

C. Locate valves for easy accessibility and maintenance. Provide access panels for all hidden valves.

D. All gas pressure regulating valves shall be vented to the atmosphere.

3.06 WARRANTY

A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or owner.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 05 19
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Wires and cables.
2. Connectors.
3. Lugs and pads.
4. MC cable.

1.03 SYSTEM DESCRIPTION

A. Provide wires, cables, connectors, lugs, strain reliefs, racking insulators for a complete and operational electrical system.

1.04 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Provide product data for the following equipment:
1. Wires.
2. Cables.
3. Connectors.
4. Lugs.
5. Splice Kits.
6. Strain Relief Fittings.
7. Cable Racking and Insulators.

C. Provide the insulation cable testing report in the project closeout documentation, refer to Closeout Requirements in the General Conditions portion of this specification.

1.05 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local Authority Having Jurisdiction (AHJ).

B. Furnish products listed by UL or other testing firm acceptable to AHJ.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wires and Cables: General Cable, Okonite, Southwire, or approved equal.

B. Connectors: Burndy, Ilsco, Thomas & Betts, or approved equal.

C. Wire connectors shall be minimum 75 degree centigrade rated and properly sized for the number of conductors being connected, terminated, spliced etc. All above grade connectors shall be solderless lug or plastic wire nut type, screw on, pressure cable type (wire nut or spring nut type), 600 volt, 105 degree C, with skirt to cover all portions of stripped wires. Connector shall be U.L. rated for number and size of conductors being joined together as a splice.

D. Splices:
1. Branch Circuit Splices: Ideal, Scotch-Lock, 3M, or approved.
2. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
3. Screw Terminal Lugs.
4. Kearney Split Bolt.

E. MC and HFC Cable: Alflex, AFC, or approved and shall meet all CEC Article 334 provisions.

2.02 WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE:

A. Copper, 600 volt rated throughout. Conductors 14AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.

B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back. Phasing tape shall be permitted on sizes #6 and larger.

C. Color Code Conductors as Follows:

PHASE	208 VOLT
A	Black
B.	Red
C.	Blue
Neutral	White
Ground	Green

D. All conductors shall be copper unless otherwise noted. Minimum size for individual conductors shall be #12 AWG unless otherwise noted. Sizes #8 AWG and larger shall be stranded conductor. Individual conductors shall be insulated with type, XHHW, THW, THHN/THWN 600-volt insulation unless otherwise noted. Control, signal, communication conductors shall be as dictated by the vendor of that equipment or as specified here-in. Proper insulation type shall be used for the proper environmental application (i.e., waterproof, wet location, plenum, temperature rated). If a condition exists where the application is uncertain, contact the Engineer for direction. Contractor is responsible to follow specific cabling requirements described in other

sections of this specification relative to various communications and controls systems as well as the respective riser diagrams shown on plans. If a discrepancy occurs, communicate such discrepancy to the Architect and Engineer immediately for resolution.

E. Insulation types THWN, THHN or XHHW. Minimum insulation rating of 90C for branch circuits.

F. [MC Cable: High strength galvanized steel or aluminum flexible armor. Full length minimum size No. 12 copper ground wire, THHN 90C conductors, full length tape marker. Overall PVC or nylon cable tape. Short circuit throat insulators, mechanical compression termination. Manufacturers: Alflex, AFC]

G. Refer to signal and communications specification sections for cable requirements.

2.03 CONNECTORS

A. Copper Pads: Drilled and tapped for multiple conductor terminals.

B. Lugs: Indent/compression type for use with stranded branch circuit or control conductors.

C. Solid Conductor Branch Circuits: Spring connectors, wire nuts, for conductors 18 through 8AWG.

2.04 LUGS AND PADS

A. Ampacity: Cross-sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation: Conductors shall not be installed until after conduit systems are permanently in place. Use an approved non hardening type wire pulling lubricant if lubricant is to be used. Maintain all conduits and wire pulls free from foreign material. If due to field conditions, more than a total of 300 degrees of bend are required; a pull box shall be furnished and installed for ease of installation. Said pull boxes must be sized and rated for the appropriate application and must remain easily accessible upon completion of the project (approval of the location shall be obtained from the Architect prior to installation). Show these pullboxes on the field record drawings. Conductors installed in underground raceways on site shall be duct sealed and taped where they exit the raceway to prevent the entrance of foreign material and moisture after the conductors are installed. Proper drainage shall be provided for underground pull and splice boxes.

B. Insulation: Use proper insulation types where temperature and environment are a factor.

C. Splices at or below grade level shall be made with wet location rated and approved mechanical connectors and shall be encapsulated in epoxy or plastic molded poured kits. The connections must be assured to be watertight. Splices at or below grade shall always be avoided and minimized. Prior approval is required for feeder splices below grade. Submit proposed materials and exhibit showing location of intended splices for Engineer’s review and approval prior to commencing with the work.

D. Labeling: All conductors in panels, switchboards, terminal cabinets, vaults, pull boxes, and junction boxes shall be labeled with tape number markers indicating circuit number and identifying system. All labeling shall be permanent. In manholes and vaults, provide embossed brass tags identifying system serviced and function. See Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS.

E. All conductors, wiring, cable where installed below floor, slab or underground shall be considered wet locations, and shall be rated accordingly. Non waterproof cabling is not allowed in any below grade or wet application.

F. Cables routed together in cable tray shall be stacked, organized and tie wrapped together in a neat and workman like manner. Random cable routing is not acceptable.

G. Cable and conductors routed through pull boxes and vaults shall be properly supported on porcelain or equal insulators mounted on steel rack inserts. Bend radius of cable or conductor shall not be less than six times the overall cable diameter.

H. Wires and Cables:
1. Conductor Installation:
   a. Install conductors in raceways having adequate, code size cross-sectional area for wires indicated.
   b. Install conductors with care to avoid damage to insulation.
   c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
   d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation.
2. Conductor Size and Quantity:
   a. Install no conductors smaller than 12AWG unless otherwise shown.
   b. Provide all required conductors for a fully operable system.
3. Provide dedicated neutrals (one neutral conductor for each phase conductor) in the following single phase circuits:
   a. Dimmer controlled circuits.
   b. Ground fault and arc fault protected circuits where a GFI and arc fault breakers are used in panelboards.
   c. Other electronic equipment which produces a high level of harmonic distortion including but not limited to computers, printers, plotters, copy machines, fax machines, where indicated.
4. MC Cable shall be allowed for lighting branch circuiting in non-exposed but accessible ceiling areas. Ceilings that are not accessible by definition shall not allow MC cable use. Power feeders, and electrical branch circuit wiring shall utilize raceways as specified and allowed by Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
5. Conductors in Cabinets:
   a. Cable and train all wires in panels and cabinets for power and control neatly and uniformly. Use plastic ties in panels and cabinets.
   b. Tie and bundle feeder conductors in wireways of panelboards.
   c. Hold conductors away from sharp metal edges.
   d. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Notice of Completion.

3.02 FIELD QUALITY CONTROL

A. Tests:
1. Test conductor insulation on feeders of 400 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures. Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below.

2. Test Report: Prepare a typed tabular report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit report with operating and maintenance manual.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Grounding and bonding requirements of electrical installations for personnel safety and to provide a low impedance path for possible ground fault currents as described in CEC Article 250.
   2. “Grounding electrode system” refers to all electrodes required by CEC, as well as including made, supplementary, lightning protection system and telecommunications system grounding electrodes.
   3. The terms “connect” and “bond” are used interchangeably in this specification and have the same meaning.

B. Related Work:
   1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be permitted to be identified per CEC.

B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes No. 10 AWG and smaller shall be ASTM B1 solid bare copper wire.

C. Conductor sizes shall not be less than what is shown on the drawings and not less than required by the CEC, whichever is greater.

2.02 GROUND RODS

A. Copperclad steel, 5/8" diameter by 8’ long, conforming to UL 467 unless otherwise noted on drawings and details.

B. Quantity of rods shall be as required to obtain the specified ground resistance or additional rods shall be driven to obtain specified resistance or less.

2.03 SPLICES AND TERMINATION COMPONENTS

A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

PART 3 - EXECUTION

3.01 GENERAL

A. Ground in accordance with the CEC, as shown on drawings, and as hereinafter specified.

B. System Grounding:
1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.
2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.

C. Equipment Grounding: Metallic structures (including ductwork and building steel), enclosures, fire sprinklers, plumbing piping, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be bonded and grounded.

3.02 INACCESSIBLE GROUNDING CONNECTIONS

A. Make grounding connections which are buried or otherwise normally inaccessible (except connections for which periodic testing access is required) by exothermic weld.

3.03 SECONDARY EQUIPMENT AND CIRCUITS

A. Main Bonding Jumper: Bond the secondary service neutral to the ground bus in the service equipment.

B. Metallic Piping, Building Steel, and Supplemental Electrode(s):
1. Provide a grounding electrode conductor sized per CEC between the service equipment ground bus and all metallic water and gas pipe systems, building steel, and supplemental or made electrodes. Jumper insulating joints in the metallic piping. All connections to electrodes shall be made with fittings that conform to UL 467.
2. Provide a supplemental ground electrode and bond to the grounding electrode system.

C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors.

D. Switchgear, Switchboards, Unit Substations, and Motor Control Centers:
   1. Connect the various feeder equipment grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
   2. For service entrance equipment, connect the grounding electrode conductor to the ground bus.
   3. Connect metallic conduits, which terminate without mechanical connection to the housing, by grounding bushings and grounding conductor to the equipment ground bus.

E. Transformers:
   1. Exterior: Exterior transformers supplying interior service equipment shall have the neutral grounded at the transformer secondary. Provide a grounding electrode at the transformer.
   2. Separately derived systems (transformers downstream from service equipment): Ground the secondary neutral at the transformer. Provide a grounding electrode conductor from the transformer to nearest component of the grounding electrode system and the ground bar at the service equipment.

F. Conduit Systems:
   1. Ground all metallic conduit systems. All metallic conduit systems shall contain an equipment grounding conductor sized per CEC.
   2. Non metallic conduit systems shall contain an equipment grounding conductor.
   3. Metal conduit containing only a grounding conductor, and which is provided for mechanical protection of the conductor, shall be bonded to that conductor at the entrance and exit from the conduit.

G. Feeders and Branch Circuits: Install equipment grounding conductors with all feeders, power and lighting branch circuits.

H. Boxes, Cabinets, Enclosures, and Panelboards:
   1. Bond the equipment grounding conductor to each pullbox, junction box, outlet box, device box, cabinets, and other enclosures through which the conductor passes.
   2. Provide lugs in each box and enclosure for equipment grounding conductor termination.
   3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs to terminate the equipment grounding conductors.

I. Motors and Starters: Provide lugs in motor terminal box and starter housing or motor control center compartment to terminate equipment grounding conductors.

J. Receptacles shall not be grounded through their mounting screws. Ground with a jumper from the receptacle green ground terminal to the device box ground screw and the branch circuit equipment grounding conductor.

K. Ground lighting fixtures to the equipment grounding conductor of the wiring system when the green ground is provided; otherwise, ground the fixtures through the conduit systems. Fixtures connected with flexible conduit shall have a green ground wire included with the power wires from the fixture through the flexible conduit to the first outlet box.

L. Fixed electrical appliances and equipment shall be provided with a ground lug for termination of the equipment grounding conductor.

M. Panelboard Bonding: The equipment grounding terminal buses of the normal and emergency branch circuit panelboards shall be bonded together with an insulated continuous copper conductor not less than No. 8 AWG where panels are in same room together or within 25’ of each other. These conductors shall be installed in rigid metal conduit.

3.04 CONDUCTIVE PIPING

A. Bond all conductive piping systems, interior and exterior, to the building to the grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

3.05 GROUND RESISTANCE

A. Grounding system resistance to ground shall not exceed 25 ohms. Make necessary modifications or additions to the grounding electrode system for compliance without additional cost to the Owner. Final tests shall assure that this requirement is met and test results shall be submitted to the Owner with final close out documents.

B. Resistance of the grounding electrode system shall be measured using a four-terminal fall-of-potential method as defined in IEEE Standard 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes must still be provided.

C. Services Company interface point shall comply with their ground resistance requirements.

D. Below-grade connections shall be visually inspected by the IOR prior to backfilling. The Contractor shall notify the IOR 24 hours before the connections are ready for inspection.

E. Furnish a copy of tests to Owner at completion of project.

3.06 GROUND ROD INSTALLATION

A. Drive each rod vertically in the earth, not less than 7 1/2’ in depth.

B. Where permanently concealed ground connections are required, make the connections by the exothermic process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connectors.

C. Where rock prevents the driving of vertical ground rods, install angled ground rods or grounding electrodes in horizontal trenches to achieve the specified resistance.

3.07 GROUNDING FOR RF/EMI CONTROL

A. Install bonding jumpers to bond all conduit, cable trays, sleeves and equipment for low voltage signaling and data communications circuits. Bonding jumpers shall consist of 4” wide copper strip or two No. 10 copper conductors spaced minimum 4” apart. Use No. 6 copper where exposed and subject to damage.

B. Comply with the following when shielded cable is used for communication circuits.
   1. Shields shall be continuous throughout each circuit.
   2. Connect shield drain wires together at each circuit connection point and insulate from ground. Do not ground the shield.
   3. Do not connect shields from different circuits together.
   4. Shield shall be connected at one end only. Connect shield to signal reference at the origin of the circuit. Consult with equipment manufacturer to determine signal reference.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Conduit and fittings.
2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.
5. Floor boxes and poke-through.
6. Cabinets, termination cabinets.
7. Gutters.
8. Concrete boxes and vaults.
9. Fiberglass or composite boxes and vaults.
10. [Hazardous Location: Sealing Fitting]

B. Related Work:
1. Installation of all wire, cable, conductor, boxes/gutters, pull ropes, fiber optic cable raceway, conduit, innerduct, cable sleeve and duct as described on the plans and/or as specified here-in. This scope shall include pathways to be installed underground on site and offsite, underslab, above grade, both concealed and exposed, overhead concealed and exposed as appropriately applied. Raceways/boxes shall be installed in accordance with their intended and allowed uses and as specified here-in whichever is more restrictive. Size and capacity of all raceway/boxes shall be as specified here-in or as depicted on the drawings, but shall not be less than that required by code. Larger raceway sizes may be specified than code would permit. The specifications shall govern.
2. Listed products for termination, coupling, extending, benching supports of raceways shall be used.
3. Raceways/boxes described by this section shall include, but not be limited to, power for site utilities and lighting, site and building communications, controls, fire alarm, security, access control, sound systems, data system, energy management systems, power distribution, lighting, lighting controls, video, CATV, voice communications, intercom, nurse call, HVAC and other building low voltage/communications systems controls as may be required. Raceways, boxes and duct paths required for utility companies shall be installed per plans unless utility company requirements are more restrictive at which time those requirements shall take precedence.
4. Protection of and cleanliness of pathways and raceways must be assured during the construction process in order to eliminate the possibility of debris entering the conduit, duct, pathway resulting in decreased wire capacity and potential damage to installed conductors and cables.
5. Pathways are shown in a diagrammatic way and are generally accurate as to routing, however, it is the Contractor's responsibility as a means and methods process to coordinate with all other trades that require space within a building. The Contractor shall

obtain approval for installation of raceways routing through structural footings, retaining walls, columns, beams, purlins, grade beams, etc.

6. It is the Contractor's responsibility to insure that all raceway and boxes systems penetrate fire assemblies and sound rated assemblies in an approved manner using the appropriate and listed products for the purpose.
7. Trenching and backfilling for all underground conduit systems installed by the Electrical Contractor shall be the responsibility of the Contractor. Conduits shall have minimum cover requirement of 36" below finish grade with the exception of site lighting conduits which may be 24" below finish grade minimum. More stringent depth requirements may be imposed by the local agency and utility company and shall be adhered to, and / or this specification or as detailed on the plans. Joint trenching may be utilized where practicable and where permitted by this specification. Concrete, native material and sand shall be used as backfill material and shall be compacted in accordance with and coordinated with the grading and site preparation requirements. Conduits shall rest in a minimum of 4" bed of sand prior to backfill and compaction. Locations of existing underground (UG) utility systems shall be determined by calling Underground Service Alert (USA) at least 48 hours prior to any excavation. Also refer to Section 26 05 46.13, ELECTRIC UTILITY SYSTEMS.
8. Minimum conduit size shall be 1/2" except if plan shows or code requires larger size. Exception: Use minimum 3/4" for underslab and below grade applications outside of building exterior walls.
9. All electrical, control, communications systems shall be installed in metallic conduit system. This shall include but not be limited to all systems described in Section B.3 above, except for voice and data systems which shall be installed as described on these plans and as specified here-in but shall not be less than the recommendations of EIA/TIA standards.
10. All line voltage wiring within the building shall be installed in metallic conduit.
11. All conduit, concrete pads, underground concrete or fiberglass substructures shall be furnished and installed with the approved materials and type for the application. Provide proper traffic control during construction as well as barriers and protection of all excavations and trenching.
12. Empty or future conduits shall be properly plugged with plastic caps or inserts with a 3/8" polyethylene pull rope. Plastic or "duct" tape will not be acceptable.
13. Exterior installations: After conductors are installed, seal conduit ends to prevent entrance of foreign material using pliable duct seal, caps or waterproof expanding foam.
14. All low voltage systems including intercom, fire alarm, public address, etc. shall be in dedicated conduit systems
15. Underground conduits entering building shall have the open end of conduit within building above the elevation of the conduit outside the building such that water cannot enter building through conduit. If such a condition exists, a pull box outside of building footprint shall be installed in conduit route before conduit enters building whereby top of pull box is below finish floor of building and moisture may exit box before entering building.
16. No single conduit run of any type shall exceed 300 degrees of radius bend from termination box to termination box.
17. Separate Raceway System: Provide a separate dedicated raceway system for each system installed, do not combine different systems into a raceway or cable tray system, unless otherwise noted or allowed.
18. Spare, Future Conduits: Conduits labeled conduit only, spare, or for future use, shall be provided with a pullrope, capped at each end, labeled as spare with destination marked, and turned over to the Owner in an unused state. Contractor shall not utilize these conduits for the installation of cabling or conductors as part of this scope of work. Contractor to verify and install at no additional cost to the Owner, additional conduits as required for the installation of the systems being installed.
19. Outlet System: Provide electrical boxes and fittings as required for a complete installation. Including but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, covers and all other necessary components.

20. Code Compliance: Comply with CEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to CEC 312, 314 and 366 except as noted otherwise.
21. Outlets to be flush mounted: Maintain integrity of insulation and vapor barrier. Unless otherwise noted, flush mount all outlet boxes.
22. Provide putty pads of proper type around outlet boxes and/or as detailed on plan to meet sound transmission restrictions and fire ratings of walls.

1.03 SUBMITTALS

A. Provide Shop Drawings and Product Data for the Following Equipment:
1. Conduit and fittings.
2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.
5. Floor boxes and poke-through.
6. Cabinets, termination cabinets.
7. Gutters.
8. Concrete boxes and vaults.
9. Fiberglass or composite boxes and vaults.
10. Putty pads.
11. Raceways
12. [Hazardous Location: Sealing Fitting]

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs.

B. Furnish products listed by UL or other independent and nationally recognized testing firm.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Heavy wall Rigid Non-Metallic Conduit, shall be PVC schedule 40 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

B. Extra heavy wall non-metallic conduit, shall be PVC schedule 80 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

C. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.

D. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.

E. Flexible Metal Conduit (FMC) shall be continuous wound reduced wall galvanized steel produced to UL standards.

F. Liquid tight flexible metal conduit shall have a thermoplastic cover over a galvanized steel core containing an integral copper ground in sizes to 1 1/4" and shall be in compliance with UL standards and CEC Article 350.

G. Manufacturers:
1. Outlet Boxes: Bowers, Raco, Steel City or equal.
2. Weatherproof Outlet Boxes: Bell, Red Dot, [Carlon] or equal.
3. Floor Boxes: Wiremold/Walker, Hubbell, Steel City, or equal.
4. Junction and Pull Boxes: Circle AW, Hoffman, Wireguard or equal.
5. Box Extension Adapter: Bell, Red Dot, [Carlon] or equal.
6. Conduit Fittings: O-Z Gedney, Thomas & Betts, or equal.
7. Vaults: Christy, Brooks, Utility Vault or equal.
8. Putty pads: 3M, Hilti, or equal.
9. Heavy wall rigid non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
10. Extra heavy wall non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
11. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
12. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.
13. Flexible Metal Conduit (FMC), Alflex, American Flexible Conduit or equal.
14. Liquid tight flexible metal conduit, Anacanda (type UA), Electri-flex Liquatite or equal.
15. Surface mount raceway, Wiremold, Three Compartment Series 5500 or equal
16. Wire basket tray, B-line, GS Metals, Cablofil or equal.
17. Cable runway tray, B-line, CPI, Homaco or equal.

18. Masonry Boxes, outlets in concrete, Raco Series 690 or equal.
19. Exterior In-Grade Boxes for Non-Utility Company, Precast concrete or polymer concrete, Utility Vault and Christy.
20. [Hazardous Location: Sealing Fitting – Killark, Crouse-Hinds or Appleton.]

2.02 OUTLET BOXES

A. NEMA 1 gutter, junction and pull boxes shall be fabricated from code gage steel finished in grey enamel with screw cover fronts and concentric knockouts in all sides.

B. NEMA 3R gutter, junction and pull boxes shall be fabricated from code gage galvanized steel with screw cover fronts and concentric knockouts in the bottom only. Any penetrations to the side, top or back shall be weatherproofed in an approved manner such as “MYERS” gasketed type hub or equal.

C. Steel outlet boxes and plaster rings shall be galvanized rigid assemblies, either one piece pressed or factory welded construction containing the size and number of knockouts required. Steel outlet boxes shall be manufactured, sized and installed in accordance with CEC Article 314. Device Outlet: Installation of one or two devices at common location, minimum 4” square, minimum 1 1/2" deep. Single or 2 gang flush device plaster ring. Raco Series 681 and 686 or equal.

D. Luminaire Outlet: minimum 4” square with correct plaster ring depth, minimum 1 1/2” deep with 3/8” luminaire stud if required. Provide proper depth plaster ring on bracket outlets and on ceiling outlets.

E. Multiple Devices: Three or more devices at common location. Install 1 piece gang boxes with 1 piece device plastering. Install one device per gang unless otherwise allowed.

F. Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Boxes shall be properly secured to the structure such that they are flush with the finish surface. Boxes shall be made structurally secure by means of the proper fastening devices.

G. Accessories: Provide outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, plaster rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

2.03 WEATHERPROOF OUTLET BOXES

A. Construction: Provide corrosion-resistant cast iron, with zinc finish, weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application, including face plate gasket, blank plugs and corrosion proof fasteners. Weatherproof boxes to be constructed to have smooth sides, zinc, galvanized finish.

B. Surface mounted die cast aluminum device boxes shall be provided with screw holes to accommodate cast device covers.

C. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner. Weatherproof boxes in wet locations as described in CEC 406.8 (B) shall be provided with a “while-in-use” cover; red dot ‘CK’ Series of aluminum die-cast construction, NEMA 3R, with lacquer finish.

2.04 JUNCTION AND PULL BOXES

A. Construction: Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.

B. Location:
1. Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
2. Install junction boxes and pull boxes as required to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 300 degrees.
3. Locations: Junction boxes shall be located only where necessary and only in equipment rooms, closets, and accessible attic and underfloor spaces. A horizontal distance of 24” shall separate outlet boxes on opposite sides of occupancy separation walls, fire-rated walls or partitions.
4. Labeling: Junction box covers shall be marked with indelible ink indicated the circuit numbers passing through the box.

2.05 BOX EXTENSION ADAPTER

A. Construction: Diecast aluminum

B. Location: Install over flush wall outlet boxes to permit flexible raceway extension from flush outlet to fixed or movable equipment.

2.06 CONDUIT FITTINGS

A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.

B. Steel boxes may allow for field knock-out modifications, but shall in all other ways conform to code requirements.

2.07 EXTERIOR IN-GRADE BOXES FOR NON-UTILITY COMPANY USE SHALL BE:

A. Precast concrete or polymer concrete type with full bottoms and draining into gravel drywell. . Open bottom splice/pull boxes 24” x 36” and smaller shall be open bottom, with minimum 12” of gravel below for drainage.

B. Flushmount in hardscape and 1” above grade in softscape.

C. Provided with correct traffic type lid, i.e., full vehicular, intermediate incidental vehicular or pedestrian-rated as applicable stamped with “ELECTRIC”, “LIGHTING”, COMMUNICATIONS”, etc. cover identification as shown on the drawings or as applicable. All boxes or vaults located in streets, driveways, sidewalks wider than 8’, and turf areas where mowing takes place shall be traffic rated.

D. Provided with brass hold-down bolts in cover.

E. Provided with necessary box extensions to gain proper depth.

F. Seal all conduit in underground boxes with duct seal after conductors have been installed.

2.08 HAZARDOUS LOCATION SEALING FITTING

A. Copper free aluminum gas seal fitting to prevent passage of gases and vapor through electrical conduit.

B. Provide proper sealing fitting listed for the hazard classification and orientation of installation.

C. Include a drain canal and drain plug in installations which have a probability that liquid or vapor condensation may be trapped in raceway.

D. Splices are not allowed in sealing fitting.

E. Install packing fiber and sealing compound per manufacturers recommendations.

2.09 IN-GRADE UTILITY COMPANY BOXES AND VAULTS

A. In-grade boxes and pads for utility company, shall be as specified by the respective utility company with all of the company’s requirements and construction methods met.

2.10 PUTTY PADS

A. Intumescent moldable firestop putty designed to protect electrical outlet boxes.

B. Designed to install around outside of outlet boxes.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Conduit systems listed below are for use in installations where they are permitted to be used by CEC and/or other occupancy restrictions. The below installation methods do not intend to suggest that these materials be installed in conflict with any applicable code. Special attention to applications shall be made in building types such as Educational, Health Care, wet location, hazardous locations, assembly occupancy and multi-story, but not limited to these. Requirements which are more restrictive than the CEC may be called for by the drawings and / or these specifications. These requirements must be adhered to. The Electrical Contractor shall be responsible to use the proper conduit system for the application. Exposed conduit is not allowed below ceilings or above slab of floor, without the permission and approval of the Architect. All conduits shall be concealed except in electrical and telecommunication rooms or where shown to be surface mounted. Exposed conduit (where allowed) shall be run square and plumb with building lines in an approved manner. Support roofmount conduits, where allowed, with minimum 12” wide redwood blocks set in mastic unless otherwise detailed in roof requirements or as specified in roofing specification, by the Architect. Strap conduits to blocks with proper sized conduit straps. Spacing of support shall be a minimum as provided for in the CEC. All exposed conduit mounted below 8’ above finished grade shall be strapped at a minimum of 5’ spacing.

B. Non-Metallic Rigid Conduit shall be used in concrete slabs, below concrete slabs on grade, or underground outside of a building slab or foundation. Maintain minimum depth requirements and cover with appropriate fill material. Minimum 4” of bedding and cover of backfill material 1/4" size grain and smaller maximum. Conduit shall be heavy wall Schedule 40 or 80, rigid PVC only. Rigid utility P&C duct shall not be used in any application. Properly sized grounding conductors shall be installed per CEC article 250, in all non-metallic conduit branch circuit and feeder runs. PVC conduit shall be formed or field bent only with the use of properly approved bending tools such as to not decrease the internal bore of the conduit. All conduits shall be cut square and reamed of burrs. Approved and compatible glue shall be used on all PVC fittings to attain watertight joints. All non-metallic conduit runs over 150’ in length and over 1 1/4" trade size conduit shall utilize galvanized rigid steel elbows.

C. Galvanized Rigid Steel (GRS) conduit shall be used where exposed less than 8’–0” above finished grade to 18” below finished grade and where subject to physical damage. Conduits shall be cut square and reamed to remove burrs and sharp edges. Strap conduit below 8’ above grade at 5’ intervals. Unless otherwise noted, threadless setscrew and threadless weathertight fittings may be used in lieu of threaded fittings. All threaded ends entering a junction box of any type shall require one locknut on the inside and one on the outside of the enclosure and be provided with a plastic bushing or grounding bushing where necessary for proper grounding. Where exposed to moisture, a watertight hub or other approved method shall be required. All conduits shall be stubbed up straight and uniform into junction boxes, panels, cabinets, etc., and shall be (GRS) properly supported and strapped. All GRS conduit located below grade, shall be tape wrapped.

D. Electrical Metallic Tubing (EMT) shall be used as allowed by code and as permitted by this specification. It shall not be in contact with soil or the concrete slab on the ground floor of any structure. Connectors and couplings shall be steel set screw type where installed in indoor dry locations not subject to moisture. Where the potential for moisture is present, compression type weathertight fittings are required. One hole conduit straps are permitted from 1/2" to 1” and two hole conduit straps are required for size 1 1/4” and larger. EMT shall not be allowed in areas

subject to severe physical damage. Install copper ground wire sized per CEC 250-122 in all EMT conduits.

E. Flexible conduit may be used where concealed in building construction or above dropped ceilings, but shall meet the following criteria: No individual circuit path from distribution panel to last device shall exceed a cumulative length of 30' of flexible conduit from start to end. Flexible conduit shall not exceed a total directional change of 270 bending degrees in any one run between conduit terminations. Squeeze type or Jake type steel flex fittings of a grounding type are required. Flexible conduit must be supported in accordance with CEC. Where exposed to the weather, moisture, or spray down flexible conduit shall be of the liquidtight type. Fittings shall be manufactured for use with liquidtight flexible conduit. All motor connections shall be made with liquidtight flex. Flexible conduit may not be used where exposed except for last 2' of equipment connection and unless otherwise noted or approved. A copper ground wire sized per CEC 250-122 shall be installed in all flexible conduit runs. Flexible conduit may not be used exposed. Weatherproof liquid tight conduit shall not be used at roof level for equipment connections with lengths exceeding 24" nor shall it be used to circumvent a rigid conduit system in a horizontal direction. Connect recessed lighting fixtures to conduit runs with a maximum of 6' of flexible metal conduit extending from junction box to fixture. "Master" "Slave" fixtures are permitted to use manufactured flexible cable of longer dimension up to 12' between "Master" and "Slave" only and only as a U.L. listed system component.

F. Underground conduits and transition to above grade/slab shall be as follows:
1. PVC elbows allowed if top of elbow is minimum 18" BFG or below top of slab, otherwise GRS elbows are required.
2. GRS elbows are required if conduit run is 150' or greater.
3. GRS risers are required from elbow below grade to equipment (device, outlet, panel, cabinet, etc.) above grade.
4. GRS elbows/risers to be PVC coated or 10 MIL taped wrapped (1/2" lapped) to 3" above finish grade or top of slab.

G. Conduit Supports: Conduit runs may be supported by one-hole and two-hole straps or supports as manufactured by Unistrut, Minerallac, Caddy or equals. Supports may be fastened by means of anchors, shields, beam clamps, toggle bolts, or other approved methods appropriate for the application and size of conduit. Pipe nailers (J-hooks) may only be used for 1" conduit and smaller and only in wood frame construction. Conduit support methods are subject to review by the engineer and authority having jurisdiction for adequacy. Installations deemed inadequate shall be corrected by the contractor at no cost to the Owner.

H. Bends and offsets shall be made with approved tools for the type of conduit being utilized. Bends shall be made without kinking or destroying the smooth bore of the conduit. Parallel conduits shall be run straight and true with bends uniform and symmetrical. Minimum radii shall be per CEC 344-24.

I. Conduit Stub-outs below grade shall be capped with plastic cap, and identified by placing a pull box marked with correctly identified utility such as "Elec", "Tel", etc. Dimension for exact location on field record drawings. Provide lids for proper field application (i.e. traffic, incidental, pedestrian).

J. Conduit Seals: Where below grade conduits enter structure through slab or retaining wall of building or basement, seal the inside of each conduit as follows:
1. Provide damming material around conductors 3" into conduit.
2. Fill 3" of conduit with 3M #2123 sealing compound.
3. Wrap conductors where they exit the conduit with 3M #2229 "Scotch Seal" mastic tape. Lap tape to approximate diameter of the raceway and wrap outside of conduit opening with (minimum) one turn.
4. Use conduit sealing bushings type CSB (O-Z/Gedney) or equal.

5. Empty conduits shall be sealed with standard non-hardening duct seal compound and then capped to prevent entrance of moisture and gases and to meet fire resistance requirements.
6. Provide cable drip loop minimum 12” high.

K. Marker tape: Place plastic yellow marker tape at 12” below finish grade along and above buried conduits. Label tape "CAUTION: ELECTRICAL LINES BELOW" or similar wording.

L. Conduits for high voltage (12kv) systems shall be separated from all other conduits by a minimum of 12”. All power system conduits shall be separated from low voltage systems by a minimum of 12” when running parallel to each other and no less than 6” when running perpendicular to each other at conduit crossings.

M. Medium voltage system conduits including 4,000 volt and above, shall be installed in conduit systems or duct banks that are concrete encased by a minimum of 3” of concrete. Depth of conduits shall remain as specified elsewhere in this specification or as required by the CEC.

N. Electrical and communications systems raceways routed underground shall not occupy the same trench as plumbing utilities such as sewer, water, storm drain, gas or other wet or dry gaseous utility system. A minimum of 12” of undisturbed earth is required. Where utilities must cross in closer proximity to each other due to physical constraints, 6” minimum crossing distances are allowed, however 18” on all sides of a utility crossing must be concrete encased.

O. Duct bank defined here-in shall be four or more conduits in a common trench, conduit spacers and saddles shall be required in all trenches where more than two conduits over 2” in diameter travel in the same trench. Proper spacing between systems as outlined above shall be required and spacers shall be located each 5’ (maximum) along trench route from point to point.

P. Conduits, routed below footings, slabs, grade beams, columns, and other structural elements shall be installed in strict compliance with structural details and criteria shown on structural plans. Clearances below structural elements and sleeves through structural elements must be carefully planned to avoid conflict and must be approved by the structural engineer if conflict arises.

Q. All conduit or raceways passing through fire rated walls, floors, or ceilings shall be installed with a listed penetration method which protects the opening to the same rating as the assembly and is non hardening.

R. Expansion Joints
1. Conduits 3” and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer’s recommendations.
2. Provide conduits smaller than 3” with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5” vertical drop midway between the end. All conduit shall have a copper green grounding bonding conductor installed.

S. Seismic Joints
1. At seismic joints, provide conduits rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes or approved fittings, on both sides of the joint. Connect conduits to junction boxes with sufficient slack flexible conduit such that these slack conduits are 1 1/2 times the distance between conduit ends. Flexible conduit shall have a copper green ground bonding jumper installed.

T. Location: Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.

U. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.

V. Special Application: Provide weatherproof outlets for locations exposed to weather or moisture.

W. Knockout Closures: Provide knockout closures to cap unused knockout holes where blanks have been removed.

X. Mount outlet boxes, unless otherwise required by ADA, or noted on drawings, the following distances above the finished floor:
   1. Receptacles, Telephone, TV & Data outlets. (measured to bottom of outlet box): +15".
   2. Outlet above counter (measured to top of outlet box): +46".
   3. Control (light) Switches. (measured to top of outlet box): +48".
   4. Fire Alarm Manual Pull Stations, T-stats. (measured to top of outlet box): +48".
   5. Fire Alarm Visuals: the lower of +80" to bottom of lens, or 6" below ceiling.
   6. Other Outlets: As indicated in other sections of specifications or as detailed on drawings.

Y. Coordinate all electrical device locations with the architectural floor plan and interior and exterior elevations to prevent mounting devices within elements that they may conflict such as cabinetry, mirrors, planters, etc.

Z. Size outlet and junction boxes to minimum wire fill space requirements. Upsize box as required to allow ease of wire installation and device installation.

AA. Outlet and junction boxes in fire rated walls shall be gauged and spaced so as not to exceed the maximum penetration allowed by the assembly without compromising the fire rating. If a conflict arises relative to a specific condition, the contractor shall follow the requirements of the fire authority and ask for guidance from the design team. At no time should a larger box be installed prior to resolution of conflict.

END OF SECTION

SECTION 26 05 46.13
ELECTRIC UTILITY SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Manholes, handholes and ducts to form a complete underground raceway system.
2. “Duct” and “conduit”, and “raceway” are used interchangeably in this specification and have the same meaning. Refer to Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS for approved raceway and materials as well as execution.
3. Scope of Work: Furnishing, installation and connection of manholes, handholes and ducts to form a complete underground raceway system for distribution of electrical and signal systems and utility service entrance facilities. This specification shall also provide guidance for construction of the utility company underground and substructure requirements. Contact serving company directly and obtain current detailed requirements of installation and adhere by same. Provide trenching, conduit, backfill, boxes and equipment pads as applicable. Nothing here in shall be construed to be in conflict with the requirements of the utility company, which shall take precedence over any possible conflicting requirement.

B. Related Work:
1. SITEWORK.
2. FLATWORK.
3. LANDSCAPING.
4. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
5. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings and boxes for raceway systems.
6. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Include manholes, handholes, duct materials, and hardware. Proposed deviations from details on the drawings shall be clearly marked on the submittals.
3. If necessary to locate manholes or handholes at locations other than shown on the drawings, show the proposed locations accurately on scaled site drawings.
4. Precast manholes and handholes: Submit detail drawings and design calculations for approval prior to installation.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. Underwriters Laboratories, Inc. (UL):
1. UL 467 Grounding and Bonding Equipment
2. UL 651 Schedule 40 and 80 Rigid PVC Conduit
3. UL 6 Electrical Rigid Metal Conduit-Steel

C. National Fire Protection Association (NFPA):
1. 70 California Electrical Code (CEC)

D. National Electrical Manufacturers Association (NEMA):
1. RN 1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
2. TC 2 Electrical Polyvinyl Chloride (PVC) Tubing And Conduit
3. TC 3 PVC Fittings For Use With Rigid PVC Conduit And Tubing

E. American Concrete Institute (ACI):
1. 318 Building Code Requirements For Structural Concrete

F. American Society for Testing and Materials (ASTM):
1. C478 Standard Specification for Precast Reinforced Concrete Manhole Sections
2. C478M Standard Specification for Precast Reinforced Concrete Manhole Sections (Metric).
3. F512-95 Standard Specification for Smooth-Wall Polyvinyl Chloride (PVC) Conduit and Fittings for Underground Installation

G. Utility company Handout Package and Construction Requirements for Underground and Substructure Installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete: ACI 318, 3000 psi minimum 28 day compressive strength.

B. Reinforcing Steel: Number 4 minimum.

C. Manhole Hardware:
1. Frames and covers (traffic type).
2. Sump frames and gratings.
3. Pulling Irons: 7/8” diameter hot dipped galvanized steel bar with exposed triangular shaped opening.
4. Cable supports:
   a. Cable stanchions, hot rolled, heavy duty, hot dipped galvanized "T" section steel 2 1/4" by 1/4" in size and punched with 14 holes on 1 1/2" centers for attaching cable arms.
   b. Cable arms, 3/16” gage, hot rolled, hot dipped galvanized sheet steel pressed to channel shape. Arms shall be approximately 2 1/2" wide and 14” long.
   c. Insulators for cable supports, high glazed, wet process porcelain.

d. Spares: Equip each cable stanchion with two spare cable arms and six spare insulators for future use.
e. Miscellaneous hardware, hot dipped galvanized steel.

D. Handhole Hardware:
1. Frames and covers configuration as shown on the drawings.
2. Pulling irons, 7/8” diameter galvanized steel bar with exposed triangular shaped opening.

E. Cable supports are not required.

F. Ground Rod Sleeve: Provide a 3” PVC sleeve in manhole floors so that a driven ground rod may be installed.

G. Manholes and Handholes shall be precast units and be constructed as described below. Units shall comply with ASTM C478, C478M.
1. Size: Plan area and clear height shall be not less than that shown on the drawings.
2. Accessories, hardware, and facilities shall be the same as required for poured in place type.
3. Assume ground water level 3’ below ground surface unless a higher water table is shown in the boring logs and adjust design accordingly.

H. Ducts:
1. Size shall be as shown on drawings.
2. Ducts (concrete encased):
a. Plastic Conduit:
1) NEMA TC6 & 8 and TC9 plastic utilities conduit UL 651 and 651A Schedule 40 PVC.
2) Duct shall be suitable for use with 90 degree C rated conductors.
3. Ducts (direct burial):
a. Plastic duct:
1) NEMA TC2 and TC3, EPC-40, Type II.
2) UL 651 and 651A, Schedule 40 Schedule 80 PVC.
3) Duct shall be suitable for use with 75 degree C rated conductors.
b. Rigid metal conduit, PVC-coated: UL6 and NEMA RN1 galvanized rigid steel, threaded type, coated with PVC sheath bonded to the galvanized exterior surface, nominal 0.040” thick.

I. Ground Rods: Per Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

J. Ground Wire: Stranded bare copper No. 6 AWG minimum.

K. Conduit Spacers: Prefabricated plastic.

L. Warning Tape: Standard 4 mil polyethylene 3” wide tape, detectable type, red with black letters, imprinted with “CAUTION BURIED ELECTRIC CABLE BELOW”.

M. Pull Rope: Plastic with 200 pound minimum tensile strength.

PART 3 - EXECUTION

3.01 TRENCHING

A. Refer to EARTHWORK section of specification for trenching back-filling, and compaction requirements.

B. Work with extreme care near existing ducts, conduits, cables, and other utilities to avoid damaging them.

C. Cut the trenches neatly and uniformly for utility company trenches, notify for inspections by utility company a minimum of 48 hours in advance.

D. Conduits to be installed under existing paved areas, roads, and railroad tracks which are not to be disturbed shall be protected into place. Conduits shall be minimum 36” cover.

E. Trench Preparation: A 4” sand bedding is required if trench bottom is not rock free. A 4” sand covering over the cable is required if the native backfill is not rock free. Backfill and compaction should meet City, County, State and utility company requirements. The serving utility company may required 100% sand backfill. All backfill requirements shall also meet or exceed those set forth in the earthwork or civil section of this specification.

F. Excavation: Provide 6” gravel in bottom of excavated holes for subsurface transformers and all concrete boxes. Spare gravel shall be available for final adjustment. The Contractor is responsible for final grade level of enclosures and boxes. Non-conformance will be corrected by electrical contractor at his expense.

G. Conduit Routing: Sharp turns, bends, or other irregularities in the conduit must be avoided. Minimum radius bends shall be as required by the serving utility company. Every effort should be made to obtain a straight water tight conduit line. The end of all spare conduits must be capped. The utility company Inspector must approve deviation from layout.

H. Conformance: All work must conform to the utility company “handout package” and Specification 59 and/or 99. Copies are available from the utility company upon request.

I. Joint Trenching: Maintain all required depths, clearance and separations as required by code, ordinance or utility company policies. Coordinate with other utilities to confirm requirements.

3.02 OTHER PADMOUNTED EQUIPMENT

A. Provide adequately sized and reinforced concrete pads with openings for conduit(s) as necessary by the utility company and or the equipment manufacturer.

B. A grounding system shall be installed at each padmounted piece of equipment including, but not limited to, a ground rod, grounding conductor, ufer, and ground grid (if called for).

C. Padmounted equipment shall be bolted to concrete pad with minimum 5/8” x 7 1/2" anchor bolts, one in each of 4 corners of each section of padmounted equipment.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Nameplates and warning signs where specified herein and as shown on contract documents including the following:
      a. Nameplates and warning signs permanently installed on all electrical equipment and devices including, but not limited to, the following items:
         1) Enclosures for transformers, switchboards, motor control, panels, pullboxes, cabinets, motors, generators, transfer switches.
         2) Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches, control stations and relays, fire alarm panels and lighting control panel.
         3) Wall switches not within sight of outlet controlled.
         4) Special systems such as, but not limited to, telephone, fire alarm, warning and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel, annunciator and pullbox.
         5) Devices mounted within and part of equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.
   2. Conductor and Cable Identification.

B. Related Work:
   1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   3. Section 26 13 00, MEDIUM VOLTAGE SWITCHGEAR (ABOVE 600 VOLTS).
   4. Section 26 13 02, SWITCHES, MEDIUM VOLTAGE (ABOVE 600 VOLTS).
   5. Section 26 24 16, PANELBOARDS.
   6. Section 26 28 16, ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
   7. Section 26 24 13, SERVICE AND DISTRIBUTION SWITCHBOARD.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 EQUIPMENT LABEL DESIGNATIONS

A. Equipment labels indicating equipment designations both emergency and normal. Designation data per drawings or to be supplied with shop drawings approval.

B. Panelboard labels showing panel designation, voltage, phase and source.

C. In accordance with CEC 110.16, provide arc flash protection warning labels on all switchboards, panelboards, distribution panels, transformers, safety switches, transfer equipment, etc. Labels shall be per ANSI Z535.4 guidelines.

2.02 MATERIALS

A. For Labels: Three layer laminated plastic or micarta with engraved white letters over black background.

B. For Emergency Equipment: Use engraved white letters over red background.

C. For Warning Signs: Minimum 18 gauge steel with red lettering on white porcelain enamel finish.

D. Arc flash labels shall be provided as required by CEC Article 70E.

E. Conductor tape number markers: TayMac MX4280 Series non-fading permanent adhesive.

PART 3 - EXECUTION

3.01 MOUNTING

A. Equipment labels shall be mounted by self-tapping, threaded screws and bolts, or by rivets. Adhesive types are not acceptable unless specifically noted in this section.

B. Conductor tape markers shall be consistently placed for ready conductor identification.

3.02 HEIGHTS ON LABELS

A. Panelboards, Switchboards and Motor Control Centers and Special Systems Enclosures: 1/4" identify equipment designation; 1/8” identify voltage rating and source.

B. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 3/16” identify circuit and load served, including location of equipment.

C. Enclosed Circuit Breakers, Enclosed Switches, and Motor Starters: 3/16” identify load served.

D. Transformers: 3/16” identify equipment designation; 1/8” identify primary and secondary voltages, primary source and secondary load. Include location of primary source or secondary load if remote from transformer.

3.03 WARNING SIGNS

A. Warning signs shall be permanently mounted with cadmium plated steel screws or nickel-plated brass bolts.

B. Warning signs to read "DANGER - HIGH VOLTAGE", with letters 1 1/2" high, 3/16” stroke minimum.

C. Provide warning sign on all doors or immediately next to door for equipment rooms, enclosures or closets containing equipment energized above 150 volts to ground as per CEC, and/or as directed by the Architect. For interior finish spaces and interior doors, signage shall be coordinated and approved with the Architect in advance of installation.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 05 73
OVERCURRENT PROTECTIVE DEVICE COORDINATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the requirements of the Overcurrent Protective Device Coordination.

B. A short circuit and coordination study shall be prepared for the electrical overcurrent devices to be installed under this project to assure selective coordination, proper equipment and personnel protection.

C. The study shall present an organized time current analysis of each protective device in series from the individual overcurrent device back to the utility and the on-site generator sources. The study shall reflect the operation of each device during normal and abnormal current conditions.

D. Implement as part of this contract, all manufacturer's recommendations for maximum protection and best selective coordination at no additional cost to Owner.

E. The Contractor shall furnish an ARC Flash analysis study per NFPA 70E – Standard For Electrical Safety In The Workplace, Reference Article 130.3 and Appendix D.

1.02 RELATED WORK

A. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Section 26 24 16, PANELBOARDS: Low voltage panelboards.

C. Section 26 13 00, SWITCHGEAR, HIGH VOLTAGE (ABOVE 600 VOLTS): Primary distribution switchgear.

D. Section 26 24 13, SERVICE AND DISTRIBUTION SWITCHBOARDS: Low voltage distribution switchboards.

1.03 SUBMITTALS

A. In accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL, submit the following:
   1. Complete short circuit and coordination study as described herein.
   2. Protective equipment shop drawings shall be submitted simultaneously with or after the protective device study. Protective equipment shop drawings will not be accepted prior to protective device study.
   3. Certification: Two weeks prior to final inspection, submit four copies of the following to the Engineer:
      a. Certification by the Contractor that the protective devices have been adjusted and set in accordance with the approved protective device study.
      b. Final setting values for each adjustable trip device.

1.04 REFERENCES

A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   1. IEEE 141 – Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
   2. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems
   3. IEEE 399 – Recommended Practice for Industrial and Commercial Power System Analysis
   4. IEEE 241 – Recommended Practice for Electric Power Systems in Commercial Buildings
   5. IEEE 1015 – Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
   6. IEEE 1584 - Guide for Performing Arc-Flash Hazard Calculations

B. American National Standards Institute (ANSI):
   1. ANSI C57.12.00 – Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
   2. ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
   3. ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
   4. ANSI C 37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.

C. The National Fire Protection Association (NFPA)
   1. NFPA 70 - National Electrical Code, latest edition
   2. NFPA 70E – Standard for Electrical Safety in the Workplace

1.05 QUALIFICATIONS

The protective device study shall be prepared by qualified engineers of the high voltage switchgear manufacturer or an approved consultant. The Contractor is responsible for providing all pertinent information required by the preparers to complete the study. Submit engineer's qualifications with study.

1.06 REQUIREMENTS

A. The complete study shall include a system one line diagram, short circuit and ground fault analysis, and protective coordination plots.

B. One Line Diagram:
   1. Show on the one line diagram, all electrical equipment and wiring to be protected by the overcurrent devices installed under this project. Clearly show, on the one line, the schematic wiring of the electrical distribution system.
   2. Also show on the one line diagram the following specific information:
      a. Calculated fault impedance, X/R ratios, and short circuit values at each bus.
      b. Breaker and fuse ratings.
      c. Generator kW and Transformer kVA and voltage ratings, percent impedance, X/R ratios, and wiring connections.
      d. Voltage at each bus.
      e. Identification of each bus.
      f. Conduit material, feeder sizes, length, and X/R ratios.

C. Short Circuit Study:

1. Systematically calculate the fault impedance to determine the available short circuit and ground fault currents at each bus. Incorporate the motor contribution in determining the momentary and interrupting ratings of the protective devices.
2. The study shall be calculated by means of a computer program. Pertinent data and the rationale employed in developing the calculations shall be incorporated in the introductory remarks of the study.
3. Present the data determined by the short circuit study in a table format. Include the following:
   a. Device identification.
   b. Operating voltage.
   c. Protective device.
   d. Device rating.

D. Calculated short circuit current.

E. Coordination Curves:
1. Prepare the coordination curves to determine the required settings of protective devices to assure selective coordination. Graphically illustrate on log paper that adequate time separation exists between series devices, including the utility company upstream device. Plot the specific time current characteristics of each protective device in such a manner that all upstream devices will be clearly depicted on one sheet.
2. The following specific information shall also be shown on the coordination curves:
   a. Device identification.
   b. Voltage and current ratio for curves.
   c. 3-phase and 1-phase ANSI damage points for each transformer.
   d. No damage, melting, and clearing curves for fuses.
   e. Cable damage curves.
   f. Transformer inrush points.
   g. Maximum short circuit cutoff point.
3. Develop a table to summarize the settings selected for the protective devices. Include the following in the table:
   a. Device identification.
   b. Relay CT ratios, tap, time dial, and instantaneous pickup.
   c. Circuit breaker sensor rating, long time, short time, and instantaneous settings, and time bands.
   d. Fuse rating and type.
   e. Ground fault pickup and time delay.

1.07 ANALYSIS

A. Analyze the short circuit calculations, and highlight any equipment that is determined to be underrated as specified. Propose approaches to effectively protect the underrated equipment.

B. After developing the coordination curves, highlight areas lacking coordination. Present a technical evaluation with a discussion of the logical compromises for best coordination.

1.08 ADJUSTMENTS, SETTINGS AND MODIFICATIONS

A. Necessary final field adjustments, settings and minor modifications shall be made to conform with the protective device study without additional cost to the Owner.

B. All final circuit breaker and relay settings and fuse sizes shall be made in accordance with the recommendations of the protective device study.

PART 2 - PRODUCTS

2.01 STUDIES

A. Contractor to furnish short-circuit and protective device coordination studies as prepared by equipment manufacturer or an approved consultant.

B. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E - Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D.

2.02 DATA COLLECTION

A. Contractor shall furnish all data as required by the power system studies. The Engineer performing the short-circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data immediately after award of the contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.

B. Source combination may include present and future motors and generators.

C. Load data utilized shall include proposed loads obtained from Contract Documents provided by Owner, or Contractor.

D. Include fault contribution of existing motors in the study, with motors greater than 25 hp. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.03 SHORT-CIRCUIT AND PROTECTIVE DEVICE EVAULATION STUDY

A. Use actual conductor impedances if known. If unknown, use typical conductor impedances based on IEEE Standards 141-1993.

B. Transformer design impedances shall be used when test impedances are not available.

C. Provide the following:
1. Calculation methods and assumptions
2. Selected base per unit quantities
3. One-line diagram of the system being evaluated
4. Source impedance data, including electric utility system and motor fault contribution characteristics
5. Typical calculations
6. Tabulations of calculated quantities
7. Results, conclusions, and recommendations.

D. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault at each:
1. Electric utility’s supply termination point
2. Incoming switchgear
3. Unit substation primary and secondary terminals
4. Low voltage switchgear
5. Motor control centers

6. Standby generators and automatic transfer switches
7. Branch circuit panelboards
8. Other significant locations throughout the system.

E. For grounded systems, provide a bolted line-to-ground fault current study for areas as defined for the three-phase bolted fault short-circuit study.

F. Protective Device Evaluation:
1. Evaluate equipment and protective devices and compare to short circuit ratings
2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses
3. Adequacy of transformer windings to withstand short-circuit stresses
4. Cable and busway sizes for ability to withstand short-circuit heating
5. Notify Owner in writing, of existing, circuit protective devices improperly rated for the calculated available fault current.

2.04 PROTECTIVE DEVICE COORDINATION STUDY

A. Proposed protective device coordination time-current curves shall be graphically displayed on log-log scale paper.

B. Include on each curve sheet a complete title and one-line diagram with legend identifying the specific portion of the system covered.

C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.

D. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

E. Plot the following characteristics on the curve sheets, where applicable:
1. Electric utility's protective device
2. Medium voltage equipment relays
3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
5. Transformer full-load current, magnetizing inrush current, and ANSI transformer withstand parameters
6. Conductor damage curves
7. Ground fault protective devices, as applicable
8. Pertinent motor starting characteristics and motor damage points
9. Pertinent generator short-circuit decrement curve and generator damage point
10. Other system load protective devices for the largest branch circuit and the largest feeder circuit breaker in each motor control center.

F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.

2.05 ARC FLASH HAZARD ANALYSIS

A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA70E-2004, Annex D.

B. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Alternative methods shall be presented in the proposal.

C. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.

D. The Arc-Flash Hazard Analysis shall include all significant locations in 208 volt systems fed from transformers equal to or greater than 45 kVA.

E. Safe working distances shall be specified for calculated fault locations based upon the calculated arc flash boundary considering an incident energy of 1.2 cal/cm2.

F. The Arc Flash Hazard analysis shall include calculations for maximum and minimum contributions of fault current magnitude. The minimum calculation shall assume that the utility contribution is at a minimum and shall assume a minimum motor load. Conversely, the maximum calculation shall assume a maximum contribution from the utility and shall assume motors to be operating under full-load conditions.

G. Arc flash computation shall include both line and load side of main breaker calculations, where necessary.

H. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2 seconds based on IEEE 1584-2002 section B.1.2.

2.06 REPORT SECTIONS

A. Input Data:
1. Short-circuit reactance of rotating machines
2. Cable and conduit materials
3. Bus ducts
4. Transformers
5. Reactors
6. Aerial lines
7. Circuit resistance and reactive values.

B. Short-Circuit Data:
1. Source fault impedance and generator contributions
2. X to R ratios
3. Asymmetry factors
4. Motor contributions
5. Short circuit kVA
6. Symmetrical and asymmetrical fault currents.

C. Recommended Protective Device Settings:
1. Phase and Ground Relays:
   a. Current transformer ratio
   b. Current setting
   c. Time setting
   d. Instantaneous setting
   e. Specialty non-overcurrent device settings
   f. Recommendations on improved relaying systems, if applicable.
2. Circuit Breakers:
   a. Adjustable pickups and time delays (long time, short time, ground)

b. Adjustable time-current characteristic
c. Adjustable instantaneous pickup
d. Recommendations on improved trip systems, if applicable.

D. Incident energy and flash protection boundary calculations
1. Arcing fault magnitude
2. Device clearing time
3. Duration of arc
4. Arc flash boundary
5. Working distance
6. Incident energy
7. Hazard Risk Category
8. Recommendations for arc flash energy reduction

PART 3 - EXECUTION

3.01 EQUIPMENT AND FIELD ADJUSTMENTS

A. Adjust relay and protective device settings according to the recommended settings table provided by the coordination study. Field adjustments to be completed by the engineering service division of the equipment manufacturer under the Startup and Acceptance Testing contract portion.

B. Make modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies and include all recommendations.

C. Following completion of all studies, acceptance testing and startup by the field engineering service division of the equipment manufacturer, a 2-year warranty shall be provided on all components manufactured by the engineering service parent manufacturing company.

3.02 ARC FLASH WARNING LABELS

A. The Contractor shall provide a 3.5 in. x 5 in. thermal transfer type label of high adhesion polyester for each work location analyzed, a sample is included in this specification.

B. The label shall have an orange header with the wording, “WARNING, ARC FLASH HAZARD”, and shall include the following information:
1. Location designation
2. Nominal voltage
3. Flash protection boundary
4. Hazard risk category
5. Incident energy
6. Working distance
7. Engineering report number, revision number and issue date.

C. Labels shall be machine printed, with no field markings.

D. Arc flash labels shall be provided in the following manner and all labels shall be based on recommended overcurrent device settings.
1. For each 600, 480 and applicable 208 volt panelboards, one arc flash label shall be provided.
2. For each motor control center, one arc flash label shall be provided.

3. For each low voltage switchboard, one arc flash label shall be provided.
4. For each switchgear, one flash label shall be provided.
5. For medium voltage switches one arc flash label shall be provided

E. Labels shall be field installed by the engineering service division of the equipment manufacturer under the Startup and Acceptance Testing contract portion.

3.03 ARC FLASH TRAINING

A. The equipment vendor shall train personnel of the potential arc flash hazards associated with working on energized equipment (minimum of 4 hours). Maintenance procedures in accordance with the requirements of NFPA 70E, Standard For Electrical Safety Requirements For Employee Workplaces, shall be provided in the equipment manuals. The training shall be certified for continuing education units (CEUs) by the International Association for Continuing Education Training (IACET).

END OF SECTION

SECTION 26 24 13
SERVICE AND DISTRIBUTION SWITCHBOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Service and distribution switchboard where shown on the contract drawings and specified herein.

1.03 QUALITY ASSURANCE

A. Conform to applicable Codes and NEMA, ANSI and IEEE Standards.

1.04 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings shall show and contain the following information:
   1. Plans showing top and bottom of switchboards.
   2. Front, rear and side elevations of switchboards.
   3. Schematic Wiring Diagrams showing the following:
      a. One-line diagram with each circuit numbered.
      b. Schedule showing circuit number, description and rating of protective device(s).
      c. Complete short circuit with standability of bus.
   4. One-half inch equal to one-foot scale drawings of electrical rooms or areas overall dimensions for equipment layout including space available for conduits and protective devices.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Each switchboard shall be U.L. listed deadfront, deadrear, completely self-supporting, with the required number of vertical sections bolted together to form one floorstanding switchboard. Construction shall be NEMA Class II with line and load and main bus connections accessible from the front. Provide switchboards of 1000 amperes or greater rating with line and load insulated bus bars. Overcurrent protective devices shall be grouped in convertible type construction. Vertical sections shall have full height bussing and where space for future devices is indicated on the Drawings all the necessary mounting hardware shall be furnished. Switchboards shall include all protective devices and other equipment indicated on the Contract

Drawings with the necessary interconnections, instrumentation, and control wiring. Bus shall be copper with plated joints, or tin plated aluminum. Bus bars shall be mounted on supports of high impact-resistant, non-tracking insulating material, and braced to withstand the maximum available fault current as indicated on the Contract Drawings. Other ratings shall be as indicated on the Contract Drawings. Series-connected or "integrated equipment" short circuit ratings shall not be applied in lieu of, or to comply with, short circuit and interrupting capacity ratings indicated on the Drawings, unless specifically approved by the Engineer.

B. Service and distribution sections shall contain circuit breakers, fusible switches, and combination motor starters, with shunt trips, motor operators, ground fault protection, and other accessories, as indicated on the Drawings, as well as provisions for utility metering in accordance with the serving electric utility requirements. Each disconnecting means shall be provided with a means for individual padlocking. Switches shall be heavy-duty, quick-make and quick-break, and horsepower rated through 500 HP. Switches rated over 600 amperes shall be bolted pressure contact type. Ratings of disconnecting means and overcurrent protective devices shall be as indicated on the Drawings.

C. Finish: Interior finish shall be a gray lacquer or enamel; exterior finish shall be a gray baked-on enamel or lacquer. Apply all finish coatings over a rust-inhibiting metal primer.

D. Identification: Each switchboard shall have an engraved laminated plastic nameplate identifying the switchboard as designated and located on the Contract Drawings, and indicating voltage, phase, and number of system conductors. For example, "Switchboard MS 277/480V. 3Ø 4W. Lettering shall be white on black finish and 2” high minimum. Nameplates shall be affixed by a minimum of two escutcheon pins or screws. Each device on the switchboard shall be provided with an engraved plastic nameplate as specified in Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Switchboard(s) shall be securely bolted to the flooring or structure. Final attachment means shall be in compliance with the seismic requirements of governing authority. Shop Drawings indicating the bolt down requirements shall be provided by the manufacturer along with all necessary calculations and shall be submitted with the Shop Drawings of the switchboard equipment. Refer to other Sections of the Specifications related to seismic requirements.

B. Switchboard(s) shall be installed on a level floor, with shims provided where necessary to attain both horizontal and vertical "plumb" conditions.

C. Switchboard(s) equipment shall be protected during construction in such a manner to prevent plaster, paint, dust, etc. from defacing the finish of equipment. Prior to final acceptance of the equipment, the interior of the equipment shall be cleaned of all foreign materials and debris. Any blemishes or defects on the exterior of the equipment shall be repaired by painting the equipment with paint supplied by the manufacturer of the equipment to match the factory finishes.

D. All floor mounted switchgear and panelboards shall be sealed with caulking between bottom of metal housing and the concrete pad or slab to prevent entrance of dust and debris.

E. All openings in switchgear and panelboards that are unused shall be sealed with bolts and washers. Use caulking where holes or openings cannot be sealed by way of a washer, or bolts or conduit seals.

F. All ventilated openings in panelboards and switchboards shall be furnished with dust filters to prevent entrance of dust and debris.

G. No operating handles in any switchboard shall be located above 6’- 6” above finish floor. Code clearances on all sides of the switchboard equipment shall be maintained.

H. Switchboards shall be mechanically grounded to the grounding system.

I. Furnish ammeters, voltmeters, current and potential transformers, test blocks, control switches, fuses and circuit breakers, and other devices as indicated on the Drawings. Meters shall be switchboard type semi-flush mounted, with phase selector switches. The height of all devices shall comply with Code and utility company requirements with the switchboard installed on a 2” high concrete pad.

J. For solidly grounded "wye" services of more than 150 volts to ground, but not exceeding 600 volts phase to phase, provide ground fault protection of equipment for each service disconnecting means for services rated 1000 amperes or more, without a single main disconnecting means. Provide ground fault protection of equipment for other systems as indicated on the Drawings.

K. Ground fault sensors shall be zero sequence type unless indicated otherwise on the drawings. Trip settings shall be as indicated on the drawings or as directed by the Engineer.

L. Protection: Keep switchboards covered during construction operations. Clean interior and exterior after all connections are completed. Factory connections shall be checked and re-torqued tight as required. Damage shall be field or factory repaired to a condition acceptable to the Engineer at no added cost to the Owner.

M. Operational Test of the ground fault protection system using the primary current injection method shall be performed by qualified personnel with suitable testing/recording equipment in the presence of the Owner. Provide the Owner with a "Certified Test Report" including test parameters.

3.02 ACCEPTANCE TESTING OF SWITCHGEAR AND SWITCHBOARD ASSEMBLIES

A. General:
   1. Inspect for physical damage.
   2. Compare equipment nameplate information with latest single line diagram and report discrepancies.
   3. Inspect for proper alignment, anchorage and grounding.
   4. Check tightness of accessible bolted bus joints by calibrated torque wrench method. Refer to manufacturer's instruction for proper foot pound levels.
   5. Key interlock systems shall be physically tested to insure proper function.
      a. Closure attempt shall be made on locked open devices. Opening attempt shall be made on locked closed devices.
      b. Key exchange shall be made with devices operated in off-normal positions.
   6. All doors, panels and sections shall be inspected for paint, dents, scratches.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 24 16
PANELBOARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Panelboards.

B. Related Work:
   1. Division 09 “PAINTING”: Identification and painting of panelboards.
   2. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
   3. Section 26 05 73 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY: Requirements for the over current protective devices to be installed to ensure proper equipment and personnel protection.
   4. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
   5. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Cables and wiring.
   6. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. Underwriters Laboratories, Inc. (UL):
   1. No. 50 Enclosures for Electrical Equipment
   2. No. 67 Panelboards
   3. No. 489 Molded Case Circuit Breakers and Circuit Breaker enclosures

C. National Fire Protection Association (NFPA):
   1. No. 70-2016 California Electrical Code (CEC)

D. National Electrical Manufacturers Association (NEMA):
   1. No. PB-1 Panelboards.
   2. No. AB-3 Molded Case Circuit Breakers and Their Application.

PART 2 - PRODUCTS

2.01 PANELBOARDS

A. Panelboards shall be in accordance with UL, NEMA, NEC, CEC and as shown on the drawings. Approved manufacturers are Cutler Hammer, Square D, and Seimens

B. Panelboards shall be standard manufactured products. All components of the panelboards shall be the product and assembly of the same manufacturer. All similar units of all panelboards to be of the same manufacturer.

C. All panelboards shall be dead front safety type. Arrange sections for easy removal without disturbing other sections.

D. All panelboards shall be completely factory assembled with molded case circuit breakers. All factory wiring shall be checked for correct tightness and visually inspected to insure that bussing and terminations have not become loose in transit to job site.

E. Panelboards shall have main breaker or main lugs, bus size, voltage, phase, top or bottom feed, and flush or surface mounting as scheduled on the drawings. Refer to single line diagram and panel schedules on drawings. Terminals shall be minimum 75 degree rated. Back fed main circuit breakers are not allowed. Main circuit breakers shall be vertically mounted.

F. Panelboards shall have the following features:
   1. Nonreduced size copper bus bars, and connection straps bolted together and rigidly supported on molded insulators. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of branch circuit devices.
   2. Full size neutral bar, mounted on insulated supports.
   3. Ground bar and isolation ground bar (where called for in panel schedule) with sufficient terminals for all grounding wires. Buses braced for the available short circuit current.
   4. All breakers and phase bus connections shall be arranged so that it will be possible to substitute a 2-pole breaker for two single pole breakers, and a 3-pole breaker for three single pole breakers, when trip is 30 amps or less and frame size is 100 amperes or less, without having to drill and tap the main bus bars at bus straps. Where used for heating and air conditioning, and refrigeration equipment, use only HACR type U.L. listed circuit breakers.
   5. Design interior so that protective devices can be replaced without removing adjacent units, main bus connectors, and without drilling or tapping.
   6. Where designated on panel schedule as "space", include all necessary bussing, device support and connections. Provide blank cover for each space.
   7. In two section panelboards, the main bus in each section shall be full size. The first section shall be furnished with subfeed lugs on the line side with cable connections to the second section. Panelboard sections with tapped bus or crossover bus are not acceptable.
   8. Series rated panelboards are not permitted.
   9. Label all panels in accordance with Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.
   10. Recessed panel space conduit: Provide (1) ¾ inch spare conduit stubbed to accessible ceiling space and/or interstitial space below floor for every (5) spaces and spares indicated on panel schedules.

G. Panelboards serving as building mains shall be “service entrance rated” and UL Listed as “service equipment”.

2.02 CABINETS AND TRIMS

A. Cabinets:
1. Provide galvanized steel cabinets to house panelboards. Cabinets for outdoor panels shall be factory primed and suitably treated with a corrosion-resisting paint finish meeting UL standard for outdoor applications.
2. All ventilated openings in panelboards and switchboards, shall be furnished with dust filters to prevent entrance of dust and debris.
3. Cabinets for panelboards may be of one piece formed steel or of formed sheet steel with end and side panels welded, riveted, or bolted as required.
4. Provide necessary hardware for "in" and "out" adjustment of panel interior.
5. Cabinets for two section panelboards shall be arranged side by side, and shall be the same height. Flush mounted cabinets should be 1 1/2" apart and coupled by conduit nipple if necessary.
6. Gutter size in panel boxes, on all sides, shall be in accordance with the CEC. Penetrations through gutter to live area of the panelboard shall incorporate approved non-metallic-grommet type of insulation to protect wire passing through.

B. Trims:
1. Fabricate trim of sheet steel consisting of frame with door attached by concealed hinges. Provide flush or surface trim as shown on the drawings.
2. Flush trims shall overlap the box by at least 3/4" all around.
3. Surface trim shall have the same width and height as the box.
4. Flush or surface trims shall not have ventilating openings.
5. Secure trims to back boxes by indicating trim clamps.
6. Provide a welded angle on rear of trim to support and align trim to cabinet.
7. Provide separate trims for each section of multiple section panelboards. Trims and doors of sections shall be of the same height.

C. Doors:
1. Provide doors with flush type latch and manufacturer's standard lock. Doors over 48 inches in height shall have a vault handle and a three-point catch, arranged to fasten door at top, bottom, and center.
2. In making switching devices accessible, doors shall not uncover any live parts.
3. Provide concealed hinges welded to the doors and trims.
4. For lighting or power contactors incorporated in panelboards, provide separate doors for the contactors.
5. Provide keyed alike system for all panelboards.
6. Provide a directory card, metal holder, and transparent cover. Permanently mount holders on inside of doors.

D. Painting:
1. Thoroughly clean and paint trims and doors at the factory with primer and manufacturer's standard finish.

2.03 MOLDED CASE CIRCUIT BREAKERS FOR PANELBOARDS

A. Breakers shall be UL listed and labeled, in accordance with the CEC, as shown on the drawings, and as specified.

B. Circuit breakers in panelboards shall be bolt on type on phase bus bar or branch circuit bar.
1. Molded case circuit breakers for lighting and appliance branch circuit panelboards shall have minimum interrupting rating as indicated or as dictated by Section 26 05 73 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY.

2. Molded case circuit breakers shall have automatic, trip free, non-adjustable, inverse time, and instantaneous magnetic trips for 100 ampere frame or less. Magnetic trip shall be adjustable from 3 times to 10 times for breakers with 600 ampere frames and higher. Factory setting shall be HI, unless otherwise noted.

C. Breaker features shall be as follows:
1. Integral housing of molded insulating material.
2. Silver alloy contacts.
3. Arc quenchers and phase barriers for each pole.
4. Quick-make, quick-break, operating mechanisms.
5. A trip element for each pole, thermal magnetic type with long time delay and instantaneous characteristics, a common trip bar for all poles and a single operator.
6. Electrically and mechanically trip free.
7. An operating handle which indicates ON, TRIPPED, and OFF positions.
   a. Line connections shall be bolted.
   b. Interrupting rating shall not be less than the maximum short circuit current available at the line terminals as indicated on the drawings, and as shown on the electrical system protective device study as required in Section 26 05 73 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY. The interrupting rating shall not be less than the minimum identified requirement.
8. An overload on one pole of a multipole breaker shall automatically cause all the poles of the breaker to open.

2.04 SEPARATELY ENCLOSED MOLDED CASE CIRCUIT BREAKERS

A. Where separately enclosed molded case circuit breakers are shown on the drawings, provide circuit breakers in accordance with the applicable requirements of those specified for panelboards.

B. Enclosures are to be of the NEMA types shown on the drawings. Where the types are not shown, they are to be the NEMA type most suitable for the environmental conditions where the breakers are being installed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with CEC, as shown on the drawings, and as specified.

B. Locate panelboards so that the present and future conduits can be conveniently connected. Coordinate the sizes and layout of cabinets within the designated spaces. All equipment must be dimensioned in order to physically fit in the spaces provided and to comply with all code required clearances.

C. Install a typewritten schedule of circuits in each panelboard. Include the room numbers (as finally described by the Owner) and items served on the cards. Obtain final room numbers from Architect prior to creating schedule.

D. Mount the panelboard so that maximum height of the top circuit breaker above finished floor shall not exceed 78 inches.

E. For panelboards located in areas accessible to the public, paint the exposed surfaces of the trims, doors, and boxes with finishes to match surrounding surfaces after the panelboards have been installed.

F. Circuit numbers shall correspond to the approved panel schedule. Provide as-built drawings showing the actual circuit numbers being used for each device on each branch circuit if changes are required.

G. Verify depth of all flush mounted enclosures in walls to be certain wall depth will accommodate panel depth prior to installation.

H. All openings in switchgear and panelboards that are unused shall be sealed with bolts and washers. Use caulking where holes or openings cannot be sealed by way of a washer, or bolts or conduit seals.

I. Contractor shall include the services of an independent testing company to test GFI circuit breakers in distribution and main panelboards.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Wiring devices.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Related Work:
   1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
   3. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   4. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 RECEPTACLES

A. General: All receptacles shall be listed by Underwriters Laboratories, Inc.
   1. Mounting straps shall be plated steel, with break-off plaster ears and shall include a self-grounding feature (this feature does not substitute for a grounding conductor terminated on grounding strap of device). Terminal screws shall be brass, brass plated or a copper alloy metal.
   2. Receptacles shall be of a screw terminal type, “pressure type quick wire” terminations are not allowed.
   3. 15 ampere and 20 ampere, 125-volt and 250-volt non-locking receptacles shall be tamper resistant type receptacles unless the application is specifically listed as an exception to CEC 406.12.
   4. Receptacles shall be “wet rated” when used in an exterior location.

B. Duplex receptacles shall be commercial grade single phase, 20 ampere, 120 volts, 2-pole, 3-wire, and conform to the NEMA 5-20R configuration in NEMA WD 6. The duplex type shall have bussing break-off feature for two-circuit operation. The ungrounded pole of each receptacle shall be provided with a separate terminal.
   1. Bodies shall be white in color. Contractor to verify device color with Architect prior to procurement.

2. Switched duplex receptacles shall be wired so that only the top receptacle is switched. The remaining receptacle shall be unswitched.

3. Controlled receptacles; installed per requirements of 2016 BUILDING ENERGY EFFICIENCY STANDARDS / Efficiency Standards, California Code of Regulations, Title 24, Part 6. SECTION 130.5 (d) – ELECTRICAL POWER DISTRIBUTION SYSTEMS as Circuit Controls for 120-Volt Receptacles and / or Controlled Receptacles. Shall be provided with an approved means of including a permanent and durable marking identifying the controlled receptacles or circuits to differentiate them from uncontrolled receptacles or circuits. Where shown on associated floor plans, and or required by the Standards; a duplex noted to be controlled shall be 'split-wire', so the top outlet shall be switched and the bottom outlet shall be unswitched. A double duplex (fourplex) noted to be controlled: one of the duplex receptacles shall be controlled and the other duplex receptacle shall be unswitched.
4. Duplex Receptacles on Emergency Circuit: Receptacle bodies shall be red in color. Wall plates shall also be powder coat painted red finish. Cover shall be labeled with panel and circuit number.
5. Ground Fault Interrupter Duplex Receptacles: Shall be an integral unit suitable for mounting in a standard outlet box.
   a. Ground fault interrupter shall be commercial grade and consist of a differential current transformer, solid state sensing circuitry and a circuit interrupter switch. It shall be rated for operation on a 60 Hz, 120 volt, 20-ampere branch circuit. Device shall meet CEC requirements. Device shall have a minimum nominal tripping time of 1/30th of a second. Devices shall meet UL 943.

C. Receptacles; 20, 30 and 50 ampere, 250 volts: Shall be complete and match with appropriate cord grip plug. Devices shall meet UL 231.

D. Weatherproof Receptacles: Shall consist of a listed weather resistant duplex receptacle, mounted in box with a gasketed, while in use weatherproof, cast metal cover plate and cap receptacle opening. The cap shall be permanently attached to the cover plate by a spring-hinged flap. Approved manufacturers: Intermatic WP10 Series, Thomas & Betts/Red Dot 2CK Series, or engineer approved equal.

2.02 SWITCHES AND DIMMERS

A. Toggle switches shall be totally enclosed tumbler type with bodies of phenolic compound. Toggle handles color to match receptacle device color unless otherwise specified.
   1. Shall be single unit toggle, butt contact, quiet AC type, heavy-duty general-purpose use with an integral self grounding mounting strap with break-off plasters ears and be of a screw terminal type.
   2. Shall be color coded for current rating, listed by Underwriters Laboratories, Inc., and meet the requirements of NEMA WD 1, Heavy-Duty and UL 20.
   3. Ratings:
      a. 120 volt circuits: 20 amperes at 120-277 volts AC.
      b. 277 volt circuits: 20 amperes at 277 volts AC.
   4. The switches shall be mounted on the strike plate side of doors.
   5. Incorporate barriers between switches with multi-gang outlet boxes where required by the CEC.
   6. All toggle switches shall be of the same manufacturer.

B. Dimmers: Incandescent lamp loads. Wall-mounted incandescent dimmers shall be specification grade with capability of raising and lowering the lighting from completely off to full intensity. Dimmers shall maintain full load rating even when two or more units are installed adjacent to

one another. All wall-mounted dimmers shall be of the same manufacturer and of a “slide” type. Color shall match all other wiring devices on project.

C. Dimmers: Fluorescent lamp loads. Wall-mounted fluorescent lamp dimmers shall be specification grade and shall be capable of raising and lowering the lighting from five percent light output. Dimmers shall have low end intensity adjustment and maintain full load rating even when two or more units are installed adjacent to one another. All wall-mounted dimmers shall be of the same manufacturer and of a “slide” type. Dimming ballast shall be provided for each lamp or pair of lamps. Dimmers shall have adequate capacity for the load served and the environment in which installed.

2.03 WALL PLATES

A. Wall plates for switches and receptacles shall be thermo plastic.

B. Standard NEMA design, so that products of different manufacturers will be interchangeable. Dimensions for openings in wall plates shall be accordance with NEMA WD1.

C. For receptacles or switches ganged together, wall plates shall be a single ganged plate.

D. Wall plates for data, telephone or other communication outlets shall be as specified in the associated specification.

E. Surface mounted boxes, NEMA1, shall be industrial grade raised galvanized steel covers. In shop areas all receptacles shall be dust proof and or waterproof where applicable.

F. Waterproof device covers shall be cast iron, 4-corner screw type, for FS and FD type mounting. Device covers shall be zinc galvanized finish. Weatherproof covers shall be lockable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Switches installed in hazardous areas shall be explosion proof type in accordance with the CEC and as shown on the drawings.

B. Installation shall be in accordance with the CEC, NECA “Standard of Installation”, and as shown as on the drawings.

C. Ground terminal of each receptacle shall be bonded to the outlet box with an approved green bonding jumper, and also be connected to the green equipment grounding conductor.

D. General: Devices shall be of the type specified herein. All devices shall be installed with “pigtailed” leads from the outlet box. No device shall be used in the “feed through” application. Screw terminals shall be used to connect all devices to the circuit and shall be grounded by means of a ground wire where grounding terminals are provided in the device.

E. Installation: Devices and plates shall be installed in a “plumb” condition and must be flush with the finish surface of the wall where boxes are recessed.

F. Mounting heights: All control and convenience devices shall comply with California Code of Regulations Title 24 and ADA with respect to accessibility requirements. Mounting heights indicated on plans shall have precedence.

G. Install switches with the off position down.

H. Clean debris from outlet boxes.

I. Provide extension rings as required to bring outlet boxes flush with finished surface or casework.

J. Test each receptacle device for proper polarity.

END OF SECTION

SECTION 26 28 16
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Disconnect and safety switches where shown on the contract drawings and specified herein.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Related Work:
   1. Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 GENERAL

A. Approved Manufacturers: Cutler Hammer, General Electric, ITE-Siemens and Square-D.

B. Disconnect Switches: Provide with devices enabling the switch to be locked in the open or closed positions.

C. Manual Motor Switches: Tumbler type rated 3HP, 240 Volts with or without overload heaters as required to protect equipment served.

D. Externally Operable Safety Switches: To have quick-make, quick-break mechanism, capable of switching 10 times switch rating, with cover interlock to prevent opening with switch in ON position and defeat mechanism for maintenance.

E. Switches: Shall be general duty (GD) for 240 volt and below and heavy duty (HD) for 277/480 volt type unless otherwise indicated. Provide NEMA 1 enclosures for interior locations and NEMA 3R enclosures for exterior or wet locations. Provide with number of poles, ampacity, voltage and HP rating, fusible or nonfusible as indicated. Copper blades shall be visible in off position.

F. Fusible Switches: Equip them with rejection clips for UL Class R fuses. Switches having a dual rating when used with dual element fuses shall have a rating so indicated and shall be confirmed by equipment vendor being connected.

G. 600 Amperes or Less Fuses: UL Class RKI with a minimum interrupting rating of 200,000 Amperes, Bussmann "Low-Peak Type" or equal.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Locations: Install switches, disconnects and safety where indicated on the Contract Drawings or as required by CEC.

B. Fastenings: Securely fasten switches to structural members or unistrut support as directed by the manufacturer.

C. Manual Motor Switches: Install flush mounted in finished areas.

D. Manual Motor Switches: Install surface mounted in equipment rooms and non-finished areas. Where installed above inaccessible ceilings provide access panels.

E. Label all disconnect switches in accordance with Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

F. Fuse: All fuses shall be as indicated on the plan or as required by the equipment. Verify fuse size with equipment manufacturer requirements, prior to installation. Use current limiting fuses as indicated on plan. Provide one spare fuse cabinet in each electrical room with one complete set of spare fuses for all sizes of main fuses, subpanel fuses, HVAC equipment fuses and fire alarm.

G. Terminals shall be minimum 75 degree rated.

END OF SECTION

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Materials and equipment shall be furnished and installed in support of electrical work described in these plans and specifications including but not limited to, raceways, boxes, enclosures, feeders, branch circuiting, supports, terminal cabinets, sleeves, gutters, panels, transformers, switchgear, lighting fixtures, controls, relays, contactors, in order to complete and make fully functional the systems described.
2. Lighting systems, both interior and exterior as shown on the plans and as specified herein, including controls, occupancy sensors, lumen sensors, photocell controls, lamps, dimmers, racks, dimming ballasts, supports, fasteners, straps, and miscellaneous mounting hardware and support structures for such equipment.
3. Utility company site work as required by the serving companies. All utility company conduits, raceways, trenching, backfilling, utility vaults, equipment pads and substructures shall meet both the respective utility companies requirements as well as those of the authority having jurisdiction, whichever is more restrictive. In no case shall work be completed and covered without the written approval of the serving utility companies both on and off site.
4. Duct banks and raceways for all power and communications systems as shown and/or required. Duct banks shall include all trenching, racking, conduit, concrete, backfill, boxes, pads, substructures required for a fully developed and useable pathway for cables, conductors, as shown on site, etc.
5. HVAC and plumbing electrical: Conduit, conductors and terminations for all line voltage power, line voltage controls and fusible and/or non-fusible safety disconnect switches for HVAC equipment, including but not limited to air conditioners, furnaces, fans, heat pumps, cooling towers, system pumps, condensing units. Provide protective equipment unless otherwise noted, etc. including protective devices.
6. Plumbing Electrical: Conduit, conductors and terminations for plumbing equipment with power requirements including necessary fusible and/or non-fusible safety disconnect devices. Provide motor starters where required unless provided by mechanical specification.
7. Power and Lighting Distribution: Furnish and install power and lighting distribution systems including but not limited to panels, feeders, transformers, branch circuits, devices, fixtures, disconnect switches, contactors, controls, etc. for a complete working system.
8. Data systems infrastructure including all boxes, raceways, cable tray, wire basket tray, dedicated branch circuits, sleeves and penetrations, etc. as described and as shown in plans, risers, specifications, EIA/TIA standards and/or required for a complete and operating system.
9. Master clock system including master Global Positioning System (GPS), antenna, retransmitter, controller, clocks, backboxes, conduits/conductors, connectors, terminations, cabinets, etc. as required for a complete and operating system.

10. Voice amplification system in multi-purpose rooms, auditoria and gymnasiums, including amplifiers, racks, mixers, microphones, outlets, cable/connections, equipment racks, etc. as specified on the drawings and in written specifications.
11. Lighting acceptance testing, documentation and completion of required forms as specified in Section 26 56 70, LIGHTING ACCEPTANCE TESTING.
12. Allocation of time to adequately train the Owner on the use and operation of all systems installed within the facility or on the property. Minimum two week advance notice shall be coordinated with the Owner and his representatives. Training shall be as outlined in individual system specifications identified to follow.

B. Related Sections Under Other Divisions:
1. Mechanical Wiring: Control circuit wiring, energy management controls and interlocks for mechanical equipment shall be installed by Mechanical Contractor.
2. Painting of electrical equipment where exposed and required by the Architect to be painted as described elsewhere in the specification.
3. Irrigation System: Provide all line voltage (50 volts or above) connections to irrigation system equipment, time clocks and or powered satellite controls. Coordinate locations of this work with the Landscape Contractor.
4. Pole Bases: Contractor shall be responsible to furnish light standard concrete pole bases, rebar, bolt templates and anchor bolt kits for a complete installation. Concrete, rebar, excavation shall be by Contractor in accordance with all parts of this specification.
5. HVAC Control Raceway: Raceways, boxes, and control wiring for thermostats, temperature sensors and control components specified within the mechanical specifications, shall be furnished and installed as required by Division 25 and installed in accordance with the minimum wiring methods allowed for branch circuit wiring in Division 26 (the DDC systems/EMS systems and components are installed in accordance with Division 25).
6. Smoke Fire Dampers: Coordination with Mechanical plans for exact locations and points of connection for power and fire alarm system connections (power and fire alarm connection shall be by Electrical Contractor).
7. Duct mounted smoke detectors: Coordination with Mechanical plans for exact locations and points of connection for power and fire alarm system connections (power and fire alarm connection shall be by Electrical Contractor).
8. Security System: Shall be installed by Owner's vendor. Contractor shall provide conduits, boxes, stubs to accessible ceilings, dedicated circuit(s) for alarm panel, access control system (key pads, electric locks), etc. as shown and/or required by the Owner's vendor.

1.03 SYSTEM DESCRIPTION

A. The electrical plans indicate the general layout and arrangement; the architectural drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design requirements as well as code minimums. Maintain all required working clearances as described in CEC Article 110 as well as other applicable articles.

B. Discrepancies shall be brought immediately to the attention of the Architect for clarification. The Architect shall approve any changes. Prior to rough-in, refer to architectural plans that shall take precedence over electrical plans with respect to locations.

C. Verify all power and communications utility company requirements prior to commencement of utility work. Make proper adjustments to the construction to satisfy the serving utility requirements if they differ from the construction documents. It shall be the Contractor's responsibility to contact each utility company for obtaining finalized utility design drawings and/or approval, and for scheduling inspection of utility infrastructure installations.

D. Charges imposed by the electric and communications utility companies shall be paid by Owner directly to utility companies.

1.04 SUBMITTALS AND SHOP DRAWINGS

A. Before construction, submit in (accordance with the General Conditions of this Specification) a complete list of all materials proposed to be furnished and installed under this section. Any material procured without review and approval of the engineer and/or owner's representative, will solely be at the contractor's risk.

B. Manufacturers' specifications, catalog cuts and shop drawings as required to demonstrate compliance with the specifications. Identify specific intended use for each component where submittal may be ambiguous. Submit entire bound submittal at one time; partial submittals will not be accepted. At a minimum, submittals will be required for the following:
1. Utility service/site work equipment including ducts, conduits, fittings, concrete manholes, concrete and fiberglass pull, manhole, boxes, vaults, trench racks, accessories, etc.
2. Distribution equipment including main switchboards, distribution switchgear, transformers, distribution panels and breakers, motor controls, distribution and branch circuit panels, grounding, transient voltage surge suppressors, etc.
3. Electrical equipment including disconnects, fuses, raceways, straps and racks, fittings, conductors, boxes, gutters, devices, plates, etc.
4. Lighting equipment including fixtures, ballasts, lamps, mounting accessories, color charts (where required), etc.
5. Lighting control equipment including low voltage switching system, dimmer switchbank / accessories, occupancy sensing equipment, time clocks, contactors, photocells, lumen sensors, etc.
6. Constructability review letter/comments for lighting acceptance testing as required by Section 26 56 70, LIGHTING ACCEPTANCE TESTING.
7. Conduit including all fittings, etc.
8. Wiring and cable, terminations, etc.
9. Fire rating penetration materials, details, etc.

C. The intent of these specifications is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Architect's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Architect shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage of equipment for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site, as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall be new and bear the label of or be listed by a nationally recognized testing laboratory. The quality and suitability of all materials shall conform to the standards and practices of this trade.

B. Supplied materials shall be of a current manufactured product line. Discontinued products are not acceptable. Where products are identified on the contract documents by part number, supply the current product model or series which meets the specification and intended use of the specified component.

2.02 SUPPORTING DEVICES

A. Hangers: Kindorf B-905-2A Channel, H-119-D washer, C105 strap, 3/8” rod with ceiling flange.

B. Concrete Inserts: Kindorf D-255, cast in concrete for support fasteners for loads up to 800 lbs.

C. Pipe Straps: Two-hole galvanized or malleable iron.

D. Luminaire Chain: Campbell Chain 75031, 90-lb. test with steel hooks.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Professionalism and appearance of installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications and recommendations. The Contractor shall man the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent appraised of changes or clarifications, etc.

B. Employment of any person on any job in the capacity of an electrician is not permitted unless such person has qualified for and holds a valid Journeyman Electrician Pocket Card or General Journeyman Electrician Certificate issued by the State of California Division of Apprenticeship Standards except, Contractor may employ electrical helpers or apprentices on any job of electrical construction, new or existing, when the work of such helpers or apprentices is performed under the direct and constant personal supervision of a journeyman electrician holding a valid Pocket Card accepted by the State of California Division of Apprenticeship Standards.
   1. Each Pocket Card carrying journeyman electrician will be permitted to be responsible for the quality of workmanship for a maximum of one helper or apprentice during any same time period, provided the nature of work is such that good supervision can be maintained and the quality of workmanship is the best, as expected by Owner and implied by the latest edition of the National Electrical Code.
   2. Before each journeyman electrician commences work, deliver to Owner at the project site, a photocopy of the journeyman’s valid Pocket Card.

C. Materials shall be installed in accordance with the manufacturers' specification and recommendations. They must conform to the approval AHJ adopted codes and standards, but

not less than the 2019 CEC and all applicable codes and standards, including but not necessarily limited to California Code of Regulations Title 24, NFPA, National Electrical Manufacturers Association, ANSI, CBC, and any other adopted ordinances of applicable agencies having jurisdiction. Refer to general conditions of specifications.

D. Electrical Contractor shall lay work out in advance in order to avoid unnecessary cutting, chasing, and drilling of floors, walls, ceilings and other surfaces. Work of this nature shall be carefully done so as not to damage work already performed by other trades. Any damage which results must be properly repaired at no extra cost to the Owner. Such alterations shall not depreciate the integrity of the structure. Approval for cuts or penetrations in structural members shall be by the Architect.

E. Supporting Devices:
   1. Verify mounting height of all luminaires or items prior to installation when heights are not detailed.
   2. Install vertical support members for equipment and luminaires, straight and parallel to building walls. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over furred or suspended ceilings.
   3. Do not use other trade's fastening devices as supporting means for electrical equipment, materials or luminaires. Do not use supports or fastening devices to support other than one particular item.
   4. Support conduits within 18" of outlets, boxes, panels, cabinets and deflections. Maximum distance between supports not to exceed 8' spacing.
   5. Securely suspend all junction boxes, pull boxes or other conduit terminating housings located above suspended ceiling from the floor above or roof structure to prevent sagging and swaying.
   6. Provide seismic bracing per UBC requirements for this building location.

F. Coordinate work with other trades as required to eliminate any delays during construction. Coordinate changes with other prime contractors to avoid construction conflicts.

G. Engineer's Field Observation: Site visits during construction for field observations and reports will be conducted by electrical engineer when directed by the Architect. A list of items that need to be addressed will be submitted to the Architect for forwarding to the Contractor. A written response to all items shall be submitted for Owner's review once complete. When Electrical Engineering representative performs a field observation, the Electrical Contractor shall be present and available to remove equipment covers as needed.

H. Drawings of Record: Provide a full and accurate set of field record drawings marked up in a neat and understandable manner submitted to the Owner Representative, Construction Manager, or Architect upon completion of the work and prior to issuance of a certificate of completion. The drawings shall dimension all electrical facilities including but not limited to underground conduit, vaults, boxes as well as conduit routing scaled to within 12" of actual field conditions and shall be kept up to date on a daily basis reflecting changes or deviations. Electrical facilities shall be accurately drawn on the plan to scale. Refer to the general conditions of these specifications for additional requirements. Record drawings shall be required to identify both horizontal and vertical dimensions to visible and fixed points such as concrete, asphalt, buildings, sidewalks, etc.

I. Identification: Provide engraved laminated plastic nameplates for all switchboards, panelboards, fire alarm terminal cabinets, telephone and cable television backboards, main devices, control panels, time clocks, contactors and safety disconnect switches accurately identifying each device. Labels shall be attached to the equipment by means of screws or rivets. Self-adhering

labels will not be acceptable. Refer to Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

J. Safety: The Electrical Contractor is responsible to maintain equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct construction operations in a safe manner for employees as well as other work persons or anyone visiting the job site. Provide barriers, trench plates, flags, tape, etc. The Contractor shall hold all parties harmless of negligent safety practices that may cause injury to others on or near the job site.

K. Guarantees: Equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Architect at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed should be repaired or replaced at no additional cost to the Owner. Materials or system requiring longer than a one-year warranty as described herein shall be separately warranted in separate letters of guarantee stating the duration of warranty.

L. Operating and Installation Manuals: Provide two copies each of manuals, operating and installation instructions for equipment indicated in submittal packages. Instruct the Owner's representative as to the operation and location of equipment necessary to allow them to operate the facility upon final acceptance. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility and the weeks prior to training scheduled.

M. Lighting Acceptance Testing: Provide two copies of lighting acceptance testing results and equipment operating manuals as specified in Section 26 56 70, LIGHTING ACCEPTANCE TESTING. Instruct the Owner on operation of control systems.

END OF SECTION

SECTION 26 51 00
INTERIOR LIGHTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Interior lighting systems, including luminaires, ballasts, lamps and emergency lighting equipment.

B. Related Work:
   1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
   3. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
   4. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
   5. Section 26 56 00, EXTERIOR LIGHTING.
   6. Section 26 56 70, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
   2. Include electrical ratings, dimensions, mounting, details, materials, terminations, wiring and connection diagrams, photometric data, ballasts, luminaires, lamps and controls.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM).

C. American National Standards Institute (ANSI).

D. Aluminum Association Inc. (AA).

E. Illuminating Engineering Society of North America (IESNA).

F. National Electrical Manufacturers Association (NEMA).

G. National Fire Protection Association (NFPA).

H. Underwriters Laboratories, Inc. (UL).

1.05 DEFINITIONS

A. Lighting terminology used herein is defined in IES

B. Exception: The term “driver” is used herein to cover both drivers and power supplies, where applicable.

C. Clarification: The term “LED light source(s)” is used herein per IES to cover LED package(s), module(s), and array(s).

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with CEC, UL, ANSI, and as shown on the drawings and specified.

2.02 LIGHTING FIXTURES (LUMINAIRES)

A. Shall be in accordance with NFPA 70, UL 1598 and shall be as shown on drawings and as specified. All luminaires shall have been certified to the California Energy Commission by its manufacturer to comply with the efficiency standards as per California Code of Regulations Title 24, Part 6, Section 111 referencing the Appliance Efficiency Regulations in Title 20. Post certification with building permit.

B. Sheet Metal:
   1. Shall be formed to prevent warping and sagging. Housing, trim and lens frame shall be true, straight (unless intentionally curved) and parallel to each other as designed.
   2. Wireways and fittings shall be free of burrs and sharp edges and shall accommodate internal and branch circuit wiring without damage to the wiring.
   3. When installed, any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks; lens doors shall close in a light tight manner.
      a. Hinged door closure frames shall operate smoothly without binding when the fixture is in the installed position, and latches shall function easily by finger action without the use of tools.

C. Ballasts shall be serviceable while the fixture is in its normally installed position, and shall not be mounted to removable reflectors or wireway covers.

D. Recessed fixtures shall be of the type approved for the ceiling and insulation conditions and appropriate for the installation location. Insulation must be held back from the fixture to provide manufacturers' recommended clearances for proper operation. Thermal tripping shall be the installer's responsibility to correct. Where installed in fire rated ceilings, coordinate installation

of fire rated enclosures around the ceiling penetrations. Fixtures shall contain the proper through wiring capacity for that which is shown on the plans.

E. Recessed fixtures shall be provided with the appropriate trims and hardware compatible with the ceiling type shown. Plaster frames are required where plaster or gypsum board ceilings are encountered.

F. Mechanical Safety: Lighting fixture closures (lens doors, trim frame, hinged housings, etc.) shall be retained in a secure manner by captive screws, chains, captive hinges or fasteners such that they cannot be accidentally dislodged during normal operation or routine maintenance.

G. Metal Finishes:
1. The manufacturer shall apply standard finish (unless otherwise specified) over a corrosion resistant primer, after cleaning to free the metal surfaces of rust, grease, dirt and other deposits. Edges of pre-finished sheet metal exposed during forming, stamping or shearing processes shall be finished in a similar corrosion resistant manner to match the adjacent surface(s). Fixture finish shall be free of stains or evidence of rusting, blistering, or flaking.
2. Interior light reflecting finishes shall be white with not less than 85 percent reflectances, except where otherwise specified on the drawing.
3. Exterior finishes shall be as shown on the drawings.

H. Provide all lighting fixtures with a specific means for grounding metallic wireways and housings to an equipment grounding conductor.

I. Recessed compact fluorescent or LED fixtures shall be manufactured specifically for compact fluorescent or LED lamps with ballasts or drivers integral to the fixture. Assemblies designed to retrofit fixtures are prohibited except when described in this fashion. Fixtures shall be designed for lamps as specified.

J. Provide wire lamp guard on all exposed lamp fixture/luminaires.

K. Provide fixtures with a U.L. listing for shower or shower rating above shower or tub areas.

2.03 LED LUMINAIRE REQUIREMENTS

A. General Requirements:
1. Luminaire shall have an external label per ANSI C136.15
2. Luminaire shall have an internal label per ANSI C136.22.
3. Luminaires shall start and operate in -20°C to +40°C ambient.
4. LED light source(s) and driver(s) shall be RoHS compliant.

B. Manufacturer: Advance Optanium “LW” Series, Sylvania Octron “XTREME” Series, Universal Triad “EL” Series.

C. All ballasts shall have been certified to the California Energy Commission by its manufacturer to comply with the efficiency standards as per California Code or Regulation Title 24, Part 6, Section 111 referencing the Appliance Efficiency Regulations in Title 20. Post certification with building permit.

D. Performance: Ballasts shall carry a minimum full 5 year warranty. All ballasts shall have a Class A sound rating. Any ballast deemed noisy by the Architect shall be replaced at no charge to the Owner.

E. Shielding: All lens material shall be 100% virgin acrylic, .125” minimum thickness, unless otherwise indicated in the fixture schedule. Diffusers shall comply with UBC 5209.

F. Slimline and magnetic ballasts shall not be allowed.

G. Maintain accessibility of all ballast locations.

2.04 LED DRIVER

A. Driver
1. Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperatures as indicated.
2. Shall accept the voltage or voltage range indicated, and shall operate normally for input voltage fluctuations of plus or minus 10 percent. Consistent with NEMA SSL 1.
3. Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.

B. Electromagnetic interference
1. Shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
2. Shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

C. The following shall be in accordance with corresponding sections of ANSI C136.37
1. Wiring and grounding
2. All internal components shall be assembled and pre-wired using modular electrical connections.
3. Mounting provisions
4. Terminal blocks for incoming AC lines
5. Latching and hinging
6. Ingress protection

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation and furnishing of lighting fixtures shall be in accordance with the CEC, manufacturer's instructions and as shown on the drawings or specified. Fixtures damaged in transit and storage prior to completion shall be replaced at Contractor’s expense.

B. Align, mount and level the lighting fixtures uniformly.

C. Avoid interference with and provide clearance for equipment. Where the indicated locations for the lighting fixtures conflict with the locations for equipment, change the locations for the lighting fixtures by the minimum distances necessary as approved by the Architect. The Architectural reflected ceiling plan will take precedence over electrical plans.

D. For suspended lighting fixtures, the mounting heights shall provide the clearances between the bottoms of the fixtures and the finished floors as shown on the drawings.

E. Lighting Fixture Supports:

1. Contractor shall provide support for all of the fixtures independent of suspended ceilings. Supports may be anchored to channels of the ceiling construction, to the structural slab or to structural members within a partition, or above a suspended ceiling.
2. Shall maintain the fixture positions after cleaning and relamping.
3. Shall support the lighting fixtures without causing the ceiling or partition to deflect.
4. Hardware for recessed fluorescent fixtures:
5. Fixtures shall be supported as detailed on drawings and as required by DSA standards.
6. Installation: Fixtures shall be securely mounted on ceilings and walls with appropriate fastening devices. "Drop-in" type T-bar fixtures shall be secured with #12 gauge safety "earthquake wires" as described by California Code of Regulations Title 24 Part 2, Chapter 47. "Earthquake clips" will be required for fastening to the T-bar system in addition to safety wire. Surface mounted fluorescent fixtures shall be solidly screwed or clipped into framing above drywall with 4-#10 sheet metal screws into each fixture. Provide blocking for screw supports behind all surface mounted lighting fixtures weighing more than 15 lbs.
7. Surface mounted lighting fixtures:
   a. Fixtures shall be bolted against the ceiling independent of the outlet box at four points spaced near the corners of each unit. The bolts shall be minimum ¼-20 bolt, secured to structural ceiling. Non-turning studs may be attached to the building structure by 12 gauge safety hangers.
8. Fixtures mounted in open construction shall be secured directly to the building structure with approved bolting and clamping devices.
9. Single or double pendent mounted lighting fixtures:
   a. Each stem shall be supported by an approved outlet box, mounted swivel joint and canopy which holds the stem captive and provides spring load (or approved equivalent) dampening of fixture oscillations. Outlet box shall be supported vertically from the building structure and be allowed to swing to a 45 degree angle.
10. Outlet boxes for support of lighting fixtures (where permitted) shall be secured directly to the building structure with approved devices or supported vertically in a hung ceiling from the building structure with a nine gauge wire hanger, and be secured by an approved device to a main ceiling runner or cross runner to prevent any horizontal movement relative to the ceiling.

F. Furnish and install the specified lamps for all lighting fixtures as part of this project.

G. Coordinate between the electrical and ceiling trades to ascertain that approved lighting fixtures are furnished in the proper sizes and installed with the proper devices (hangers, clips, trim frames, flanges), to match the ceiling system being installed.

H. Bond lighting fixtures and metal accessories to the grounding system as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

I. At completion of project, relamp all fixtures which have failed/burned-out lamps. Clean all fixtures, lenses, diffusers and louvers that have accumulated dust/dirt during construction.

J. Provide unswitched leg of interior lighting branch circuit to integral emergency battery pack light fixtures, exit signs and night lights as applicable per lighting plans.

K. Wallmount fixtures in walkway areas shall not project more than 4 inches from wall when projection occurs lower than 80 inches.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 56 00
EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the furnishing, installation, and connection of exterior luminaires, controls, poles and supports.

1.02 RELATED WORK

A. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.

C. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.

D. Section 26 05 46.13, ELECTRIC UTILITY SYSTEMS: Underground handholes and conduits.

E. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

F. Section 26 51 00, INTERIOR LIGHTING.

G. Section 26 56 70, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
   2. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, poles, luminaires, effective projected area (EPA), lamps and controls.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM).

C. American Concrete Institute (ACI).

D. American National Standards Institute (ANSI).

E. Aluminum Association Inc. (AA).

F. Illuminating Engineering Society of North America (IESNA).

G. National Electrical Manufacturers Association (NEMA).

H. National Fire Protection Association (NFPA).

I. Underwriters Laboratories, Inc. (UL).

1.05 DELIVERY, STORAGE, AND HANDLING

A. Poles: Do not store poles on ground. Store poles so they are at least one foot above ground level. Do not remove factory-applied pole wrappings until just prior to installation of pole.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with CEC, UL, ANSI, as shown on the drawings and as specified.

2.02 POLES

A. General:
1. Poles shall be steel or aluminum as specified in fixture schedule and as shown on the drawings. Finish shall be as approved by the Architect. Assume custom color for bidding.
2. The pole and arm assembly shall be designed for wind loading of 100 miles per hour, with an additional 30 percent gust factor, supporting luminaire(s) having the effective projected areas indicated as per manufacturer data.
3. Poles shall anchor-bolt type designed for use with underground supply conductors. Poles shall have gasketed handhole with a minimum clear opening of 2.5” x 5”. Handhole cover shall be secured by stainless steel captive screws.
4. Provide a steel grounding stud opposite hand hole openings.

B. Provide a base cover matching the pole in material and color to conceal the mounting hardware pole-base welds and anchor bolts.

C. Hardware: All necessary hardware shall be 300 series tamperproof stainless steel.

D. Types:
1. Aluminum: Provide aluminum poles manufactured of corrosion resistant AA AAH35.1 aluminum alloys conforming to AASHTO LTS-4 for Alloy 6063-T6 or Alloy 6005-T5 for wrought alloys, and Alloy 356-T4 (3,5) for ASTM B108-01 cast alloys. Poles shall be seamless extruded or spun seamless type. Provide a pole grounding connection designed to prevent electrolysis when used with copper ground wire. Base covers for aluminum poles shall be cast from 356-T6 aluminum alloy in accordance with ASTM B108-01.

2. Steel: Provide steel poles having minimum 11-gage steel with minimum yield/strength of 48,000 psi and iron-oxide primed factory finish. Base covers for steel poles shall be structural quality hot-rolled carbon steel plate having a minimum yield of 36,000 psi.

2.03 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete.

B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and all accessories specified under wind conditions as specified in this section.

C. Place concrete in spirally wrapped treated paper forms for round foundations, and construct forms for square foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 1/4” radius unless otherwise detailed.

E. Concrete shall have 3000 psi minimum 28 day compressive strength.

F. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings and meet ACI 318. Anchor bolts shall be in a welded cage or properly positioned by the tie wire to stirrups.

G. Install a copperclad ground rod, not less than 5/8” diameter by 8’ long in pullbox adjacent to each fixture. Where rock or layered rock is present, drill a hole not less than 2” in diameter and 6’ deep, backfill with tamped fine sand and drive the rod into the hole. Bond the rod to the pole with not less than number 6 AWG bare copper wires. The method of bonding shall be approved for the purpose.

H. After leveling of pole grout base solid between plate and footing with dry pack concrete for vibration reduction.

2.04 LUMINAIRES

A. UL 1598 and ANSI C136.17. Luminaries shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat and safe cleaning and relamping.

B. Light emitting diode (LED)-based solid state lighting (SSL) products shall be factory tested in accordance to the International Engineering Society (IES) LM-79 recommendations and meet ANSI C78.377-2008 standards.

C. LED light sources shall be factory tested in accordance to IES LM-80 recommendations.

D. LED-based SSL product shall incorporate an external heat sink, integral to the luminaire.

E. IESNA HB-9 and RP-8 light distribution pattern types shall be as indicated on the drawings.

F. Incorporate associated ballasts and drivers within the luminaire housing.

G. Lenses shall be frame-mounted heat-resistant, borosilicate glass, prismatic refractors. Attach the frame to the luminaire housing by hinges or chain.

H. Pre-wire internal components to terminal strips at the factory.

I. Bracket mounted luminaries shall have leveling provisions and clamp type adjustable slip-fitters with locking screws.

J. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

K. LED-based SSL luminaires shall be manufactured specifically for LED lamps with drivers integral to the luminaire housing.

2.05 LED-BASED SOLID STATE DRIVERS

A. Shall be listed by either U.L. or equal listing agency and comply with IEEE C.62.41-1991, Class A operation.

B. Provide a minimum power factor of 0.9.

C. Minimum operating temperature appropriate for outdoor environments.

D. Shall operate at a frequency greater than or equal to 120Hz.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install lighting in accordance with the CEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

B. Poles:
1. Provide pole foundations with galvanized steel anchor bolts, threaded at the top end and bent 1.57 rad 90 degrees at the bottom end. Provide galvanized nuts, washers, and ornamental covers for anchor bolts. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath and the end of conduit elbow. Adjust poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.
2. After the poles have been installed, shimmed and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Provide a plastic or copper tube, of not less than 3/8" inside diameter, through the grout tight to the top of the concrete base for moisture weeping.
3. Attach pole base cover to pole flange with set screws.

C. Foundation Excavation: Depth shall be as indicated on drawings. Dig holes large enough to permit the proper use of tampers to the full depth of the hole. Place backfill in the hole in 6" maximum layers and thoroughly tamp. Place surplus earth around the pole in a conical shape and pack tightly to drain water away.

D. Photocell Switch Aiming (where applicable): Aim switch according to manufacturer's recommendations. Mount switch on or beside each luminaire when switch is provided in cast weatherproof aluminum housing with swivel arm or set adjustable window slide for proper footcandles photocell turn-on.

3.02 GROUNDING

A. Ground noncurrent-carrying parts of equipment including metal poles, luminaries, mounting arms, brackets, and metallic enclosures as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially treated or alloyed connectors suitable and listed for this purpose.

END OF SECTION

This Page Left Blank Intentionally

SECTION 26 56 70

LIGHTING ACCEPTANCE TESTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. The Contractor shall be responsible for the Certificate of Acceptance, but coordinate with the Certified California Lighting Controls Test Technician to assure that all required documents have been filed with and approved by the enforcement agency prior to receiving a final occupancy permit. The Certificate of Acceptance will indicate that the Contractor has demonstrated acceptance requirements of the plans and specifications, that current requirements for installation certificates are met, and that currently required operating and maintenance information (as well as the Certificate of Acceptance) were provided to the building Owner.
2. Testing, evaluation and calibration of lighting controls equipment provided, installed and connected in Division 26.
3. Documentation of test results, completion of “Certificate of Acceptance” and “Certificate of Installation” forms and filing with the enforcement agency for approval.
4. Specific Jobsite Conditions:
   a. Acceptance testing must be tailored for each specific design, job site, and climactic conditions. While the steps for conducting each test remain consistent, the application of the tests to a particular site may vary. The Contractor shall review the construction documents and include all required time, material, testing equipment, etc. as required to complete the requirements of this section.

B. Related Work:
1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 51 00, INTERIOR LIGHTING.
3. Section 26 56 00, EXTERIOR LIGHTING.

1.03 REFERENCES

A. Acceptance Testing Criteria: 2016 Building Energy Efficiency Standards Non-Residential Compliance Manual.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements:
1. All material, equipment, labor and technical supervision to perform tests, calibrations and documentation specified herein.

B. Scope of Testing, Evaluation and Calibration (as applicable):
1. Automatic (master) time switches.
2. Occupancy sensors.
3. Automatic daylighting controls.
4. Photo electric sensors.
5. Daylighting controls.
6. Outdoor astronomical time switches.
7. Area controls.

1.05 SUBMITTALS

A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

B. Test Reports:
1. Written record of all tests and completion of forms included in this section.
2. At completion of project, assemble a final test report. Submit report to the enforcement agency and the Owner prior to final occupancy to include:
   a. Summary of project.
   b. Description of systems and equipment tested.
   c. Visual inspection report.
   d. Description of tests.
   e. Test results.
   f. Conclusions and recommendations.
3. Report shall be bound in booklet form, include on the Contractor's letterhead the title of the report and the systems tested.

C. Constructability Plan Review
1. The Contractor shall review the construction drawings and specifications to understand the scope of the acceptance tests and raise critical issues that might affect the success of the acceptance tests prior to starting construction. Any constructability issues associated with the lighting system should be forwarded to the design team for review/modifications prior to equipment procurement and installation. The Contractor shall submit on company letterhead, with the lighting control equipment required by Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL, 1.4B, a letter confirming that the constructability review has been completed and their company has reviewed and is prepared to complete the lighting acceptance testing required by this section.

PART 2 - PRODUCTS

2.01 FORMS

A. Lighting Installation forms and verification procedures for lighting systems that require acceptance testing can be downloaded from the following website: www.energy.ca.gov/2015publications/CEC-400-2015-033/appendices/forms/NRCI

B. Lighting Acceptance forms are to be provided by a Certified California Lighting Controls Acceptance Test Technician. The California Energy Commission adopted changes to the California building Efficiency Standards (Title 24, Parts 1 and 6) that require lighting controls and devices to be certified as properly installed and operational, prior to issuance of occupancy permits. All Acceptance Technicians must be employed by an Acceptance Test employer that provides support as well as quality control. Certified California Lighting Controls Acceptance Test Technicians can be found at the following website: www.calctp.org/acceptance-technicians/contractors

C. These completed forms will be the deliverable product to the enforcement agency and Owner as described in 1.4 of this section.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Tests:
1. Contractor's Responsibilities:
a. Perform all required tests required by this section.
b. Schedule testing with building Owner.
c. Provide Installation forms
d. Acceptance forms provided by California Certified Lighting Controls Technician hired by Contractor.
e. Calibration of equipment such as light meters, photo electric controls, etc.
f. Programming of time switches (interior/exterior lighting) for operations as directed by the Owner.

3.02 ADJUSTING

A. Final Settings: The Contractor shall be responsible for implementing all final settings and adjustments on controls equipment as required for a complete and operating system.

END OF SECTION

This Page Left Blank Intentionally

SECTION 31 10 00
SITE CLEARING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section requires the selective removal and subsequent off-site disposal of the following:

1. Removal and disposal of all abandoned pipe and conduit except for pipe or conduit indicated specifically on plans for abandonment in place.

2. Removal and offsite disposal of grass and root mat.

3. Demolition of asphalt concrete and pavements as indicated on the drawings to straight, neatly saw cut surface.

4. Trees as indicated on plans, completed including roots.

5. All other removals which may or may not been shown on plans as required for the project construction.

1.02 SITE CONDITIONS

A. Protections: Contractor shall provide temporary barricades and other forms of protection to protect general public from injury due to demolition work.

B. Traffic: Conduct demolition operations and debris removal to ensure minimum interference with roads, streets, walks, bike paths, and other adjacent occupied or used facilities. Access must be coordinated with County's Representative.

C. Utility Services: Maintain all existing utilities to remain in service and protect them against damage during demolition operations.

D. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations and County Air Pollution Control District pertaining to environmental protection. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (Green Book), latest edition.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.01 DEMOLITION

A. General: Perform demolition work in a systematic manner. Use such methods as required to complete work indicated on drawings in accordance with governing regulations.

B. Provide services for effective air and water pollution controls as required by County Air Pollution Control District regulations.

C. Prior to commencing grading operations, soil containing debris, organics, pavement, or other unsuitable materials, shall be stripped from the foundation and pavement areas. Demolition areas shall be cleared of old foundations, slabs, abandoned utilities, tree roots, and soil disturbed during the demolition process. Depressions or disturbed areas left from the removal of such material shall be replaced with compacted fill under observation by the Geotechnical representative.

D. Concrete sidewalks will be removed to the nearest construction or expansion joint to the limits of removal as shown on the plans. Exact locations will be determined in the field by the County's Representative.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from Project site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose of off site.

B. If hazardous materials are encountered during demolition operations, contact County's Representative.

C. Burning of removed materials is not permitted on project site.

3.03 HAZARDOUS MATERIALS

A. Except as otherwise specified, in the event Contractor encounters on the Project site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, Contractor shall immediately stop Work in the area affected and report the condition to the County's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.

B. Construction involving asbestos cement (transite) pipe shall be performed by qualified personnel in accordance with the standards and specifications set forth by American Water Works Association (AWWA), the Occupational Safety and Health Act (OSHA) and the Environmental Protection Agency (EPA), as well as location jurisdictional codes.

3.04 CLEANUP AND REPAIR

A. General: Upon completion of demolition work, remove tools, equipment and demolished materials from site.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to existing condition prior to start of operations. Repair adjacent construction or surfaces soiled or damaged by demolition work.

END OF SECTION

SECTION 31 20 00
EARTH MOVING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes: Excavation, Compaction and Fill.

1.02 REFERENCE

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. Geotechnical Investigation, Ventura County Fire Department Training Center and Headquarters, Camarillo, California, dated July 14, 2020, SC5128, prepared by Cotton, Shires and Associates, Inc. and supplemental reports.

1.03 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.

1. Standard Specifications for Public Works Construction (SSPWC), latest edition.

2. CAL/OSHA Construction Safety Order Requirements.

B. Soil Testing Service

1. The County will engage a soil testing service to include testing soil materials proposed for use in the Work and for quality control testing during grading operations.

2. Samples of materials shall be furnished to the testing service by the Contractor at least one week before their anticipated use.

3. Work for this Section includes smoothing out areas for density tests and otherwise facilitate testing work, as directed.

4. Shoring Systems: Pre-engineered systems, clearly labeled as such, may be used. Refer to the Geotechnical Study for further requirements.

1.04 PROJECT CONDITIONS

A. The Contractor shall visit the site and familiarize himself with existing site conditions.

B. Additional test borings and other exploratory operations may be made by the Contractor at no cost or liability to the County.

C. Existing Utilities:

1. Where uncharted or incorrectly charted piping or other utilities are encountered during excavation, consult County 's Representative immediately for directions. Cooperate with the County’s Representative in keeping respective services and

facilities in operation. Repair damaged utilities to the satisfaction of the County's Representative at no cost to the County. Disturbed trench sections shall be replaced in kind.

2. Contractor to coordinate with the County 's Representative to obtain all required permits and schedule inspections.

D. Protection of Subgrade: Do not allow equipment to pump, rut, or disturb subgrade, stripped areas, or other areas prepared for Project.

E. Contractor shall implement measures to prevent soil erosion, and where possible, sediment shall be retained onsite.

F. Contractor shall implement all necessary recommendations contained in the Geotechnical Study.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.01 SITE PREPARATION

A. General:

1. Remove vegetation, improvements, or obstructions interfering with installation of new construction. Transport and legally dispose of off site. Removal includes stumps and roots. Contractor shall utilize the best construction method to minimize the erosive effect from the removal of site vegetation.

2. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Paint cuts over one inch in size with tree pruning compound. Care shall be taken so as not to scar any area of the tree's bark.

3. In order to protect from sediment transfer or contamination from urban run-off during construction, the following grading and erosion control practices shall be followed:

a. If grading occurs during the rainy season (November through April), sediment traps, barriers, covers or other methods shall be used to reduce erosion and sedimentation.

b. Excavated materials shall not be deposited or stored where the material can be washed away by high water or storm run-off.

c. Grading operations on site shall be conducted so as to prevent damaging effects of sediment production and dust on the site and on adjoining properties.

d. When vegetation has to be removed on site, the methods shall be one that minimizes the erosive effects from the removal.

e. Exposure of soil to erosion by removing vegetation shall be limited to the area required for construction operations. The construction area shall be fenced to define the project.

f. Temporary mulching, seeding, or other suitable stabilization shall be used to protect areas during construction or other land disturbance activities on site.

g. Topsoil, removed from the surface in preparation for grading and construction activities on Campus is to be stored on or near the site and protected from erosion while grading operations are underway, provided that such storage may not be located where it would cause suffocation of root systems of trees to be preserved. After completion of such grading, topsoil is to be restored to exposed cut and fill embankments of building pads so as to provide a suitable base of seeding and planting.

h. Sediment basins, sediment traps, or similar control measures shall be installed before extensive clearing and grading operations begin for site development.

i. Water or dust palliatives shall be applied to exposed earth services as necessary to control dust emissions.

j. Revegetation or stabilization of exposed earth surfaces shall take place as soon as possible.

B. Removals

1. Clear the site of trees, shrubs, and other vegetation, which is indicated to be removed.

2. Completely remove stumps, roots, and other debris to avoid problems with future utilities.

3. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.

4. Existing fills, soil containing debris, organics, pavement, or other unsuitable materials shall be excavated and removed prior to commencing grading operations. Demolition areas shall be cleared of old foundations, slabs, abandoned utilities, landscaping, and soils disturbed during the demolition process. Depressions or disturbed areas left from the removal of such material shall be replaced with compacted fill.

5. The limits and depths for removal of existing fill materials shall be evaluated by project soils engineer during grading.

6. Revegetation or stabilization of exposed earth surface shall take place as soon as possible.

C. Removal of Improvements

1. Remove above-grade and below-grade improvements necessary to permit construction and other work as indicated.

2. Remove from site and legally dispose of off-site, existing fill materials, soil debris, or other unsuitable materials prior to commencing grading operations.

3.02 EXCAVATION

A. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown, within a tolerance of plus or minus 0.04 foot.

B. Excavation for Planting Areas: Conform to cross-sections, elevations and dimensions shown, within a tolerance of plus or minus 0.10 foot.

3.03 COMPACTION

A. General: Control soil compaction during construction providing minimum percentage of density specified for each area, under the provisions of the Geotechnical Study.

B. Percentage of Maximum Density Requirements: Compact soil to not less than the percentages of maximum dry density specified in the Geotechnical Study and in accordance with ASTM D1557-91 method of compaction.

C. Moisture Control:

1. When moisture content of exposed scarified soil and/or full material is below that sufficient to achieve recommended compaction, water shall be added to the soil and/or fill. While water is being added, soil shall be bladed and mixed to provide relatively uniform moisture content throughout the material.

2. When moisture content of exposed scarified soil and/or fill material is excessive, material shall be aerated by blading or other methods. Fill placed in pavement areas shall be compacted at near optimum moisture content. Jetting is not permitted for compaction.

3.04 FILL

A. In all excavations, use satisfactory excavated or borrow material sampled and tested by the County 's Testing Laboratory. Fill selection shall be per Geotechnical Study.

B. Fill excavations as promptly as Work permits, but not until completion of the following:

1. Acceptance by County’s Representative of construction below finish grade including, where applicable, waterproofing, damp-proofing, and drainage pipe.

2. Examination, testing, approval and recording locations of underground utilities.

3. Removal of concrete formwork.

4. Removal of shoring and bracing and backfilling of voids with satisfactory materials.

5. Removal of trash and debris.

6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

7. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

C. Continual dust control, as required by the County, and in accordance with County Air Pollution Control District's Standards shall be required for the project construction.

3.05 GRADING

A. General: To provide support for building floor slabs, all existing fill and unsuitable natural soils shall be excavated and replaced as properly compacted fill.

B. Compaction: After grading, compact subgrade surfaces to the depth and percentage of compaction for each area classification.

C. Fill placement and grading operations shall be performed only under the observation of the County 's Testing Laboratory.

D. The exterior grades around building areas shall be sloped to drain away from the buildings to prevent ponding of water adjacent to foundations.

E. Grading operation shall be conducted so as to prevent damaging effects of sediment product and dust on the site and adjoining properties.

3.06 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Transport excess excavated material and legally dispose of off-site.

3.07 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction: County 's Testing Laboratory will observe, test and approve subgrades and fill layers before further construction Work can be performed. The County's Representative will determine the frequency of tests. Subgrade: Allow at least one field density test of subgrade to be made for every 2000 sq. ft. of paved area, but in no case less than 3 tests.

B. Field examination and testing will be performed by the County 's Testing Laboratory. The Contractor shall cooperate with such testing and shall give the County's Representative advance notice of grading scheduling.

C. Frequency of Tests for Trenching: As specified in Geotechnical Study Section 8 and as determined by the County's Representative.

D. If in the opinion of the County's Representative, based on soil testing reports and observations, subgrades or fills which have been placed are below specified density, provide corrective work as specified at no additional expense to the County, and pay for retesting of the soil.

3.08 PROTECTION

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, compact to required density and provide other corrective work as specified, with retesting, prior to further construction.

END OF SECTION

SECTION 31 23 33
TRENCHING, BACKFILLING & COMPACTION

PART 1 - GENERAL

1.01 SUMMARY

A. Excavating trenches for construction of utilities.

B. Trench backfill materials.

C. Backfilling and compacting requirements.

1.02 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. Geotechnical Investigation, Ventura County Fire Department Training Center and Headquarters, Camarillo, California, dated July 14, 2020, SC5128, prepared by Cotton, Shires and Associates, Inc. and supplemental reports.

1.03 SUBMITTALS

A. Materials source.

B. Sand equivalent test reports per ASTM D2419.

C. Certificates.

D. Drawings for shoring, bracing, sloping, or other provisions for worker protection for any excavation shall conform to the requirements of the CAL/OSHA Construction Safety Orders Requirements.

1.04 EXISTING UTILITIES

A. Drawings show existing major underground utilities from reference drawings. Prior to excavation, the Contractor shall notify the County's Representative to obtain any additional information which may be applicable to the Work.

B. Any incident of a utility being inadvertently damaged by the Contractor shall be immediately shutoff and then be immediately repaired by the Contractor at no cost to the County.

C. Contractor to pothole all utility connections and verify exact size, location and material prior to beginning construction and notify engineer of any discrepancies.

PART 2 - MATERIALS

2.01 APPROVALS

A. Imported material shall be approved by the County's Representative prior to being brought to the site. Provide a sample of the material in sufficient quantity for the

County's Representative's use in evaluating the material.

2.02 TRENCH BACKFILL MATERIAL

A. Sand bedding shall have a sand equivalent (SE) of 30 or greater. The SE shall be evaluated during grading. Materials shall conform to the specification of the Geotechnical Study.

B. Backfill material shall conform to the requirements of Section 217-2 of the SSPWC.

C. Aggregate base course shall be per Plan.

D. Topsoil removed from trenches shall be stockpiled at locations approved by the County's Representative.

2.03 SOURCE QUALITY CONTROL

A. Inspection and testing shall be performed by the County's Representative.

PART 3 - EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum.

3.02 TRENCH EXCAVATION

A. All saw cutting shall be neat, straight cuts and shall conform to Section 306-3 of the SSPWC. All cuts shall be square unless otherwise specifically noted on plans.

B. Trench excavation shall conform to Section 306-3 of the SSPWC and the following requirements:

1. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe barrel. Suitable excavations shall be made to receive the bell of the pipe and the joint shall not bear upon the bottom of the trench. All adjustments to line and grade shall be made by scraping away or filling in with sand under the body of the pipe and not by wedging or blocking.

2. If the trench is excavated below the required grade, correct any part of the trench excavated below the grade, at no additional cost to the County per the Geotechnical Study. Place the backfill material over the full width of trench in compacted layers not exceeding 6 inches deep to the established grade with allowance for the pipe base. If shoring is required, the trenches shall be shored and braced in accordance with the Trench Construction Safety Orders of the Division of Industrial Safety.

3. When subgrade is encountered that in the opinion of the County's Representative is unsuitable for pipe support, the County's Representative may order the excavation to be carried to an approved depth below the bottom of the pipe and backfilled with sand, to the lines and grades shown on the drawings and

specified by the County's Representative.

4. The minimum width of the trench at the top of the pipe zone shall be as necessary to install the pipe. The utility lines shall be centered in the trench. In the event of (1) actual physical interference between existing crossing subsurface utilities and the proposed utility lines and (2) vertical discrepancy in connecting proposed utility lines to existing utility system, a minimum clearance of 0.5 feet between the utility line and the crossing, interfering utility shall be provided, unless otherwise indicated on the plans.

5. Where existing utilities or tree roots are to be protected, trench excavation shall be by hand. No mechanical excavating equipment shall be used within 6 inches of any utility or root.

6. Trenching machinery may be used for excavations provided the specified trench width can be maintained.

3.03 TRENCH BACKFILL

A. Pipe bedding and trench backfill materials: Suitable imported pipe bedding for utilities shall consist of material having a sand equivalent of at least 30. The sand backfill material shall be placed within the pipe zone that extends from the bottom of the pipe to at least 12 inches above the top of the pipe for the full width of the trench. The horizontal distance between the spring line of the pipe and the side walls of the trench shall be such that bedding material can be properly placed and compacted below the haunches of the pipe. Pipe bedding and pipe zone backfill shall be compacted to at least 95 percent relative compaction. Backfill material placement shall conform to provisions of Geotechnical Study.

B. Trench backfill placed above the pipe zone shall consist of suitable onsite or imported soil per Geotechnical Study. The trench backfill materials shall be compacted to at least 90 percent relative compaction. Compaction shall be increased to a minimum of 95 percent of maximum dry density within structural fills within building areas. Mechanical compaction of trench backfill shall be performed and water consolidation (jetting) methods of compaction shall not be permitted. Trench backfill in landscape areas shall be compacted to a minimum of 90 percent relative compaction or per landscape specifications.

C. Trench Backfilling shall conform to the requirements of Sections 306-12 of the SSPWC and Geotechnical Study:

1. During the process of laying pipe in trenches, sufficient material shall be carefully placed and hand tamped about the pipe to hold it firmly to established line and grade. Oversized material, broken rock or shale, if encountered, shall not be used for backfill.

2. No motor driven mechanical compacting equipment shall be used over pipelines until the backfill has been compacted to 12 inches over the crown of the pipe.

3. All backfill material shall be deposited in horizontal layers not exceeding the thickness specified in Section 306-12 of the SSPWC and not exceeding 8 inches in thickness. The distribution of materials shall be such that all material following

compaction and consolidation will form a homogeneous mass free of voids, pockets, streaks or other imperfections. Backfilling shall be done with earth free from lumps, hardpan, chunks, paving material, organic matter or other deleterious substances.

4. Jetting of bedding or backfill material to obtain specific moisture content or for compaction shall not be permitted. If encountered, existing fill in the utility excavation shall be excavated and recompacted or removed and replaced with new fill materials per requirements of Section 2.02.

5. Compaction of all backfill material for trenches, pavements or structures, shall be per provisions of the Geotechnical Study. Appropriate warning detector tape shall be placed over all utilities.

6. Prior to final cleanup or resurfacing, the County's Representative shall take compaction tests in any backfill area and at any depth, with the Contractor providing equipment and operator to assist in such test. If any such compaction test fails, the Contractor shall correct such failure and pay for any retesting that is required. The County's Representative shall make as many tests as he feels is required to receive a satisfactory and acceptable job.

3.04 STOCKPILING

A. Stockpiling of imported materials or excavated materials shall direct surface water away from approved stockpile site to prevent erosion.

B. After stockpiles are removed, leave area in a clean and neat condition.

3.05 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by County's Representative.

END OF SECTION

SECTION 31 63 29
DRILLED PIERS

PART 1 - GENERAL

1.01 APPLICABLE SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section

1.02 SUMMARY

A. The work included under this section consists of furnishing all materials, supplies, equipment, tools, transportation and facilities and performing all labor and services necessary for, required in connection with or properly incidental to drilling piers, casing holes and dewatering prior to concrete placement as described in this section of the specifications, shown on the accompanying drawings or reasonably implied therefrom, except as hereinafter specifically excluded.

B. Work Included:

1. Drilling Piers
2. Placing reinforcement
3. Casing Holes
4. Dewatering

C. Related Work Specified Elsewhere:

1. Reinforcement; Section 03 20 00
2. Cast-in-place Concrete; Section 03 30 00

1.03 REFERENCE STANDARDS

A. The following is a list of Reference Standards referred to in this portion of the Specification:

1. American Concrete Institute Standard ACI 336.1 "Specification for the Construction of Drilled Piers", current edition.
2. 2019 Edition of the California Building Code.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with all Federal, State and Local Codes and Safety Regulations. In addition, comply with the provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.

1. California Building Code, 2019 edition.
2. ACI 336.1 "Specification for the Construction of Drilled Piers", current edition.
3. State of California Department of Transportation Standard Specifications, current governing edition.

B. Qualifications: Installation of drilled piers shall be by a contractor with experience specific to the installation of drilled piers. Sub-contractors shall submit a written resume of a minimum of 5 jobs with similar drilled pier construction within the last 5 years including quantity, depth, diameter, installation method, owner, and references. Written proof of sub-contractor's qualifications may be requested. The general contractor shall ensure that the proposed sub-contractor has fulfilled those requirements.

C. The Contractor shall notify the Architect at least 48 hours in advance of any drilling operations to allow for arrangement of the Soils Engineer and Structural Engineer to make inspections in accordance with, "Field Quality Control," in Part 3 of this specification section.

1.05 SUBMITTALS

A. General Requirements

1. Submittals shall be made to Architect in accordance with the requirements of Division 1, General Requirements of these specifications.
2. Construction, and fabrication or ordering of materials shall not begin until Contractor has received submittals reviewed by Architect governing all aspects of the intended work.

B. Shop Drawings:

1. The Contractor shall submit a pier installation plan to the Engineer for approval for all drilled piers. The pier installation plan shall include complete descriptions, details, and supporting calculations for the following:
   a. Concrete mix design, certified test data, and trial batch reports per Section 03 30 00.
   b. Reinforcement shop drawings per Section 03 20 00.
   c. Drilling or coring methods and equipment.
   d. Proposed method for casing installation and removal when necessary.
   e. Methods for placing, positioning, and supporting bar reinforcement.
   f. Methods and equipment for verifying that the bottom of the drilled hole is clean before placing concrete.
   g. Methods and equipment for dewatering of holes when necessary.
   h. Methods and equipment for placing concrete.
   i. Slurry type and proposed method of stabilizing holes with slurry when necessary.

1.06 SEQUENCING AND SCHEDULING

A. The Contractor shall obtain information and instructions from all trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete piers.

PART 2 - PRODUCTS - See other portions of specifications.

PART 3 - EXECUTION

3.01 DRILLING PIERS

A. All holes for piers shall be drilled to the diameter and depth as shown on the plans.

1. All holes shall be examined for straightness and any hole that on visual inspection from the top shows less than one-half the diameter of the hole at the bottom of the hole shall be rejected. Suitable temporary casings shall be furnished and placed when necessary to control water or to prevent caving of the hole as determined by the Soils Engineer.
2. The pier shall not be out of plumb by more than 5 percent over the length of the pier and the top of the pier shall be within 3 inches of the design location.
3. All loose material existing at the bottom of the hole after drilling operations have been completed shall be removed and the bottom of the hole cleaned out before placing concrete in the hole.
4. Material resulting from drilling holes shall become property of the contractor and be disposed of at the Contractor's expense. Disposal of drill cuttings shall be offsite unless otherwise permitted in writing by the Owner.
5. Surface water shall not be permitted to enter the hole and all water that may have infiltrated the hole shall be removed before placing concrete therein.
6. Mineral, synthetic, or water slurry may be used to stabilize drilled pier excavations provided that the slurry conforms to Section 49-3.02B(6) of the State of California Department of Transportation Standard Specifications, 2018 Edition.

B. Concrete Placement:

1. Concrete shall be placed in drilled piers the day of drilling.
2. The reinforcing steel cage shall be placed and secured symmetrically about the axis of the pier and shall be securely blocked to clear the sides of the hole prior to placement of concrete.
3. After placing reinforcement and prior to placing concrete in the drilled hole, if caving occurs or deteriorated foundation material accumulates on the bottom of the hole, the bottom of the drilled hole shall be cleaned. The contractor shall verify that the bottom of the drilled hole is clean.
4. Construction joints not shown on the plans are not acceptable unless specifically authorized by the Engineer.
5. Free fall of concrete shall not exceed 8 feet.
6. Completely dewater holes before placing concrete.
7. Casings, if used in drilling operations, shall be removed from the hole as concrete is placed therein. The bottom of the casing shall be maintained not more than 5 feet below the top of the concrete and at a sufficient height to offset the hydrostatic or lateral soil pressure during withdrawal and placing operations, unless otherwise permitted by the Soils Engineer. Separation of the concrete during withdrawal operations shall be avoided by hammering or otherwise vibrating the casing.

C. Concrete Placement Under Slurry:

1. Concrete deposited under slurry shall be carefully placed in a compact monolithic mass with one or more tremie tubes, each of which are at least 8 inches in diameter. The delivery tube system shall consist of watertight

tubes with sufficient rigidity to keep the ends always in the mass of concrete placed. Internal bracing for the steel reinforcing shall accommodate the delivery tube system.

2. During placement of tremie concrete, the delivery tube tip shall be maintained at least 10 feet below the top surface of concrete. When slurry methods are used, a fully operational standby concrete pump, adequate to complete the work in the time specified, shall be provided at the site during concrete placement. If a temporary casing is used, concrete placed under slurry shall be maintained at least 5 feet above the bottom of the casing. The withdrawal of the casing shall not cause contamination of the concrete with slurry. If slurry is not used, the temporary casing shall not be withdrawn until the concrete head in the casing is greater than the groundwater outside the casing. This positive concrete head shall be maintained during the withdrawal of the casing.
3. A log of concrete placement for each drilled hole shall be maintained by the Contractor when the concrete is deposited under slurry. The log shall show the pile location, tip elevation, dates of excavation and concrete placement, length and tip elevation of any casing, and details for any hole stabilization method and materials used.
4. Vertical inspection pipes for acceptance testing as shown on the plans shall be provided in all drilled piers 24 inches in diameter or larger, except when the holes are dry or when the holes are dewatered without the use of temporary casing in a manner that controls groundwater.
5. Vertical inspection pipes shall be Schedule 40 PVC pipe with a nominal inside diameter of 2 inches. Each inspection pipe shall be capped at the bottom of the reinforcing cage. A temporary top cap or similar means shall be provided to keep the pipes clean before testing. The inspection pipes shall be clean, dry, and unobstructed at the time of testing providing a 2-inch diameter clear opening. The inspection pipes shall be securely fastened in place to allow straight alignment parallel to the reinforcement. Inspection pipes shall extend to the bottom of the reinforcing cage. Cored holes to replace non-functioning inspection pipes shall be provided at the direction of the engineer and at no additional cost to the owner.
6. Acceptance tests will evaluate the homogeneity of the placed concrete. Tests will include gamma-gamma logging in conformance with State of California Test 233 in compliance with the State of California Department of Transportation Standard Specifications, 2018 edition, and sonic echo testing on piers without inspection tubes. The Contractor shall not conduct operations within 25 feet of the gamma-gamma logging operations. The contractor shall allow 20 days for the testing procedures to take place. Inspection pipes and or cored holes shall be dewatered and filled with grout after notification that the pile is acceptable.
7. If acceptance testing determines that a pile does not meet the requirements of the specifications and California Test 23, Part 5C, then that pile will be rejected. The Engineer determines whether the rejected pile requires mitigation due to structural, geotechnical, or corrosion concerns. If the Engineer determines that the rejected pile requires mitigation, the Contractor shall submit to the Engineer for review a mitigation plan for the repair, supplementation, or replacement for each rejected pile.

3.02 FIELD QUALITY CONTROL

A. The Soils Engineer shall perform inspections during drilling of piers as specified below and Contractor shall cooperate with and notify Soils engineer at least 48 hours in advance of inspections required:

1. Inspect drilling of piers
2. Inspect the walls of drilled holes

B. The Contractor shall notify the Structural Engineer for the following observations at least 48 hours before the drilling of piers.

1. Inspect the reinforcement of the piers and its placing
2. Inspect the placement of concrete

END OF SECTION 31 63 29

This Page Left Blank Intentionally

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 - GENERAL

1.01 SUMMARY

A. Aggregate base course for asphalt concrete paving.

1.02 RELATED SECTIONS

A. Section 31 22 00 Earthwork and Grading.

B. Section 32 12 16 Asphalt Paving.

1.03 REFERENCES

A. Standard Specifications for Public Works (SSPWC), latest edition.

B. ASTM Standards.

C. State Standard Specifications (SSS), Caltrans, latest edition.

1.04 SUBMITTALS

A. Submit material samples and reports in accordance with requirements of County.

B. Submit samples in sufficient quantities for material testing.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aggregate Base Material shall be Class 2 Aggregate Base conforming to SSS Section 26-1.02B and shall be free of organic materials and other deleterious substances.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify substrate has been inspected; gradients and elevations are correct, and dry.

3.02 AGGREGATE BASE PLACEMENT

A. Aggregate base placement shall conform to the provisions of the SSPWC, Section 301-2

B. Level and contour surfaces to elevations and gradients indicated.

C. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

D. Where the required aggregate base thickness is 6 inches or less, the base material may be spread and compacted in one layer. Where the required thickness is more than 6 inches, the aggregate base material shall be spread and compacted in 2 or more layers of

approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches.

E. The relative compaction of each layer of compacted base material shall not be less than 95 percent (ASTM D1557).

F. Aggregate base course shall be dense and unyielding upon proof-rolling with full water truck.

3.03 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch from grades shown on plans.

B. Scheduled Compacted Thickness shall conform to the provisions of the SSPWC Section 301-2.2.

3.04 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by the County's Testing Laboratory. Compaction testing will be performed in accordance with ASTM D1557, latest edition.

B. If tests indicate work does not meet specified requirements, remove work, replace and retest at Contractor's expense.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Asphaltic concrete paving driveway pavements.

1.02 RELATED SECTIONS

A. Section 31 20 00 Earthwork.

B. Section 32 11 23 Aggregate Base Courses.

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. ASTM Standards.

1.04 SUBMITTALS

A. Submit asphalt concrete mix design(s) for approval of the County Representative.

1.05 TESTING AND INSPECTION

A. Testing and inspection of asphalt pavement mix(es) and testing of placed stabilizing base course and asphalt pavement will be performed by the County's Testing Laboratory. Testing and inspection will be performed so as to minimize disruption of work.

B. Allow the County's Testing Laboratory access to the mixing plant for verification of weights or proportions, character of materials used and determination of temperatures used in the preparation of asphaltic concrete mix.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide the aggregate base, and bituminous surface conforming to the requirements of the Standard Specifications for Public Works Construction (SSPWC).

2.02 PAVING MATERIALS

A. Asphalt Concrete: Asphalt concrete material shall be C2-PG 64-10 per SSPWC Section 203-6. The grading and proportioning of aggregates shall be such that the combined mineral aggregate conforms to the specified requirements.

B. Asphalt Emulsion: SSPWC Section 203-3, Grade SS-1h.

C. Prime Coat: Grade SC-70 per SSPWC Section 203-2.

D. Aggregates for base course shall conform to requirements of Specification Section 32 11 23, Aggregate Base Course.

2.03 ASPHALT PAVEMENT MIX

A. Combine mineral constituents in proportions to produce a mixture conforming to requirements of the SSPWC Section 203-6.

B. Percentage by weight of asphalt cement in mixture shall be in accordance with SSPWC Section 203-6.

C. Maintain thorough and uniform mixture.

D. Bring asphalt and mineral constituents to required temperatures before mixing. Ensure aggregates are sufficiently dry so as not to cause foaming in mixture.

PART 3 – EXECUTION

3.01 GENERAL

A. Execute Work in accordance with SSPWC Section 302.

3.02 PREPARATION

A. Ensure grading of subgrade to required elevation. Subgrade preparation shall be per SSPWC Section 301.

B. Before final rolling, shape entire section, add additional sub-soil if necessary, and compact subgrade to provide grades, elevation and cross-section indicated. Points of finished subgrade surface shall be within 0.04 foot of elevations indicated on the Drawings.

3.03 BASE COURSE

A. Execute work in accordance with Specification Section 32 11 23 – Aggregate Base Courses.

3.04 MAINTENANCE

A. Maintain the base course until the asphaltic pavement is in place. Maintenance shall include drainage, rolling, shaping and water as necessary to maintain the course in proper condition. Maintain sufficient moisture at the surface to prevent a dusty condition. Areas of completed base course that are damaged shall be conditioned, reshaped and re-compacted in accordance with the requirements of the Specifications without additional cost to the County.

3.05 TACK COAT

A. Prior to the application of the asphalt concrete, a paint binder (tack coat) shall be applied to all surfaces of walkway, curbs, gutters, manholes and drainage structures which will be in contact with asphalt pavement per SSPWC Section 302-5.4.

B. Coat surfaces of catch basins which are to remain free of asphalt with oil, or provide equivalent protection, to prevent asphalt adhesion.

3.06 PRIME COAT

A. Prior to the application of the asphalt concrete, a prime coat shall be applied at a rate of 0.20 to 0.40 gallons per square yard.

3.07 ASPHALT CONCRETE

A. Requirements: The bituminous concrete shall consist of mineral aggregate, uniformly mixed with bituminous material in a central plant in accordance with SSPWC Section 203-6. The percentage of asphalt binder shall be in accordance with SSPWC Section 400-4. The mixing plant and construction equipment shall conform to the requirements of SSPWC Sections 302-5 and 203-6.

B. Placing: Deliver bituminous mixtures to the work site temperatures specified in SSPWC Section 302-5.5. Spread and place in accordance with SSPC Section 302-5.5. Asphalt surface shall be fog-sealed.

C. Compaction: Initial or breakdown rolling and the final rolling of the uppermost layer of the asphalt concrete shall be in accordance with SSPWC Section 302-5.6. Compaction by vehicular traffic shall not be permitted.

3.08 JOINING PAVEMENT

A. Carefully make joints between old and new pavements or between successive days work in such manner as to insure a continuous bond between old and new sections of the course in accordance with SSPWC Section 302.

B. Expose and clean edges of existing pavement. Cut edge to straight, vertical surfaces. Paint all joints with a uniform coat of tack coat before the fresh mixture is placed. Prepare joints in the new pavement in accordance with SSPWC Section 302-5.7.

3.09 TOLERANCES

A. Flatness: Maximum variation of 1/8 inch when measured with a 10-foot straight edge.

B. Variation from True Elevation: Within 1/4 inch.

3.10 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by the County’s Testing Laboratory.

B. Field inspection and testing will be performed by the County's Testing Laboratory. The Contractor shall cooperate with such testing and shall give the County Representative advance notice of paving scheduling. Sufficient “Advance Notice” shall be determined by the County Representative.

C. If tests indicate materials do not meet specified requirement, replace material and retest at no additional cost to the County.

D. Frequency of Test: As determined by the County’s Testing Laboratory.

3.11 PROTECTION

A. After placement, protect pavement from mechanical injury.

END OF SECTION

This Page Left Blank Intentionally

SECTION 32 13 13
CONCRETE PAVING

PART 1 – GENERAL

1.01 SUMMARY

A. Concrete for pavement.

1.02 RELATED SECTIONS

A. Section 31 20 00 – Earthwork

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. ASTM Standards.

1.04 SUBMITTALS

A. Submit the following:

1. Product Data: Provide data on admixtures, curing compounds, and joint systems.

2. Concrete mix design(s).

3. Certificates from the batch plant.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with the SSPWC, latest edition; and ASTM Standards, latest edition.

B. Obtain cementitious materials from same source throughout.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F or surface is wet.

PART 2 – PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Section 303-5 of the SSPWC.

2.02 CONCRETE MATERIALS

A. Concrete Material for Pavement:

1. Class 650-CW-4000 for pavement. Portland cement concrete per Standard Specifications for Public Works Construction Section 201-1.1.2.

2. Concrete reinforcements shall be constructed per the Project Plans and Specifications.

2.03 ACCESSORIES

A. Curing Compound shall conform to SSPWC Section 201-4. Pigmented compound shall not demonstrate any residual coloring of the concrete after one week.

2.04 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94.

B. Use accelerating admixtures in cold weather only when approved by the County's Representative. Use of admixtures will not relax cold weather placement requirements.

C. Use calcium chloride only when approved by the County's Representative.

D. Use set retarding admixtures during hot weather only when approved by the County's Representative.

2.05 CONCRETE REINFORCEMENT

A. Concrete reinforcement shall conform to SSPWC Section 201-2.2.3 and the Project Plans.

2.06 SOURCE QUALITY CONTROL

A. Provide certificates of compliance from the batch plant.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support imposed loads.

B. Verify gradients and elevations of subgrade are correct.

3.02 PREPARATION

A. Overexcavation and subgrade preparation shall be in accordance with specification 31 20 00 – Earthwork.

B. Compacted fill can then be placed in accordance with specification section 31 20 00 - Earthwork.

C. Notify County’s Representative a minimum of 24 hours prior to commencement of concrete placement operations.

3.03 FORMING

A. Place and secure forms to correct location, dimension, and profile.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with SSPWC Section 303-5.

B. Install ½” thick fiberboard expansion joint and snap cap. Seal with Sikaflex-2 NS EZ flexible sealant by Sika or MasterSeal NP-1 by BASF after removal of snap cap (typical).

C. Construct weakened plane joints conforming to SSPWC Section 303-5.4.3, one and a half inches deep, at intervals not exceeding 12 feet.

D. The top edges of curbs shall have 0.5" radius.

3.05 FINISHING

A. Concrete finishes shall be per SSPWC Section 303-5.5.3.

B. Portland cement concrete paving shall have a medium salt (medium broom) finish on all surfaces less than or equal to 5% and slip resistant (heavy broom finish) on all surfaces greater than 5%.

C. Place curing compound in accordance with SSPWC Section 303-5.6 on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.06 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by the County’s Testing Laboratory.

B. County 's Testing Laboratory will perform slump and compressive strength tests.

C. Contractor shall maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.07 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, vandalism and mechanical injury.

B. It is the Contractor's responsibility to replace all concrete work subject to vandalism and graffiti at no extra cost to the County.

END OF SECTION

This Page Left Blank Intentionally

SECTION 321316

DECORATIVE CONCRETE PAVING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes colored, stamped and stained concrete paving.

B. Related Sections:
1. Division 03 Section "Cast-in-Place Concrete" for general building applications of concrete.
2. Division 32 Section "Site Paving and Surfacing" for cast-in-place concrete paving with other finishes, curbs and gutters, stamped detectable warnings and wheel stops.
3. Division 32 Section "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within decorative concrete paving and in joints between decorative concrete paving and asphalt paving or adjacent construction.

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans.

1.04 SUBMITTALS

A. General: Submit in conformance with General Provisions Section 2-5.3 “Submittals”

B. Product Data: For each type of product indicated.

C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color, pattern, or texture selection.

D. Samples for Verification: For each type of exposed color, pattern, or texture indicated.

E. Other Action Submittals:
1. Design Mixtures: For each decorative concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
2. Samples from manufacturers standard line for: Stamp pattern and color for selection by Engineer.

F. Qualification Data: For qualified ready-mix concrete manufacturer:

G. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Applied finish materials.
7. Bonding agent or epoxy adhesive.
8. Joint fillers.

H. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer of decorative concrete paving systems.

B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

C. Testing Agency Qualifications (Provided by City): Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Source Limitations: Obtain decorative concrete paving products and each type or class of cementitious material of the same brand from same manufacturer's plant, and obtain each aggregate from single source.

E. Concrete Testing Service (Provided by City): Engage a qualified testing agency to perform material evaluation tests and to verify concrete mixtures.

F. ACI Publications: Comply with ACI 301 unless otherwise indicated.

G. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of decorative concrete paving to demonstrate typical joints; surface color, pattern, and texture; curing; and standard of workmanship.
2. Build mockups of decorative concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Engineer and not less than 96 inches by 96 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

H. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to decorative concrete paving, including but not limited to, the following:
a. Concrete mixture design.

b. Quality control of concrete materials and decorative concrete paving construction practices.

2. Require representatives of each entity directly concerned with decorative concrete paving to attend, including the following:
   a. Contractor's superintendent.
   b. Decorative concrete paving Installer.

1.06 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.01 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
   1. Use flexible or uniformly curved forms for curves of a radius of 100 feet or less. Do not use notched and bent forms.

B. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration indicated. Provide solid backing and form supports to ensure stability of textured form liners.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCEMENT

A. Recycled Content: Provide steel reinforcement with an average recycled content of steel so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

C. Reinforcing Bars: ASTM A 615, Grade 60; deformed.

D. Steel Bar Mats: ASTM A 184; with ASTM A 615, Grade 60, deformed bars; assembled with clips.

E. Plain-Steel Wire: ASTM A 82, as drawn.

F. Joint Dowel Bars: ASTM A 615, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.

G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
   1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.03 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, gray portland cement Type II.

B. Normal-Weight Aggregates: ASTM C 33, uniformly graded. Provide aggregates from a single source.
   1. Maximum Aggregate Size: 1 inch nominal.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: Potable and complying with ASTM C 94/C 94M.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
   1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
   2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
   3. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.

F. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Davis Colors.
      b. Dayton Superior Corporation.
      c. Scofield, L. M. Company.
      d. Solomon Colors, Inc.
      e. SureCrete Design Products.
      f. Or approved equal.

2.04 FIBER REINFORCEMENT

A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C 1116/C 1116M, Type III, 1/2 to 1-1/2 inches long.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Monofilament Fibers:
         1) Euclid Chemical Company (The), an RPM company; Fiberstrand 100, Fiberstrand 150.
         2) Grace, W. R. & Co. - Conn.; Grace MicroFiber.
         3) Or approved equal.
      b. Fibrillated Fibers:
         1) Euclid Chemical Company (The), an RPM company; Fiberstrand F.
         2) Grace, W. R. & Co. - Conn.; Grace Fibers.
         3) Or approved equal.

2.05 SURFACE COLORING MATERIALS

A. Pigmented Mineral Dry-Shake Hardener: Factory-packaged, dry combination of portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Conspec by Dayton Superior; Conshake 600 Colortone.
      b. Euclid Chemical Company (The), an RPM company; Surflex.
      c. L&M Construction Chemicals, Inc.; QUARTZPLATE FF.
      d. Scofield, L. M. Company; LITHOCHROME Color Hardener.
      e. SureCrete Design Products; Color Hardener.
      f. Or approved equal.

B. Pigmented Powder Release Agent: Factory-packaged, dry combination of surface-conditioning and dispersing agents interground with color pigments that facilitates release of stamp mats. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Bomanite Corporation; Release Agent.
      b. Scofield, L. M. Company; LITHOCHROME Antiquing Release.
      c. Stampcrete International Ltd.; Colored Release Agent.
      d. SureCrete Design Products; Powder Release.
      e. Or approved equal.

C. Liquid Release Agent: Manufacturer's standard, clear, evaporating formulation that facilitates release of stamp mats and texture rollers.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Scofield, L. M. Company; LITHOTEX Liquid Release.
      b. Stampcrete International Ltd.; Stampcrete Liquid Release.
      c. Superior Decorative by Dayton Superior; Pro Liquid Release.
      d. Symons by Dayton Superior; Clear Liquid Release.
      e. Or approved equal.

2.06 STAMPING DEVICES

A. Stamp Mats: Semirigid polyurethane mats with projecting textured and ridged underside capable of imprinting texture and joint patterns on plastic concrete.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Bomanite Corporation.
      b. Scofield, L. M. Company.
      c. Superior Decorative by Dayton Superior.
      d. SureCrete Design Products.
      e. Or approved equal.

B. Stamp Tools: Open-grid, aluminum or rigid-plastic stamp tool capable of imprinting joint patterns on plastic concrete.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Matcrete Precision Stamped Concrete Tools.
      b. Scofield, L. M. Company.

c. SuperStone, Inc.
d. Or approved equal.

2.07 STAIN MATERIALS

A. Reactive Stain: Acidic-based stain with wetting agents and high-grade, UV-stable metallic salts that react with calcium hydroxide in cured concrete to produce permanent, variegated, or translucent color effects.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Artcrete, Inc.; Faux Brick Concrete Stain.
b. Bomanite Corporation; Chemical Stain.
c. Scofield, L. M. Company; Lithochrome Chemstain Classic.
d. SureCrete Design Products; SureStain.
e. Or approved equal.

2.08 CURING AND SEALING MATERIALS

A. Curing Paper: Nonstaining, waterproof paper, consisting of two layers of kraft paper cemented together and reinforced with fiber, and complying with ASTM C 171.

B. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Conspec by Dayton Superior; Aquafilm.
b. Euclid Chemical Company (The), an RPM company; Eucobar.
c. L&M Construction Chemicals, Inc.; E-CON.
d. Meadows, W. R., Inc.; EVAPRE.
e. Or approved equal.

C. Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B, manufactured for colored concrete.
1. For integrally colored concrete, curing compound shall be pigmented type approved by coloring admixture manufacturer.
2. For concrete indicated to be sealed, curing compound shall be compatible with sealer.

D. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type I, Class A, manufactured for use with colored concrete.

E. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type I, Class A, manufactured for use with colored concrete.

F. Clear Acrylic Sealer: Manufacturer's standard, waterborne, nonyellowing and UV-resistant, membrane-forming, medium-gloss, acrylic copolymer emulsion solution, manufactured for colored concrete, containing not less than 15 percent solids by volume.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. H&C Concrete Care Products; Shield-Crete Clear Glaze.
b. Scofield, L. M. Company; CEMENTONE Clear Sealer.
c. Symons by Dayton Superior; Decorative Sealer WB.
d. Or approved equal.

2.09 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
   1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

D. Polyethylene Film: ASTM D 4397, 1 mil thick, clear.

2.010 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
   1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:
   1. Compressive Strength (28 Days): 3250 psi.
   2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
   3. Slump Limit: 5 inches, plus or minus 1 inch.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
   1. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-1/2-inch nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing admixture in concrete as required for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Cementitious Materials: Limit percentage by weight of cementitious materials other than portland cement according to ACI 301 as follows:
   1. Fly Ash or Pozzolan: 25 percent.

G. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.

H. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.011 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below decorative concrete paving to identify soft pockets and areas of excess yielding.
   1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
   2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
   3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Division 31 Section "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

B. Protect adjacent construction from discoloration and spillage during application of color hardeners, release agents, stains, curing compounds, and sealers.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.04 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap to adjacent mats.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
   1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
   1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
   2. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   3. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
   4. Dowelled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
   1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
   2. Extend joint fillers full width and depth of joint.
   3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
   4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
   5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
   6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent decorative concrete paving:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
      a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

a. Tolerance: Ensure that sawed joints are within 3 inches in both directions from center of dowels.

3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to 3/8-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging tool marks on concrete surfaces.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement and joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

K. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.07 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared, and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

3.08 INTEGRALLY COLORED CONCRETE FINISH

A. Integrally Colored Concrete Finish: After final floating and stamping, apply the following finish:
1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.09 PIGMENTED MINERAL DRY-SHAKE HARDENER

A. Pigmented Mineral Dry-Shake Hardener Finish: After initial floating, apply dry-shake materials to paving surfaces according to manufacturer's written instructions and as follows:
1. Uniformly apply dry-shake hardener at a rate of 100 lb/100 sq. ft. unless greater amount is recommended by manufacturer to match paving color required.

B. Pigmented Powder Release Agent: Uniformly distribute onto dry-shake-hardened and still-plastic concrete at a rate of 3 to 4 lb/100 sq. ft..

3.010 STAMPING

A. Mat Stamping: After floating and while concrete is plastic, apply mat-stamped finish per Decorative Concrete Paving Schedule in Section 3.17 below..
1. Pigmented Powder Release Agent: Uniformly distribute onto concrete at a rate of 3 to 4 lb/100 sq. ft..
2. After application of release agent, accurately align and place stamp mats in sequence.
3. Uniformly load mats and press into concrete to produce required imprint pattern and depth of imprint on concrete surface. Gently remove stamp mats. Hand stamp edges and surfaces unable to be imprinted by stamp mats.
4. Remove residual release agent according to manufacturer's written instructions, but no fewer than three days after stamping concrete. High-pressure-wash surface and joint patterns, taking care not to damage stamped concrete. Control, collect, and legally dispose of runoff.

3.011 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Compound: Apply curing compound immediately after final finishing. Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after application. Maintain continuity of coating, and repair damage during curing period.
   1. Cure integrally colored concrete with a curing compound.
   2. Cure concrete finished with pigmented mineral dry-shake hardener with a curing compound.

F. Curing and Sealing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

G. Curing Paper: Cure with unwrinkled curing paper in pieces large enough to cover the entire width and edges of slab. Do not lap sheets. Fold curing paper down over paving edges and secure with continuous banks of earth to prevent displacement or billowing due to wind. Immediately repair holes or tears in paper.

3.012 SEALER

A. Clear Acrylic Sealer: Apply uniformly in two coats in continuous operations according to manufacturer's written instructions. Allow first coat to dry before applying second coat, at 90 degrees to the direction of the first coat using same application methods and rates.
   1. Begin sealing dry surface no sooner than 14 days after concrete placement.
   2. Allow concrete surfaces to dry before applying sealer.
   3. Thoroughly mix slip-resistance-enhancing additive into sealer before applying sealer according to manufacturer's written instructions. Stir sealer occasionally during application to maintain even distribution of additive.

3.013 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:
   1. Elevation: 1/4 inch. (Must Comply with ADA Criteria)
   2. Thickness: Plus 3/8 inch, minus 1/4 inch.
   3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
   4. Lateral Alignment and Spacing of Dowels: 1 inch.
   5. Vertical Alignment of Dowels: 1/4 inch.
   6. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
   7. Joint Spacing: 3 inches.
   8. Contraction Joint Depth: Plus 1/4 inch, no minus.
   9. Joint Width: Plus 1/8 inch, no minus.

3.014 FIELD QUALITY CONTROL

A. Testing Agency: City will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
   1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd.or fraction thereof of each concrete mixture placed each day.
      a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
   5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
   6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
      a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

G. Decorative concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.015 REPAIRS AND PROTECTION

A. Remove and replace decorative concrete paving that is broken or damaged or does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.

B. Detailing: Grind concrete "squeeze" left from tool placement. Color ground areas with slurry of color hardener mixed with water and bonding agent. Remove excess release agent with high-velocity blower.

C. Protect decorative concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain decorative concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.016 DECORATIVE CONCRETE PAVING SCHEDULE

A. Patterned Decorative Concrete Paving:
   1. Locations: As Indicated on Civil Drawings.
   2. Coloring Method: Integrally colored and pigmented mineral dry-shake hardener.
      a. Color: Match Engineer's sample.
   3. Patterning Method:
      a. Texture, Pattern and Color: TBS
      b. Pigmented Mineral Dry-Shake Hardener: TBS
      c. Release Agent: Match pigmented mineral dry-shake hardener.

END OF SECTION

SECTION 32 16 00
CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAYS

PART 1 – GENERAL

1.01 SUMMARY

A. Concrete for curbs, gutters, sidewalks.

1.02 RELATED SECTIONS

A. Section 31 20 00 – Earthwork

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. Geotechnical Investigation, Ventura County Fire Department Training Center and Headquarters, Camarillo, California, dated July 14, 2020, SC5128, prepared by Cotton, Shires and Associates, Inc.

C. ASTM Standards.

1.04 SUBMITTALS

A. Submit the following:

1. Product Data: Provide data on admixtures and curing compounds.

2. Concrete mix design(s).

3. Certificates from the batch plant.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with the SSPWC, latest edition; and ASTM Standards, latest edition.

B. Obtain cementitious materials from same source throughout.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F or surface is wet.

PART 2 – PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Section 303-5 of the SSPWC.

2.02 CONCRETE MATERIALS

A. Concrete Material for Curbs, Walk (Path of Travel), Pavement, and Cast-in-Place Catch Basin:

1. Class 560-C-3250 for cast-in-place catch basins, curbs, and gutters. Portland cement concrete per Standard Specifications for Public Works Construction Section 201-1.

2. Concrete reinforcements shall be constructed per the Project Plans and Specifications.

2.03 ACCESSORIES

A. Curing Compound shall conform to SSPWC Section 201-4. Pigmented compound shall not demonstrate any residual coloring of the concrete after one week.

2.04 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94.

B. Use accelerating admixtures in cold weather only when approved by the County's Representative. Use of admixtures will not relax cold weather placement requirements.

C. Use calcium chloride only when approved by the County's Representative.

D. Use set retarding admixtures during hot weather only when approved by the County's Representative.

2.05 CONCRETE REINFORCEMENT

A. Concrete reinforcement shall conform to SSPWC Section 201-2.

2.06 SOURCE QUALITY CONTROL

A. Provide certificates of compliance from the batch plant.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support imposed loads.

B. Verify gradients and elevations of subgrade are correct.

3.02 PREPARATION

A. Moisten subgrade to minimize absorption of water from fresh concrete. Compact subgrade material to a depth of 12" beneath 4” of sand below concrete pavements to a minimum 92% of the maximum dry density. Refer to geotechnical report for site subgrade preparation recommendations.

B. Coat surfaces of catch basin frames with oil to prevent bond with concrete pavement.

C. Notify County’s Representative a minimum of 24 hours prior to commencement of concrete placement operations.

3.03 FORMING

A. Place and secure forms to correct location, dimension, and profile.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with SSPWC Section 303-5.

B. Install ½” thick fiberboard expansion joint and snap cap. Seal with Sikaflex self-leveling sealant after removal of snap cap (typical).

C. Construct weakened plane joints conforming to SSPWC Section 303-5.4.3, one inch deep, at intervals not exceeding 10 feet.

D. The top edges of curbs shall have 0.5" radius.

3.05 FINISHING

A. Concrete finishes shall be per SSPWC Section 303-5.5.

B. Portland cement concrete paving shall have a medium salted finish for slopes less than 6%, and slip-resistant at slopes of 6% or greater.

C. Walkway grades in excess of 5% shall conform to requirements of Section 11B-401 of the latest edition of the California Building Code.

D. Place curing compound in accordance with SSPWC Section 303-5.6 on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.06 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by the County’s Testing Laboratory.

B. County's Testing Laboratory will perform slump and compressive strength tests.

C. Contractor shall maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.07 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, vandalism and mechanical injury.

B. It is the Contractor's responsibility to replace all concrete work subject to vandalism and graffiti at no extra cost to the County.

END OF SECTION

This Page Left Blank Intentionally

SECTION 32 17 23
PAVEMENT MARKING

PART 1 - GENERAL

1.01 SUMMARY

All striping and pavement markings shall be located per plans.

All construction shall conform to the Standard Specifications for Public Works Construction and Caltrans Standard Plans and Specifications

Pavement marking shall consist of the layout and construction of temporary painted markings and reflective pavement markers. Final marking and striping shall be thermoplastic.

All equipment, materials, and components for striping, pavement markings and pavement markers, and the installation thereof, shall conform to the Caltrans Standard Plans and Standard Specifications, Section 84, "Traffic Stripes and Pavement Markings," except as noted in the Special Provisions and on the Plans. These Plans and Specifications are hereinafter referred to as Caltrans Standard Plans and Caltrans Standard Specifications.

Thermoplastic: The Contractor shall install thermoplastic striping and pavement markings at all locations within the work area that have thermoplastic delineation in place prior to construction and for locations called out to receive thermoplastic striping and markings. Thermoplastic striping and pavement markings shall be constructed in accordance with Section 84: Traffic Stripes and Pavement Markings of the Caltrans Standard Specifications

Pavement Markers: Pavement markers shall be Type D, 2-Way Blue as specified in City of Camarillo Water Division Standard Specifications.

Where reference is made to State furnished materials, it shall mean Contractor furnished materials unless otherwise noted

1.02 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), 2021

B. California Building Code (CBC), 2022.

C. State of California Department of Transportation Standard Specifications, Caltrans, 2022 Edition.

D. City of Camarillo Water Division Standard Specifications, Revised July 2005.

PART 2 - MATERIALS

2.01 FIELD QUALITY CONTROL

A. All paint and related materials shall conform to Section 84 of the Caltrans Specifications.

B. Painting and striping of the accessible parking stalls shall conform to the Civil Plans.

PART 3 - EXECUTION

3.01 PREPARATION

A. Painted lines and markings on pavement shall be 4-inch minimum wide and white in color, unless noted otherwise per plans.

B. Accessible parking spaces shall be marked according to CBC Section 11B-502 and the Civil Plans.

C. Detectable warning surfaces and detectable directional textures shall be in conformance to CBC Section 11B-705.1 and 11B-705.2.

3.02 FIELD QUALITY CONTROL

A. Pavement markings and striping shall consist of the following:

The first coat of paint shall consist of two (2) complete passes.

It shall be the responsibility of the Contractor to "touch up" any

striping, stop bars, legends or line striping that may wear out prior to the application of the thermoplastic delineation to ensure public safety at no cost to the County.

If tabs are allowed by the Engineer and have been approved in advance for a particular location for specific reasons, tabs shall be placed in sufficient number to clearly delineate striping and stop bars. Tabs shall be removed concurrent with final striping.

Final striping and pavement markings shall be constructed of thermoplastic.

END OF SECTION

SECTION 32 31 19
FENCES AND GATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Ventura County Standard Specifications (VCSS), General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Decorative steel tubular pedestrian gates with metal frames and hardware.
2. Manual Vehicle Gate with V-track, support brackets, steel column supports and footings.
3. Decorative Fencing System

B. Related Sections:
1. Division 03 Section “Cast-in-Place Concrete” for concrete bases for tracks and post concrete fill.
2. Division 04 Section “Concrete Unit Masonry” for CMU walls to support site gates.
3. Division 05 Section “Metal Fabrications” for v-track and gate frames.
4. Division 08 Section “Door Hardware” for locking devices for site gates.
5. Division 09 Section “Exterior Painting” for finish painting of fences, gates and gate frames.
6. Division 31 Section “Trenching & Backfilling” for excavation and backfill where decorative metal gates are located.

1.3 REFERENCE STANDARDS

A. American Welding Society (AWS):
1. AWS D1.1-04: Structural Welding Code – Steel.

B. ASTM International:
1. ASTM A 29-04: Specification for Steel Bars, Carbon and Alloy, Hot-Wrought Iron.
2. ASTM A 36-05: Specification for Carbon Structural Steel.
3. ASTM A -04: Specification for Ferritic Malleable Iron Castings.
4. ASTM A 48-03: Specification for Gray Iron Castings.
5. ASTM A 123-02: Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
6. ASTM A 153-04: Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
7. ASTM A 500-03a: Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
8. ASTM A 510-03: Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel.
9. ASTM A 653-04a: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
10. ASTM A 780-01: Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
11. ASTM A 792-03: Specification for Steel Sheet, 55 Percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

12. ASTM C 387-04: Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
13. ASTM C 1107-02: Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).
14. ASTM F 2408-04: Specification for Ornamental Fences Employing Galvanized Steel Tubular Pickets.

C. Code of Federal Regulations (CFR):
1. 40 CFR 59, Subpart D-2001: National Volatile Organic Compound Emission Standards for Architectural Coatings.

D. The Society for Protective Coatings (SSPC):
1. SSPC-PA 1-04: Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel.
2. SSPC-SP 5/NACE No. 1-04: Joint Surface Preparation Standard SSPC-SP 5/NACE No. 1: White Metal Blast Cleaning.
3. SSPC-SP 6/NACE No. 3-04: Joint Surface Preparation Standard SSPC-SP 6/NACE No. 3: Commercial Blast Cleaning.

1.4 SUBMITTALS

A. General: Submit in conformance with General Requirements, Division 1; Section 01 33 00, “Submittals.”

B. Product Data: For each type of product indicated.

C. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.

D. Samples: For each gate material and for each color specified.
1. Provide Samples 12 inches in length for linear materials.

E. Welding Certificates.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for decorative metallic-coated steel tubular picket fences, including finish, indicating compliance with referenced standard and other specified requirements.

G. Maintenance Data: For gate operators to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1, “Structural Welding Code - Steel.”

C. Pre-installation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Products shall include a warranty that System is free from defects in design, material, manufacturing and operation. Factory warranty period shall be for five (5) years parts and workmanship from the date of installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers:
1. Products named or identified by make or model number, or other designation and described below are base products. Base products establish the standards of type, function, dimension, in-service performance, physical properties, appearance, warranty, cost, and other characteristics required by the Project.
2. If “No substitutions” is indicated next to the product name, provide only products of listed manufacturers.
3. Subject to the requirements of Division 01 Section “Product Requirements,” products of manufacturers not listed may be proposed for substitution, provided that they are comparable to the products specified.
4. The burden of proof of equality of proposed products is on the Contractor.

B. Swinging and Rolling Ornamental Metal Gates:
1. Swing gates - PassPort™ Majestic – Welded Ornamental Steel as manufactured by Ameristar Fence Products, Inc., Tulsa, OK; Phone: 888-333-3422. Sizes as indicated on the Drawings provide privacy screen on interior of gate per detail.
2. Wheels for Rolling Vehicular Gates: Elite Power Wheel (4-inch diameter) heavy duty weight capacity of 3,000 lbs. Solid-steel V-groove wheels for V-groove slide gates with gold zinc plating.
3. Guide Tracks for Rolling Vehicular Gates: Continuous galvanized steel V-tracks anchored into concrete paving as detailed on the Drawings.

2.2 PEDESTRIAN GATE MATERIALS

A. Steel material for gate panels and posts shall conform to the requirements of ASTM A653, with a minimum yield strength of 45,000-psi and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft^2, Coating Designation G-90. Gate frame shall include metal box to receive hardware set.

B. Material for infill panels shall be pickets (3/4-inch square x 14-gauge tubing) or wood slats.

C. The top rails, uprights and diagonal braces shall be steel channels, 2 inches x 6 inches x 11-gauge tubing.

D. The bottom rail shall be 2 inches x 10 inches x 11-gauge.

E. Picket holes in the rail shall be spaced 4.715 inches o.c.

F. Hardware: Refer to Door Schedule and Section 08 71 00 Door Hardware for Gate Hardware Requirements.

2.3 PRIVACY SCREEN MATERIAL

A. Privacy Screen: 5 7700 CRL Standard Perforated Panel System as manufactured by C.R. Laurence Co., Inc. Corporate Headquarters 2503 E. Vernon Ave. Los Angeles, CA 90058-1826. Toll Free Phone (800) 421-6144; Or approved equal.
   1. Galvanized perforated panel with 10% open area. Infill panel at metal swinging and pedestrian gates. Provide metal frame as necessary for gate attachment and to terminate perforated panel edges. Paint to match gate frame.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Division 03 Section “Cast-in-Place Concrete” with a minimum 28-day compressive strength of 3000-psi, 3-inch slump, and 1-inch maximum aggregate size.

C. Non-shrink Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107 and specifically recommended by manufacturer for exterior applications.

2.5 HORIZONTAL-SLIDE GATES

A. Gate Configuration: Rolling, single leaf, manual operation.

B. Gate Frame Height and Opening Width: As indicated on the Drawings.

C. Galvanized-Steel Frames and Bracing: Fabricate members from square tubing.
   1. Top rail, Upright and diagonal Frame Members: Square tubes minimum 2-inch by 2-inch inches formed from 11 gauge nominal-thickness steel sheet and hot-dip galvanized after fabrication.

D. Bottom Rails: 2-inch x 4-inch x 11 gauge steel sheet and hot-dip galvanized after fabrication. (notched and plated for V-track Wheels)

E. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 – completely sanded joint, some undercutting and pinholes okay.

F. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanized to comply with ASTM A 123 unless otherwise indicated. For hardware items, hot-dip galvanize to comply with ASTM A 153.

G. Metallic-Coated Steel Finish: Shop paint in color/finish to be selected by Architect.

2.6 GATE FABRICATION

A. Pickets, rails, and posts shall be pre-cut to specified lengths.
   1. Rails shall be pre-punched to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture.
   1. Aligned pickets and rails shall be joined at each picket-to-rail intersection by manufacturer’s fusion welding process, thus completing the rigid panel assembly.

2. Process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel.

C. Manufactured panels and posts shall be subjected to an inline electro-deposition coating (E-Coat) process consisting of a multi-stage pretreatment/wash (with zinc phosphate), followed by a duplex application of an epoxy primer and an acrylic topcoat.
1. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils.
2. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2.
3. Color shall be Black as selected by the Architect.

D. Gates shall be fabricated using welded ornamental panel material as specified in above. It shall be welded on the secure side of the gate. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

2.7 CAST-IN-PLACE CONCRETE

A. General: Comply with ACI 301 for cast-in-place concrete.

B. Materials: Refer to Division 03 Section “Cast-In-Place Concrete.”

2.8 GROUT AND ANCHORING CEMENT

A. Non-shrink, Non-metallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement:
1. Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound.
2. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior applications.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes.

1. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.
2. Construction layout and field engineering are specified in Division 01 Section “Execution.”

3.3 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.4 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates. Refer to Division 1 Sections “Operating and Maintenance Data and Training” and “Closeout.”

END OF SECTION

SECTION 33 10 00
WATER UTILITIES

PART 1 – GENERAL

1.01 SUMMARY

A. Pipe and fittings for site water lines.

B. Valves.

C. Fire hydrant.

D. Water meter

E. Backflow preventer.

1.02 RELATED SECTIONS

A. Section 31 20 00 Earthwork.

B. Section 31 23 33 Trenching and Backfilling.

1.03 REFERENCES

A. American Water Works Association Standards (AWWA).

B. City of Camarillo Water Division Standard Specifications, July 2005 and latest amendments.

C. Standard Specifications for Public Works Construction (Green Book), latest edition.

1.04 SUBMITTALS

A. Submit the following:

1. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories.

2. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

3. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Turn over to the project manager one set of drawings with all deviations from the plans shown in neat, clean and readable red ink.

4. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

5. Disinfection Report:
    a. Type and form of disinfectant used.
    b. Date and time of disinfectant injection start and time of completion.

c. Test locations.
d. Name of person collecting samples.
e. Initial and 24-hour disinfectant residuals in treated water in ppm for each outlet tested.
f. Date and time of flushing start and completion.
g. Disinfectant residual after flushing in ppm for each outlet tested.

6. Bacteriological Report:
   a. Date issued, project name, and testing laboratory name, address, and telephone number.
   b. Time and date of water sample collection.
   c. Name of person collecting samples.
   d. Test locations.
   e. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
   f. Coliform bacteria test results for each outlet tested.
   g. Certify water conforms, or fails to conform, to bacterial standards of AWWA C651 Section 7.1 Standard Conditions

7. Water Quality Certificate: Certify water conforms to quality standards of the County's Representative, suitable for human consumption.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of piping mains, valves, connections, fire hydrant, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with City of Camarillo Standards, AWWA, Standard Specifications for Public Works Construction California, Fire Code Chapters 5 & 33 and NFPA 24.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.07 QUALIFICATIONS

A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this section with minimum three years' experience.

B. Testing Firm: Company specializing in testing potable water systems, certified by State of California.

C. Submit bacteriologist's signature and authority associated with testing.

1.08 DELIVERY AND STORAGE

A. Deliver and store valves in shipping containers with labeling in place.

PART 2 – PRODUCTS

2.01 GENERAL

A. All water lines shall be designed for a minimum working pressure of 250 psi. All fittings appurtenant piping materials shall be designed for a minimum working pressure of 250 psi unless otherwise indicated.

2.02 PIPE

A. Joints: Mechanical joints shall be used for the waterline construction unless otherwise shown on plans and standard details. Gaskets for mechanical joints shall be rubber conforming to ANSI A21.11 and AWWA C111.

B. Fittings: Fittings shall be ductile iron rated for 250 psi working pressure. Mechanical joint fittings shall conform to ANSI A21.10 or AWWA C110 (short short body style, not approved). Lining for fittings shall be Plastic Engineering P.E.I. 100 epoxy to a minimum thickness of 10 mils. Fittings shall be wrapped with 6 mil. polyethylene sheet. Grease all underground nuts and bolts before wrapped with the polyethylene sheet.

C. Polyvinyl Chloride (PVC) potable water pipe: Pipe material shall be (Polyvinyl chloride (PVC) pressured pipe shall be manufactured in accordance with AWWA Standard Specification C-900).

2.03 GATE VALVES

A. Conform to AWWA C-509-01.

B. Gate valves shall be iron body, NRS valves with O-ring seals, and shall open when the stem is rotated counterclockwise. The valves shall be designed for a minimum working pressure of 250 psig, have a bronze stem, and have a cast iron wedge with styrene butadiene rubber permanently bonded to the wedge. The valves shall have full port openings for unobstructed flow, be designed for underground service, and be in full compliance with the latest revision of AWWA C509. The valve linings and coatings shall be in accordance with AWWA C210-84. Linings and coatings shall be factory applied. Valves shall be furnished with 2-inch square operating nut. Valve shall be wrapped with 6 mil. polyethylene sheet. Grease all underground nuts and bolts before wrapping with the polyethylene sheet.

2.04 FIRE HYDRANT

A. Conform to City of Camarillo Water Division Standard Specifications.

2.05 WATER METER

A. Not Applicable.

2.06 BACKFLOW PREVENTER

A. Not Applicable.

2.07 ACCESSORIES

A. Concrete for Thrust Blocks: Contractor shall construct concrete thrust block per City of Camarillo Standards.

B. Thrust blocks shall be constructed to bear against undisturbed earth and shall not bear against adjacent pipe, fittings, or valves. Where concrete must be poured around adjacent pipe, a block out or a short pipe length shall be used such that a flexible joint exists within 12 inches of each side of thrust block, unless indicated otherwise on the plans. Concrete shall not be allowed to set in contact with pipe surfaces or to enter or come in contact with any joint.

C. Valve Appurtenances: The Contractor shall furnish and install all valve appurtenances. Provide two galvanized T-handled operating wrenches, 4 feet total length or as required to easily access valve from grade.

D. Valve box body shall be per City of Camarillo Standards. The cover shall be marked "water." The cover of each valve box shall be provided with a 2" diameter bronze disc and the Contractor shall stamp the valve number on the disc per the Architect's instructions. The disc shall be mounted to the valve box cover or higher using stainless steel screws. The extension piece shall be 8" diameter, Class 235 P.V.C. water line conforming to the requirements of AWWA C-900.

E. Appropriate warning detector tape shall be placed over all utilities.

1. Underground detectable warning tape shall be placed over all non-metallic underground utilities.

2. 12-gauge copper continuous location wire shall be placed on all water mains.

F. Corrosion-Protection Encasement for Piping

1. Encasement for Underground Metal Piping and Fittings: AWWA C105, Polyethylene film, 10 mil minimum thickness, tube or sheet. Plastic wrap shall be clear or black. Purple wrap shall not be used.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Maintenance records in accordance with NFPA 25.

B. Verify the existing water main sizes, class of pipes, and locations as indicated.

C. Verify piping system has been cleaned, inspected, and pressure tested.

D. Perform scheduling and disinfecting activity with start-up, water pressure testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

3.02 PREPARATION

A. Remove scale and dirt, on inside and outside, before assembly.

B. Prepare pipe connections to equipment with flanges or unions.

3.03 BEDDING

A. Excavate pipe trench in accordance with Specification Section 31 23 33 for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth, compact to a minimum of 95 percent relative compaction.

C. The compaction of the backfill material along the sides and one foot above the pipe shall be done with hand tampers to protect the pipe. Jetting is not permitted to obtain required compaction.

D. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION - PIPE

A. Route pipe in straight line.

B. Install pipe to allow for expansion and contraction without stressing pipe or joints.

C. Install access fittings to permit disinfection of water system.

D. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main in accordance with County of Ventura Standard Plans & Specifications.

E. Protect metal restrained joint components against corrosion by applying a bituminous coating by coating with non-oxide corrosion resistant greased 10 mil plastic wrap.

F. Establish elevations of buried piping to ensure cover conforming to City of Camarillo Standards. The minimum cover from the finish grade to the top of pipe is 36 inches for potable and fire waterline, any shallower cover to clear with the existing utility crossings shall be reviewed and approved by the City's Representative.

G. Install 12-gauge copper continuous location wire over top of pipe.

H. Backfill trench in accordance with Specification Section 31 23 33.

I. Maintain separation of water main from sewer piping in accordance with the State Department of Health Services, Criteria for the Separation of Water Mains and Sanitary Sewers (Section 64630, Title 22 California Administrative Code), and State Regional Water Quality Control Board.

J. All pipe laid in trench which is to be left for further extension (i.e., end of work day) shall have its open end covered to protect from possible rodent intrusion.

3.05 INSTALLATION - VALVES

A. Set valves on solid bearing.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

C. Install brass valve 1 ½" diameter tags and imprint valve number per City of Camarillo.

3.06 SERVICE CONNECTIONS

A. Not Applicable.

3.07 PRESSURE TEST OF WATER PIPING SYSTEM

A. Water piping system shall be pressure tested for 2 hours at 200 psi, with no allowable drop in water pressure.

B. All leakage tests shall be completed and approved prior to placing of permanent resurfacing.

C. Pressure test shall be witnessed by City of Camarillo's inspector.

3.08 DISINFECTION AND BACTERIA TESTING OF WATER PIPING SYSTEM

A. Water piping system shall be disinfected and flushed per AWWA Section C651.

B. Upon completion of retention period required for disinfection, flush pipeline until chlorine concentration in water leaving pipeline is no higher than that generally prevailing in existing system or is acceptable for domestic use.

C. Legally dispose of chlorinated water. When chlorinated discharge may cause damage to environment, apply neutralizing chemical to chlorinated water to neutralize chlorine residual remaining in water.

D. After final flushing and before pipeline is connected to existing system, or placed in service, employ an approved independent testing laboratory to sample, test and certify water quality suitable for human consumption.

3.09 TEST RECORDS

A. Records shall be in accordance with NFPA 13 & 24. Records shall be made of each piping system installation during the test. These records shall include:

1. Date of test.

2. Description and identification of piping tested.

3. Test fluid.

4. Test pressure.

5. Remarks to include such items as:

   a. Leaks (type, location).
   b. Repairs made on leaks.

6. Certification by Contractor and signed acknowledgment by the City of Camarillo's Representative.

3.10 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by City of Camarillo's Representative.

B. Perform pressure test on potable water distribution system in accordance with County of Ventura Standard Plans & Specifications except that there is no allowable leakage for the duration of the test.

1. Slowly bring piping to test pressure and allow system to stabilize prior to conducting leakage test. Do not open or close valves at differential pressures above rated pressure.

2. Examine exposed piping, fittings, valves, hydrants, and joints carefully during hydrostatic pressure test. Repair or replace damage or defective pipe, fittings, valves, hydrants, or joints discovered, following pressure test.

END OF SECTION

This Page Left Blank Intentionally

SECTION 33 40 00
STORMWATER UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Storm drainage piping, fittings, accessories, and bedding.

B. Catch basins.

C. Manholes.

D. Inlet and outlet structures.

1.02 RELATED SECTIONS

A. Section 31 20 00 Earthwork.

B. Section 31 23 33 Trenching and Backfilling.

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), latest edition.

B. ASTM Standards.

1.04 SUBMITTALS

A. Submit the following in accordance with provisions in Division 1:

1. Product Data: Provide data indicating pipe, pipe accessories and catch basin grates.

2. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

3. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

4. Layout diagram for storm drain components per plan.

1.05 PROJECT RECORD DOCUMENTS

A. Submit record drawings. Accurately record locations of pipe runs, connections, catch basins, structures, manholes and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated on drawings.

B. Complete pothole work per plans and notify the County of any discrepancy prior to commencing construction.

1.07 COORDINATION

A. Coordinate the work with connection to existing storm drain mains, and trenching.

PART 2 – PRODUCTS

2.01 PIPE MATERIALS

A. Reinforced Concrete Pipe (RCP), per SSPWC Section 207-2.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required. Fittings shall be watertight.

B. Solvent cap cement: pipe with solvent cement joints per SSPWC Section 207-17.3.3.

2.03 CATCH BASINS AND MANHOLES

A. Precast catch basins shall include traffic rated grate, as manufactured by Brooks or approved equal.

B. Cast-in-Place catch basins per Utility Improvement Plan.

2.04 METAL

A. All exposed metal parts are to be galvanized in accordance with SSPWC, Section 210-3.

2.05 CONCRETE

A. All concrete shall be Class 560-C-3250, per SSPWC Section 201.

2.06 BEDDING MATERIALS

A. Refer to Specification Section 31 23 33 Trenching and Backfilling for Bedding Material.

2.07 FILTER FABRIC

A. Filter fabric shall be non-woven geosynthetic per SSPWC Section 213.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that trench cut is ready to receive Work and excavations, dimensions, and elevations are as indicated on Drawings.

3.02 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with compacted bedding material.

B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.03 BEDDING

A. Excavate pipe trench in accordance with Specification Section 31 23 33. Hand trim excavation for accurate placement of pipe to elevations indicated on Drawings.

B. Place bedding material in trench bottom, level materials in continuous layer. Bedding shall be 1/2 of pipe diameter or 4" minimum thickness whichever is greater, compact to a minimum of 95 percent of maximum dry density.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION - PIPE

A. Install reinforced concrete pipe in accordance with manufacturer's instructions and per SSPWC Section 306-7.3.

B. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

C. Install sand backfill along sides and over top of pipe. Provide sand backfill over top of pipe to minimum compacted thickness of 12 inches, compacted to a minimum of 95 percent of maximum dry density.

D. Refer to Specification Section 31 23 33 for Trenching Requirements. Do not displace or damage pipe when compacting.

E. The compaction of the backfill material along the sides and one foot above the pipe shall be done with hand tampers or equal to protect the pipe.

3.05 INSTALLATION - CATCH BASINS, MANHOLES

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base with provisions for storm drainage pipe end sections.

C. Level top surface of concrete base to receive shaft sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated on drawings.

E. Compact top 12" of native materials below the bottom of catch basins and manholes to minimum 95 percent of maximum dry density.

3.06 FIELD QUALITY CONTROL

A. Inspection and testing shall be performed by the County’s representative.

B. Request inspection prior to and immediately after placing backfill cover over pipe.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to the County.

3.07 PROTECTION

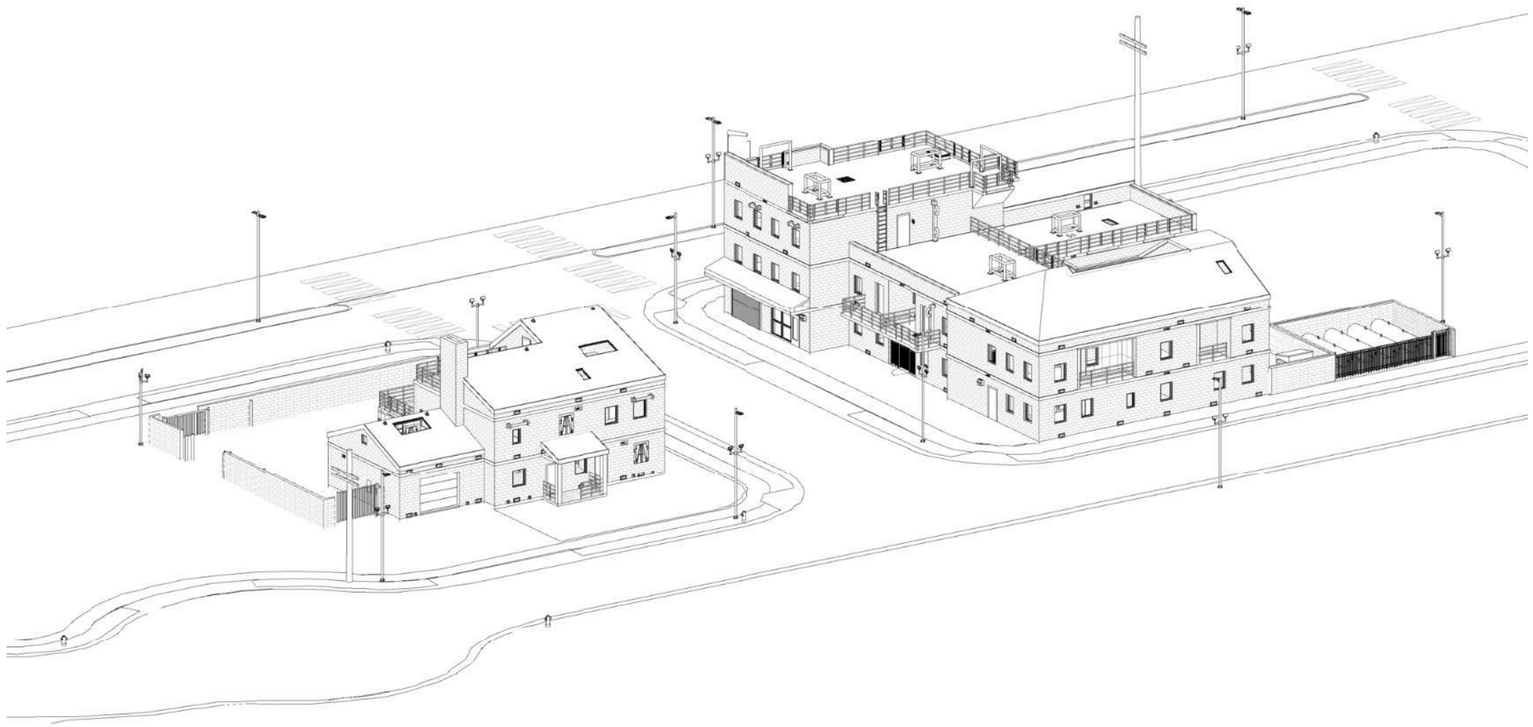
A. Protect pipe and backfill cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

VENTURA COUNTY FIRE TRAINING CENTER SITE IMPROVEMENTS AND STRUCTURAL TRAINING PROPS

PROJECT NO: P6T18021
SPEC. NO: CP23-02

BID SET **08/21/2023**



VICINITY MAP
NOT TO SCALE

PROJECT TEAM

ARCHITECT
MARY MCGRATH | ARCHITECTS
610 16th Street, Suite 219
Oakland, CA 94612
Phone: 510-208-9400

PUBLIC SAFETY CONSULTANT
MANNS WOODWARD STUDIOS
10839-D Philadephia Road
White Marsh, Maryland 21162
Phone: 410-344-1460
Fax: 443-403-2460

STRUCTURAL ENGINEER
CORNERSTONE STRUCTURAL ENGINEERING GROUP
986 W. Aluvial Ave. Suite 201
Fresno, CA 93711
Phone: 559-320-3200

MEP ENGINEER
3C I ENGINEERING
1500 Palm Street
Sas Luis Obispo, CA 93401
Phone: 805-540-3363

CIVIL ENGINEER
ENCOMPASS CONSULTANT GROUP
25115 Avenue Stanford, Suite A-320
Santa Clarita, CA 91355
Phone: 661-429-2963

ELECTRICAL
THOMA ENGINEERING
3562 Empleo Street, Suite C
Sas Luis Obispo, CA 93401
Phone: 805-543-3850

REFERENCE DOCUMENT

Geotechnical Investigation
Ventura County Fire Department
Training Center and Headquarters
Camarillo, California

Prepared by:
Cotton, Shires and Associates, Inc.
July 2020

Supplemental Report
Response to County of Ventura Plan Check Review Comments
Design Level Geotechnical Investigation
Ventura County Fire Department
Training Center and Headquarters
Camarillo, California

Prepared by:
Cotton, Shires and Associates, Inc.
July 14, 2020

DRAWING INDEX

DRAWING INDEX

PERMITS

Description	Permit No.	Approval Date
Bldg. 1 - Construct 5,431 sq.ft. 2-story Shell structure for training of Ventura County Fire Personnel	C21-000777	-
Bldg. 2 - Construct 12,346 sq.ft. 2 to 3 story Shell structure for training of Ventura County Fire Department Personnel	C21-000778	-
Grading and site improvements for Ventura County Fire Training Center	GP21-0120	-
State SWPP/NPDES WDID	4 56C399940	-
City of Camarillo Water Division	TBD	-

PROJECT DESCRIPTION

The project includes expansion of the training campus to the east of the existing drill grounds and the construction of two new structural props.

Site improvements include the development of a road system which provides a variety of training conditions from a "boulevard" to a residential cul-de-sac. Street and site lighting are provided for both realistic training conditions and lighting for clean-up or evening training. Site props include simulated power poles, stop signs, crosswalks, and typical sidewalks with accessible transitions to simulate real street conditions. Gates and site walls surround the structural props. A propane farm is provided to serve the gas training props located at the drill grounds and one of the structural training props.

In addition to the implementation of roadways there are utility and infrastructure upgrades including:
1. New stormwater system with subterranean storm water management system with infiltration and detention basins.
2. An extension to the existing fire water system with new hydrants and a fire sprinkler training prop.
3. New site electrical systems including new service panel, SCE transformer and sub panels at training prop buildings. Undergrounding of overhead service lines to existing buildings with an associated panel upgrade at each building.
4. Replacement of an existing fiber communication line from Fire Station 50 to the existing training facilities.

There are two structural props and expanded drill grounds in the center of the roadway. They include a Class A Burn Building and a Class B Multi-purpose Building:

CLASS A BURN BUILDING
The 5,431 GSF Class A burn building is a masonry structure with concrete floors, ceilings and roof designed to allow a variety of training scenarios.
Construction Type: Construction shall consist of conventional masonry and concrete with special mixtures designed to mitigate water infiltration and resist heat. Floors are sloped at a minimum of ¼" per foot towards exterior doors and scuppers in order to drain suppression water. Floor within burn rooms and burn areas are depressed to receive fire brick. All ceilings, walls, and structural elements in burn locations, shall receive a thermal protection system such as refractory tile or insulating calcium silicate boards. Each burn room is equipped with a sacrificial thermal couple temperature monitoring system. The purpose of this system is to determine the fuel loading requirements to achieve optimal and safe temperatures during burn operations. Doors and Window Shutters are constructed with galvanized steel and be detailed to accommodate thermal expansion while mitigating exterior light infiltration. All anchor points are designed from galvanized or stainless steel and accommodate a working load of at least 1,000 pounds and an ultimate load of 10,000 pounds.
The Class A burn building includes the following:
Multiple "Class A" Burn Rooms; Adjustable Mazes; Residential Garage Fire; Multi-Pitch Roof Ventilation; Ability to Control Light & Smoke; Forced Entry.

CLASS B MULTI-PURPOSE TRAINING BUILDING
The Multi-Purpose building will consist of 12,346 GSF multi-story building conventionally constructed, capable of simulating and representing commercial, apartment, condo, and storefront buildings that exhibit features common to these archetypes. This building will also be fit with a series of Class "B" burn props affording instructors the ability to cycle through evolutions in a faster manner and teach fire suppression techniques in a more controlled environment. "Class B" burn buildings trade the realistic fire behavior and flexibility of burn locations found within a "Class A" building for faster set-up times, increased cleanliness, reduced pollution, and extended structural life spans.

Construction Type: Construction shall consist of conventional masonry and concrete with special mixtures designed to mitigate water infiltration and resist heat. Floors are sloped at a minimum of ¼" per foot towards exterior doors and scuppers in order to drain suppression water. Select rooms are equipped with gas and electrical connections to support "Class B" burn props. Walls and ceilings immediately adjacent to "Class B" props shall receive refractory tile or insulated calcium silicate board for heat resistance. Floors require no special protection. The building is equipped with a centralized sound system and synthetic smoke distribution system designed to best simulate a variety of challenging scenarios.

The Class B Building includes the following: Center Hallways, Garden Style Apartment Circulation; Interior & Exterior Stairways; Small & Large Search & Rescue Rooms; Balconies; Forced Entry; Flat Roof; Pitched Roof; Simulated Power Poles; Curb Lines; Sprinkler System Props/Lab; Fire Alarm Simulation and Parapet Walls. The building is equipped with an integrated sound system capable of producing controlled sound effects in various spaces.

An "Owner provided Prop Vendor" will be providing and installing all the fire prop systems. The General Contractor for the site and building improvements is to closely coordinate with the Prop Vendor by providing all pathways and wiring including back boxes. Integration of the "Owner provided Prop Vendor" systems is a requirement of the project.

LOT APN NO. : 230-0-303-285
OVERALL SITE AREA : 965,000 S.F.
WORK AREA : 231,000 S.F.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO.	DESCRIPTION	DATE
	BID SET	08-21-2023

FIRE DEPT. BUSINESS SERVICES MANAGER
DIRECTOR OF PUBLIC WORKS
Acting
DEPUTY DIRECTOR OF PUBLIC WORKS
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY SL	CHECKED BY MM
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO SHEET 1 OF 123
SHEET TITLE
COVER SHEET, PROJECT DESCRIPTION AND DRAWING INDEX
SHEET NO
G000

COMMON ABBREVIATIONS

SYMBOLS
& - AND
@ - AT
℄ - DIAMETER
⏍ - SQUARE

A
AB - ANCHOR BOLT
ABV - ABOVE
ACOUST - ACOUSTICAL
ACT - ACOUSTIC CEILING TILE
AFF - ABOVE FINISH FLOOR
AHJ - AUTHORITY HAVING JURISDICTION
ALUM - ALUMINUM
AP - ACCESS PANEL
APPROX - APPROXIMATELY
ARCH - ARCHITECTURAL

B
B.C. - BOTTOM CHORD
BLK - BLOCK
BLDG - BUILDING
BLKG - BLOCKING
BLKHD - BULKHEAD
BM - BEAM
B.O. - BOTTOM OF
BOD - BASIS OF DESIGN
BOT - BOTTOM
B.R. - BULLET RESISTANT
BRNG - BEARING

C
℄ - CENTER LINE
CFCI - CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI - CONTRACTOR FURNISHED, OWNER INSTALLED
CFLS - COUNTER FLASHING
CJ - CONTROL JOINT
CL - CLOSET
CLG - CEILING
CMU - CONCRETE MASONRY UNIT
CND - CONDUIT
COL - COLUMN
COOR - COORDINATE
CONC - CONCRETE
CONSTR - CONSTRUCTION
CONT - CONTINUOUS
C.T. / CT - CERAMIC TILE
CPT - CARPET / CARPET TILE
CTSK - COUNTERSUNK
CU - CUBIC
CU FT - CUBIC FOOT
CU YD - CUBIC YARD

D
D - DEEP / DEPTH
DEG - DEGREE
DIA - DIAMETER
DIM - DIMENSION
DL - DEAD LOAD
DMPR - DAMPER
DN - DOWN
DR - DOOR
DS - DOWNSPOUT
DTL - DETAIL
DWG - DRAWING

E
EA - EACH
EIFS - EXTERIOR INSULATON AND FINISHING SYSTEM
ELEC - ELECTRICAL
EL - ELEVATION
ELEV - ELEVATION
ELMA - ELEVATOR MACHINE ROOM
EJ - EXPANSION JOINT
ENT - ENTRANCE, ENTRY
EQ - EQUAL
EST - ESTIMATE
EW - EACH WAY
EXST - EXISTING
EXT - EXTERIOR
EXP - EXPOSED
EXP JT - EXPANSION JOINT

F
F - FAHRENHEIT
FD - FLOOR DRAIN
F.E. - FIRE EXTINGUISHER
F.E.C. - FIRE EXTINGUISHER CABINET
FF - FINISHED FLOOR
FF EL - FINISHED FLOOR ELEVATION
FG - FINISHED GRADE
FHY - FIRE HYDRANT
FDC - FIRE DEPARTMENT CONNECTION
FIN - FINISH
FIN FL - FINISHED FLOOR
FL - FLOOR
FLEX - FLEXIBLE
FLUOR - FLUORESCENT
FND - FOUNDATION
FPM - FEET PER MINUTE
FRT TREATED - FIRE RETARDANT
FSK - FOIL SCRIM KRAFT
FT - FEET, FOOT
FT - FLOOR TRANSITION
FTG - FOOTING

G
GA - GAGE, GAUGE
GALV - GALVANIZED
GL - GLASS, GLAZING
GND - GROUND
GRTG - GRATING
GWB - GYPSUM WALL BOARD

H
H - HIGH / HEIGHT
HC - HANDICAPPED
HD - HEAD
HM - HOLLOW METAL
HORIZ - HORIZONTAL
HR - HOUR
HT - HEIGHT

I
ID - INSIDE DIAMETER
IN - INCH
INFO - INFORMATION
INSUL - INSULATION

J
JB - JUNCTION BOX
JM - JAMB
JST - JOIST
JT - JOINT

L
LG - LONG
LL - LIVE LOAD
LSC - LIFE SAFETY CODE
LTG - LIGHTING

M
MACH - MACHINE
MAT'L - MATERIAL
MAX - MAXIMUM
MBT - MARBLE THRESHOLD
MECH - MECH
MEP - MECHANICAL / ELECTRICAL / PLUMBING
MFGR - MANUFACTURER
MH - MANHOLE
MIN - MINIMUM
MO - MASONRY OPENING
MSNRY - MASONRY
M.T. - METAL THRESHOLD
MTL - METAL
MTD - MOUNTED

N
NA - NOT APPLICABLE
NIC - NOT IN CONTRACT
NO - NUMBER
NTS - NOT TO SCALE

O
O/C - ON CENTER
OD - OUTSIDE DIAMETER
OFIC - OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI - OWNER FURNISHED, OWNER INSTALLED
OPNG - OPENING
OPP - OPPOSITE
OPP HND - OPPOSITE HAND
OV - OVER
OVHD - OVERHEAD

P
P-LAM - PLASTIC LAMINATE
PLY - PLYWOOD
PLYWD - PLYWOOD
PNLBD - PANELBOARD
PNT/ PT - PAINT
POLYISO - POLYISOCYANURATE
PRESS - PRESSURE
PROJ - PROJECT
PROP - PROPERTY
PSF - POUNDS PER SQUARE FOOT
PSI - POUNDS PER SQUARE INCH
PT - PRESSURE TREATED
PTD - PAINTED
PVC - POLYVINYL CHLORIDE
PVMT - PAVEMENT
PWT - PREFABRICATED WOOD TRUSS

R
R - RADIUS
RCP - REFLECTED CEILING PLAN
REINF - REINFORCING, REINFORCED
RES - RESINOUS
REQD - REQUIRED
REV - REVISION
RGD - RIGID
RM - ROOM
RO - ROUGH OPENING
RST - REINFORCING STEEL

S
SB - SMART BOARD
SCD - SEE CIVIL DRAWINGS
SCHED - SCHEDULE
SD - STORM DRAIN
SED - SEE ELECTRICAL DRAWINGS
SECT - SECTION
SF - SQUARE FOOT
SI - SQUARE INCH
SIM - SIMILAR
SLP - SLOPE
SMD - SEE MECHANICAL DRAWINGS
SPCL - SPECIAL
SPEC - SPECIFICATIONS
SPLY - SUPPLY
SQ - SQUARE
SS - STAINLESS STEEL
SSD - SEE STRUCTURAL DRAWINGS
ST - STREET
STD - STANDARD
STL - STEEL
STOR - STORAGE
STRUCT - STRUCTURAL
SURF - SURFACE
SUSP - SUSPENDED
SW - SWITCH
SYS - SYSTEM

T
T & B - TOP AND BOTTOM
T.B. - TACK BOARD
T.B.D. - TO BE DETERMINED
TEMP - TEMPERATURE
THK - THICK
THRES - THRESHOLD
T&G - TONGUE & GROOVE
TO - TOP OF
TOB - TOP OF BEARING POINT
TOC - TOP OF CONCRETE
TOF - TOP OF FOOTING
TOM - TOP OF MASONRY
TOP - TOP OF PAVEMENT, PARAPET
TOS - TOP OF STEEL
TRTD - TREATED
T.S. - TRANSITION STRIP
TYP - TYPICAL

U
UGND - UNDERGROUND
UL - UNDERWRITERS LAB
UNO - UNLESS NOTED OTHERWISE
UON - UNLESS OTHERWISE NOTED

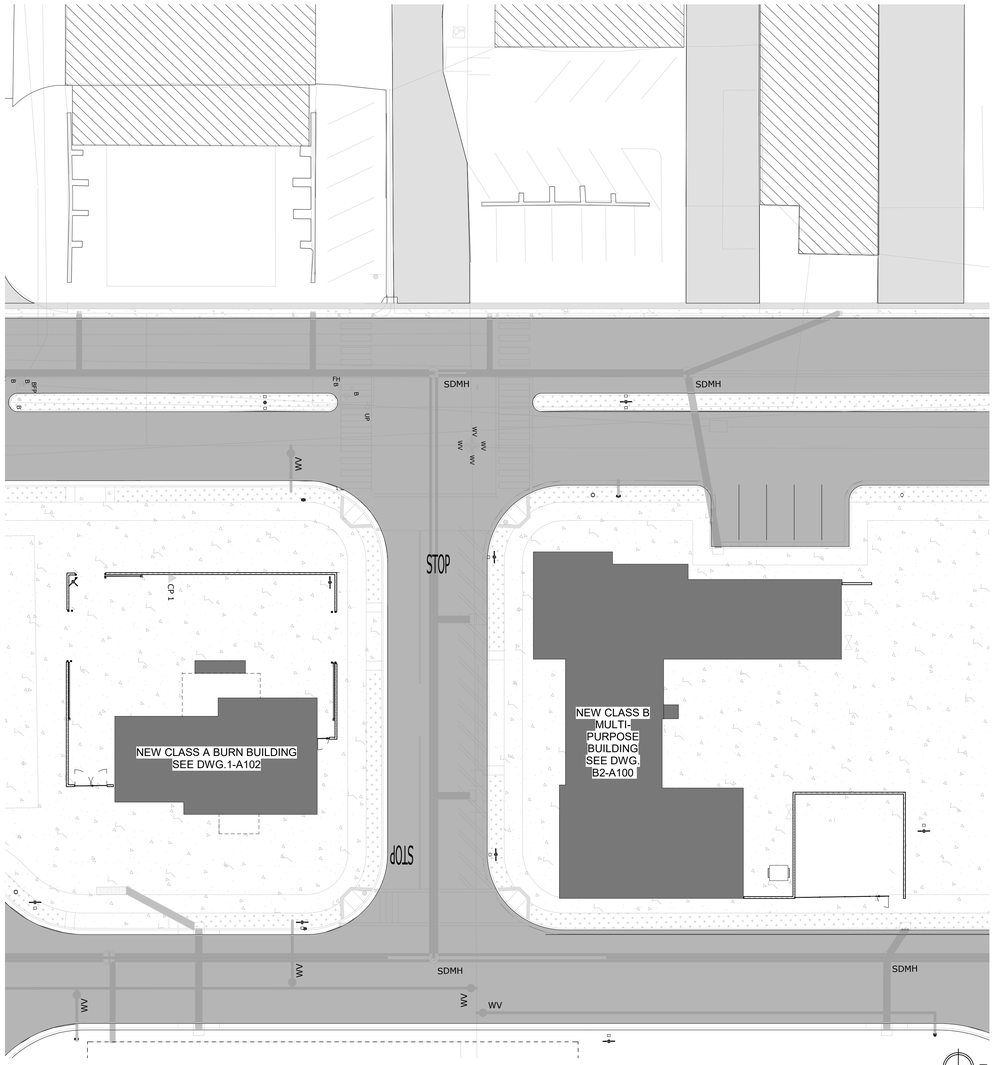
V
VB - VAPOR BARRIER
VCT - VINYL COMPOSITION TILE
VERT - VERTICAL
VIF - VERIFY IN FIELD
VOL - VOLUME

W
W - WIDE / WIDTH
W/ - WITH
W/0 - WITHOUT
W.B. - WHITEBOARD
WD - WOOD
WR - WATER RESISTANT
WTRPRF - WATERPROOF
WWF - WELDED WIRE FABRIC
WWM - WELDED WIRE MESH

THIS LIST OF ABBREVIATIONS IS A GUIDE TO ABBREVIATIONS WHICH MAY BE USED IN THESE DOCUMENTS. ABBREVIATIONS NOT LISTED MAY ALSO BE USED.

SYMBOLS & TAGS

TAG	DESCRIPTION
REFERENCE 0'-0"	LEVEL ELEVATION TAG
N	NORTH ARROW TAG
1 A101	SECTION TAG
1 A101	CALLOUT / DETAIL
0'-0"	SPOT ELEVATION TAG
1 DRAWING TITLE DRAWING SCALE	DETAIL / DRAWING TITLE TAG
99	WALL TYPE
1 A101	ELEVATION TAG



1 **SITE CODE PLAN - ACCESSIBLE PATH OF TRAVEL ONLY**
1" = 20'-0"

CODE SUMMARY

BUILDING CODE SUMMARY

The Class 'A' Burn Building and the Class 'B' Multi-Purpose Building props are unoccupied training structures that are used for fire fighter fire and rescue training purposes only.

Both buildings have been designed to meet the requirements of NFPA 1402: Standard on Facilities for Fire Training and Associated Props and of NFPA 1403; Standard on Live Fire Training Evolutions.

The Class 'A' Burn Building is a training prop used to create live fire training scenarios using combustible burn materials such as pallets, bails of straw and/or excelsior (compressed fibrous wood shavings).

The Class 'B' Multi-Purpose is a training prop used to create gas-fueled fire training scenarios using a liquid propane burn prop.

NFPA 1402 Chapter 6 Training Structures and Props - General outlines the requirements for the design, construction and maintenance of training props. Both the Class 'A' Burn Building and the Class 'B' Multi-Purpose Building shall comply with this section.

NFPA 1402 Chapter 7 Live Fire Training Structures outlines the requirements for the design, construction and maintenance of live fire training props. The Class 'A' Burn Building shall comply with this section.

NFPA 1402 Chapter 8 Gas-Fueled Live Fire Training Systems - Interior outlines the requirements for the design, construction and maintenance of gas-fired fire training systems. The Class 'B' Multi-Purpose Building shall comply with this section.

CODE ANALYSIS SUMMARY

PROJECT	MULTI-PURPOSE BUILDING	AREA	CLASS 'A' BURN BUILDING	AREA
VENTURA COUNTY FIRE TRAINING CENTER	FIRST FLOOR TOTAL:	6,358 S.F.	FIRST FLOOR TOTAL:	2,300 S.F.
	INTERIOR :	6,006 S.F.	INTERIOR :	2,218 S.F.
	COLD BREEZEWAY :	352 S.F.	COVERED PORCH :	82 S.F.
	SECOND FLOOR TOTAL:	6,546 S.F.	SECOND FLOOR TOTAL:	2,572 S.F.
	INTERIOR :	4,795 S.F.	INTERIOR :	2,023 S.F.
	BALCONIES AND DECK:	1,751 S.F.	BALCONIES AND DECK:	548 S.F.
	THIRD FLOOR TOTAL:	4,985 S.F.	THIRD FLOOR (ROOF) TOTAL:	1,524 S.F.
	INTERIOR :	1,601 S.F.	INTERIOR :	1,190 S.F.
	BALCONIES AND DECK:	3,294 S.F.	BALCONIES AND DECK:	334 S.F.
	FOURTH FLOOR (ROOF) TOTAL:	1,665 S.F.		
	INTERIOR :			
	NON-ENCLOSED :	1,665 S.F.	SQUARE FOOTAGE TOTAL:	6,396 S.F.
			INTERIOR :	5,431 S.F.
	SQUARE FOOTAGE TOTAL:	19,464 S.F.	NON-ENCLOSED :	964 S.F.
	INTERIOR :	12,402 S.F.		
	NON-ENCLOSED :	7,062 S.F.		

CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

THE INTENT OF THE CONSTRUCTION DRAWINGS AND THE CONSTRUCTION SPECIFICATIONS/PROJECT MANUAL IS TO INCLUDE ALL ITEMS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK BY THE CONTRACTOR. THE CONSTRUCTION DRAWINGS AND THE CONSTRUCTION SPECIFICATIONS/PROJECT MANUAL ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL; PERFORMANCE BY THE CONTRACTOR SHALL BE REQUIRED ONLY TO THE EXTENT CONSISTENT WITH THE CONSTRUCTION DRAWINGS AND THE CONSTRUCTION SPECIFICATIONS/PROJECT MANUAL AND REASONABLY INFERABLE FROM THEM AS BEING NECESSARY TO PRODUCE THE INDICATED/INTENDED RESULTS.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO.	DESCRIPTION	DATE
	BID SET	08-21-2023

FIRE DEPT. BUSINESS SERVICES MANAGER
DIRECTOR OF PUBLIC WORKS
DEPUTY DIRECTOR OF PUBLIC WORKS
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY Author | CHECKED BY Checker
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 2 OF 123
SHEET TITLE SYMBOLS, ABBREVIATIONS AND SITE CODE SHEET
SHEET NO G001

BID SET

County of Ventura
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

COUNTY OF VENTURA PUBLIC WORKS AGENCY

GENERAL GRADING NOTES:

1. GRADING ACTIVITIES SHALL BE IN ACCORDANCE WITH THE VENTURA COUNTY BUILDING CODE APPENDIX J GRADING, LATEST EDITION.
2. THE GRADING PERMIT AND WORK SHOWN IN THESE PLANS IS VALID ONLY TO THE EXTENT OF THE VENTURA COUNTY BUILDING CODE APPENDIX J - GRADING. PERMITS OR PERMISSIONS THAT MAY BE REQUIRED BY OTHER REGULATORY AGENCIES OR INTERESTED PARTIES ARE THE RESPONSIBILITY OF THE PERMITTEE.
3. A PRE-CONSTRUCTION MEETING SHALL BE HELD AT THE SITE PRIOR TO ANY GRADING ACTIVITY OR LAND DISTURBANCES WITH THE FOLLOWING PARTIES PRESENT: OWNER, GRADING CONTRACTOR, DESIGN CIVIL ENGINEER, SOILS ENGINEER, COUNTY GRADING INSPECTOR(S), AND OTHER JURISDICTIONAL AGENCIES WHEN REQUIRED.
4. HEAVY EQUIPMENT NOISE & TRUCK DELIVERIES SHALL NOT BEGIN UNTIL AFTER 7:00 A.M AND SHALL END BY 7:00 P.M. SAMEDAY. NO WORK BEYOND 4:30 PM UNLESS APPROVED BY PWA.
5. NO GRADING ACTIVITY SHALL OCCUR IN ANY WETLAND, BLUE-LINE STREAM, RED-LINE CHANNEL, OR FLOODPLAIN WITHOUT THE PROPER PERMITS & PERMISSION FROM THE PWA & RESOURCE MANAGEMENT AGENCY (RMA), OR OTHER AUTHORITIES HAVING JURISDICTION.
6. RETAINING WALLS AND BRIDGES REQUIRE A SEPARATE PERMIT FROM BUILDING AND SAFETY.
7. ALL RECOMMENDATIONS MADE BY THE SOILS ENGINEER (AND ENGINEERING GEOLOGIST, WHERE EMPLOYED) CONTAINED IN THE REPORTS AS APPROVED BY THE COUNTY SHALL BE A PART OF THIS GRADING PLAN.
8. ALL DISTURBED SURFACES SUBJECT TO EROSION SHALL BE PROTECTED IN ACCORDANCE WITH THE VENTURA COUNTYWIDE MUNICIPAL STORMWATER NPDES PERMIT. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED FULLY FUNCTIONAL.
9. ALL UNSUITABLE MATERIAL, I.E. LUMBER, LOGS, BRUSH, COMPRESSIBLE SOILS, OR ANY ORGANIC MATERIALS OR RUBBISH, SHALL BE REMOVED AS REQUIRED BY THE SOILS ENGINEER AND ENGINEERING GEOLOGIST FROM ALL AREAS TO RECEIVE FILL.
10. ALL AREAS TO RECEIVE FILL SHALL BE INSPECTED AND APPROVED BY THE SOILS ENGINEER (AND ENGINEERING GEOLOGIST WHERE EMPLOYED) AFTER REMOVAL OF UNSUITABLE MATERIAL AND EXCAVATION OF KEYWAYS AND BENCHES, AND PRIOR TO PLACEMENT OF SUBSURFACE DRAINAGE SYSTEMS OR FILL.
11. ALL MATERIALS DEEMED UNSUITABLE FOR PLACEMENT IN COMPACTED FILL SHALL BE REMOVED FROM THE SITE. MATERIALS SUCH AS CONSTRUCTION INERT DEBRIS, OR IMPORTED MATERIALS SHALL BE APPROVED BY THE SOILS ENGINEER AND COUNTY PRIOR TO USE IN COMPACTED FILL. WHERE EXCAVATED MATERIAL IS LARGER THAN TWELVE INCHES IN LARGEST DIMENSION, IT MUST BE BROKEN INTO SMALLER PARTICLE SIZES, BEFORE BEING USED AS FILL.
12. THE SOILS ENGINEER SHALL DIRECT THE REMOVAL OF ANY EXISTING UNDERGROUND STRUCTURES SUCH AS SEPTIC TANKS, IRRIGATION LINES, ETC.
13. ANY WATER WELL LOCATED WITHIN THE AREA OF DISTURBANCE SHALL BE REPORTED TO THE WATER RESOURCES DIVISION, WATERSHED PROTECTION DISTRICT PRIOR TO ITS MODIFICATION, ABANDONMENT, OR DESTRUCTION.
14. ANY OIL WELL LOCATED WITHIN THE AREA OF DISTURBANCE SHALL BE REPORTED TO THE STATE OF CALIFORNIA, DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES PRIOR TO ITS MODIFICATION, ABANDONMENT, OR DESTRUCTION.
15. ALL TEMPORARY EXCAVATED SLOPES OR BENCHES AND KEYS FOR BUTTRESS OR STABILIZATION FILLS MUST BE EXAMINED BY THE ENGINEERING GEOLOGIST AND SOILS ENGINEER TO INSURE THAT ALL POTENTIAL PLANES OF FAILURE HAVE BEEN EXPOSED IN THE EXCAVATION AND WILL BE ADEQUATELY SUPPORTED BY THE PROPOSED BUTTRESS. FIELD CERTIFICATION MUST BE SUBMITTED BY THE CONSULTANTS PRIOR TO PLACING FILL.
16. THE SOILS ENGINEER AND ENGINEERING GEOLOGIST (WHERE EMPLOYED) SHALL PROVIDE RECOMMENDATIONS AND APPROVE CORRECTIVE WORK TO INSURE SLOPE STABILITY WHERE UNSTABLE MATERIAL IS EXPOSED AT THE TOP OF CUTS AND EXCAVATIONS.
17. THE USE OF CORRUGATED STEEL PIPE IS NOT ALLOWED IN ANY COUNTY RIGHTS OF WAY. THE USE OF CORRUGATED STEEL PIPE ON PRIVATE PROPERTY SHOULD BE MINIMIZED. HOWEVER, IF USED SHOULD BE COATED TO MINIMIZE CORROSION AND TO EXTEND SERVICE TIME.
18. INTERIM SOILS AND GEOLOGIC REPORTS SHALL BE SUBMITTED TO THE COUNTY AS REQUIRED BY THE BUILDING OFFICIAL.
19. ROUGH GRADE SOILS ENGINEERING AND (IF APPLICABLE) ENGINEERING GEOLOGY REPORTS SUMMARIZING ALL EARTHWORK PERFORMED AND CONCLUDING THAT THE WORK HAS BEEN COMPLETED ACCORDING TO THE APPROVED REPORTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL OF THE ROUGH GRADING BY THE BUILDING OFFICIAL PRIOR TO CALLING FOR BUILDING AND SAFETY INSPECTION.
20. FINAL SOILS ENGINEERING AND (IF APPLICABLE) ENGINEERING GEOLOGY REPORTS SUMMARIZING ALL EARTHWORK PERFORMED SINCE ROUGH GRADING AND CONCLUDING THAT THE WORK HAS BEEN COMPLETED ACCORDING TO THE APPROVED REPORTS SHALL BE SUBMITTED WITH THE AS-BUILT PLANS (RECORD DRAWING) TO THE COUNTY PRIOR TO FINAL INSPECTION BY THE BUILDING OFFICIAL.
21. ALL GRADING WORK SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION REPORT LISTED HEREON.

EARTHWORK QUANTITIES

CUT: 1,120 CU. YDS. EXPORT: 0 CU. YDS. DISPOSAL SITE ____

FILL: 1,120 CU. YDS IMPORT: 0 CU. YDS SOURCE ____

THIS PROJECT INCLUDES POST CONSTRUCTION BMP'S X YES ____ NO

THE TOTAL ESTIMATED DISTURBED AREA OF GRADING AND CONSTRUCTION IS 4.2 ACRES. PROJECTS THAT ARE 1.0 ACRE OR GREATER IN DISTURBED AREA WILL REQUIRE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND NOTICE OF INTENT (NOI) AS APPROVED BY THE STATE REGIONAL WATER QUALITY CONTROL BOARD AS DESCRIBED ABOVE.

AVERAGE NATURAL SLOPE IN THE AREA OF GRADING 0.5 %

THE TOTAL AMOUNT OF IMPERVIOUS AREA TO BE CONSTRUCTED AS PART OF THIS PROJECT IS 139,000 SQ. FT.

TOTAL PROPOSED LANDSCAPED AREA ____ SQ. FT. TOTAL NATIVE PLANTING LANDSCAPE AREA 0 % (PERCENT OF TOTAL LANDSCAPE AREA)

ADVISORY: THE PLANTING OF NATIVE VEGETATION IS RECOMMENDED ON ALL GRADED SLOPES. PLEASE VISIT THE VENTURA COUNTY PUBLIC WORKS WEBSITE AT HTTP://VCPUBLICWORKS.ORG/DIS FOR A MEMORANDUM BY THE VENTURA COUNTY WATERSHED PROTECTION DISTRICT THAT PROVIDES INFORMATION FOR SEEDING GRADED AREAS.

LAND DEVELOPMENT & INSPECTION SERVICES MUST BE NOTIFIED TEN (10) WORKING DAYS PRIOR TO ANY EXPORT/IMPORT TO/FROM THE PROJECT SITE.

PERMITS

COUNTY ENCROACHMENT PERMIT NO.
____ ____ DATE ____

VENTURA COUNTY WATERSHED PROTECTION DISTRICT WATERCOURSE PERMIT NO.
____ DATE ____

STATE ENCROACHMENT PERMIT NO.
____ ____ DATE ____

FLOODPLAIN DEVELOPMENT PERMIT
____ DATE ____

ENGINEERED GRADING INSPECTION CERTIFICATES

JOB ADDRESS OR LOT AND TRACT NO: APN: 230-0-030-285

ROUGH GRADING CERTIFICATION

(A) BY SOILS ENGINEER

I CERTIFY THAT THE ROUGH GRADING WORK INCORPORATES ALL RECOMMENDATIONS CONTAINED IN THE REPORT OR REPORTS FOR WHICH I AM RESPONSIBLE AND ALL RECOMMENDATIONS THAT I HAVE MADE BASED ON FIELD INSPECTION OF THE WORK AND TESTING DURING GRADING. I FURTHER CERTIFY THAT WHERE THE REPORTS OF AN ENGINEERING GEOLOGIST, RELATIVE TO THIS SITE, HAVE RECOMMENDED THE INSTALLATION OF BUTTRESS FILLS OR OTHER SIMILAR STABILIZATION MEASURES, SUCH EARTHWORK CONSTRUCTION HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED DESIGN.

LOT NOS: ____

SEE REPORTS DATED: ____

FOR TEST DATA, RECOMMENDED ALLOWABLE SOIL BEARING VALUES & OTHER SPECIAL RECOMMENDATIONS.

SOILS ENGINEER ____ (SIGNATURE) REG. NO ____ DATE ____

SEAL

(B) BY ENGINEERING GEOLOGIST

I CERTIFY THAT THE ROUGH GRADING WORK INCORPORATES ALL OF THE RECOMMENDATIONS CONTAINED IN THE REPORT OR REPORTS FOR WHICH I AM RESPONSIBLE AND ALL RECOMMENDATIONS THAT I HAVE MADE BASED ON FIELD INSPECTION OF THE WORK DURING GRADING.

LOT NOS: ____

ENGINEERING GEOLOGIST ____ (SIGNATURE) CERT. NO. ____ DATE ____

SEAL

(C) BY CIVIL ENGINEER

I CERTIFY TO THE SATISFACTORY COMPLETION OF ROUGH GRADING INCLUDING GRADING TO APPROXIMATE FINAL ELEVATIONS; PROPERTY LINES LOCATED AND STAKED, CUT AND FILL SLOPES CORRECTLY GRADED AND LOCATED IN ACCORDANCE WITH THE APPROVED DESIGN; SWALES AND TERRACES GRADED READY FOR PAVING; BERMS INSTALLED; AND REQUIRED DRAINAGE SLOPES PROVIDED ON THE BUILDING PADS. I FURTHER CERTIFY THAT WHERE REPORT OR REPORTS OF AN ENGINEERING GEOLOGIST AND/OR SOILS ENGINEER HAVE BEEN PREPARED RELATIVE TO THIS SITE, THE RECOMMENDATIONS CONTAINED IN SUCH REPORTS HAVE BEEN INCORPORATED IN THE DESIGN.

LOT NOS: ____

CIVIL ENGINEER ____ (SIGNATURE) REG. NO. ____ DATE ____

SEAL

FINAL GRADING CERTIFICATION

BY CIVIL ENGINEER

I CERTIFY TO THE SATISFACTORY COMPLETION OF GRADING IN ACCORDANCE WITH THE APPROVED PLANS. ALL DRAINAGE DEVICES REQUIRED BY THE GRADING PERMIT, GRADING PLANS AND GRADING ORDINANCE HAVE BEEN INSTALLED. EROSION TREATMENT OF SLOPES AND IRRIGATION SYSTEMS (WHERE REQUIRED) HAVE BEEN INSTALLED. ADEQUATE PROVISIONS HAVE BEEN MADE FOR DRAINAGE OF SURFACE WATERS FROM EACH BUILDING SITE AS OF THIS DATE.

LOT NOS: ____

CIVIL ENGINEER ____ (SIGNATURE) REG. NO. ____ DATE ____

SEAL

GRADING CONTRACTOR CERTIFICATION

BY GRADING CONTRACTOR

I CERTIFY THAT THE GRADING WAS DONE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, THE GRADING ORDINANCE, AND THE RECOMMENDATIONS OF THE CIVIL ENGINEER, SOILS ENGINEER AND ENGINEERING GEOLOGIST. IT IS UNDERSTOOD THAT THIS CERTIFICATION INCLUDES ONLY THOSE ASPECTS OF THE WORK THAT CAN BE DETERMINED BY ME, AS A COMPETENT GRADING CONTRACTOR, WITHOUT SPECIAL EQUIPMENT OR PROFESSIONAL SKILLS.

GRADING CONTRACTOR ____ (SIGNATURE) LICENSE NO. ____ DATE ____

INSTRUCTIONS: THE OWNER MAY SIGN IF THE GRADING WAS NOT DONE BY A LICENSED GRADING CONTRACTOR.

GENERAL STORMWATER NOTES:

THE LEGALLY RESPONSIBLE PERSON OF ANY PROPERTY IN WHICH GRADING ACTIVITIES OR OTHER SOIL DISTURBANCE ACTIVITIES ARE PERFORMED, INCLUDING PERMITTEE, SHALL COMPLY WITH THE LATEST AND APPLICABLE NPDES REQUIREMENTS. EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE INSTALLED BEFORE GRADING BEGINS. DURING GRADING ACTIVITIES, ALL BMP'S SHALL BE UPDATED AS NECESSARY TO PREVENT EROSION AND ANY ILLICIT DISCHARGE OF CONSTRUCTION RELATED POLLUTANTS. EROSION CONTROL BMP'S ARE LISTED ON COUNTY FORMS SW-1, SW-2, OR SW-HR.

1. **GENERAL CONSTRUCTION PERMIT.** PROJECTS THAT CAUSE SOIL DISTURBANCE OF ONE ACRE OR MORE, OR THAT ARE PART OF A COMMON PLAN OF DEVELOPMENT OR SALE THAT CAUSE SOIL DISTURBANCE OF ONE ACRE OR MORE ARE REQUIRED TO OBTAIN COVERAGE UNDER NPDES CALIFORNIA STATEWIDE GENERAL CONSTRUCTION PERMIT NO. CAS000002, AS A NUMBER ASSIGNED TO THE PROJECT BY THE STATE WATER RESOURCES CONTROL BOARD, COMPLETED AND SIGNED NOTICE OF INTENT (NOI) AND PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE SUBMITTED AND IMPLEMENTED DURING ALL GRADING ACTIVITIES.
2. **COUNTY'S STORM DRAIN SYSTEM.** ILLICIT DISCHARGES INTO THE COUNTY'S STORM DRAIN SYSTEM AS A RESULT OF GRADING, CLEARING, CONSTRUCTION, DEMOLITION, AND OTHER SOIL DISTURBANCE ACTIVITIES ARE PROHIBITED.
3. **INSPECTIONS.** EROSION CONTROL AND PERMANENT STORMWATER TREATMENT BMP'S ARE SUBJECT TO INSPECTIONS AS REQUIRED BY THE PERMIT ORDER NO. R4-2010-0108, AS AMENDED FROM TIME TO TIME.
4. **PUMPED WATER DISCHARGES.** DISCHARGES OF PUMPED GROUND WATER REQUIRE A DISCHARGE PERMIT FROM THE STATE OF CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD (RWQCB).
5. **SANITARY FACILITIES.** PORTABLE SANITARY FACILITIES SHALL BE LOCATED ON RELATIVELY LEVEL GROUND AWAY FROM TRAFFIC AREAS, DRAINAGE COURSES, AND STORM DRAIN INLETS.
6. **EMERGENCY WORK.** A STANDBY CREW FOR EMERGENCY WORK SHALL BE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON (OCTOBER 1ST TO APRIL 15TH). NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF EMERGENCY DEVICES WHEN RAIN IS IMMINENT.

PROJECT BMP'S

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE LATEST EDITION OF THE CASQA CONSTRUCTION BMP ONLINE HANDBOOK MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY THE PROJECT ENGINEER, QUALIFIED SWPP DEVELOPER, PRACTITIONER OR THE BUILDING OFFICIAL). CERTAIN BMP'S ARE REQUIRED AS PART OF THE STORMWATER FORMS SW-1, SW-2 AND SW-HR. THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT THE BMP'S LISTED HEREON, ARE IMPLEMENTED AND MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION. THE INSPECTOR OR BUILDING OFFICIAL MAY PERFORM UNANNOUNCED SITE INSPECTIONS TO ENSURE THAT THE PROJECT MAINTAINS THE BMP'S AS LISTED BELOW.

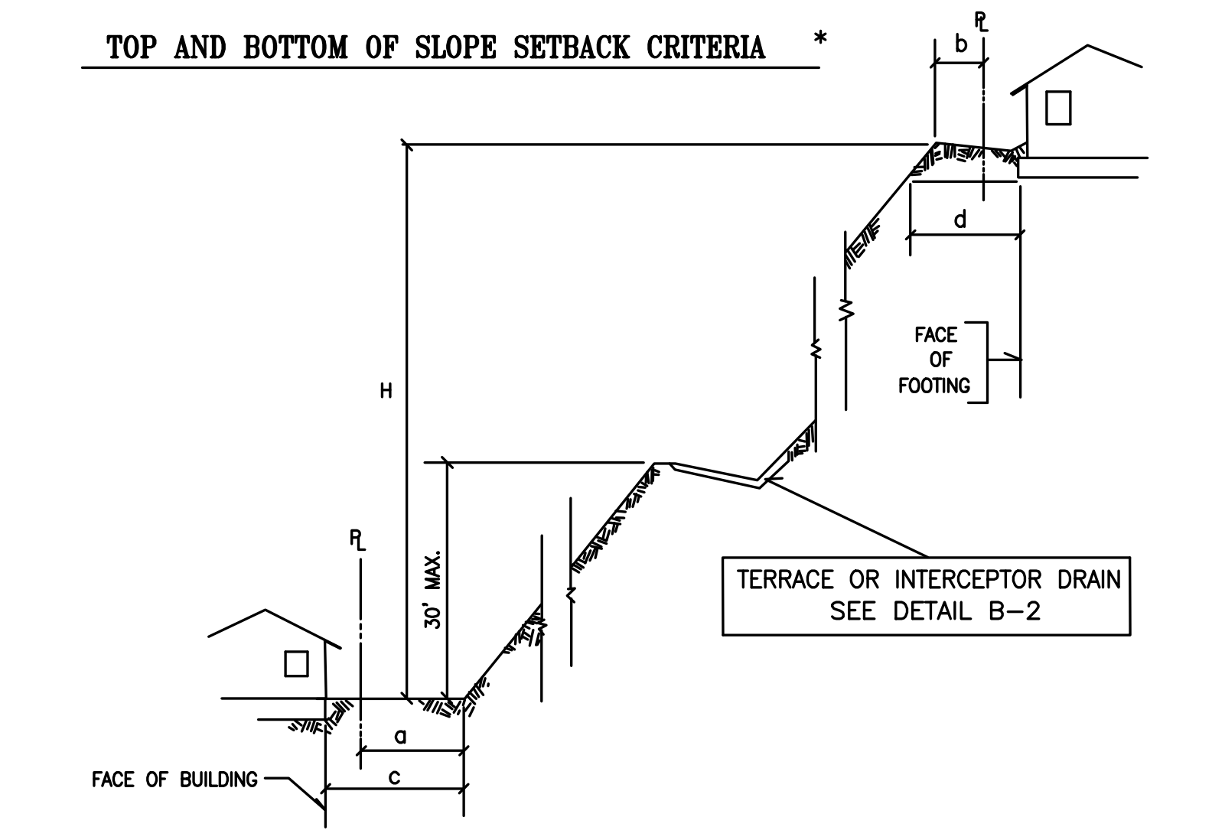
BMP DESCRIPTIONS AND DETAILS CAN BE OBTAINED FROM THE CALIFORNIA STORMWATER HANDBOOKS AT WWW.CASQA.ORG

COMPLETE CHECKLIST BELOW FOR APPLICABLE PROJECT BMP'S

	EROSION CONTROL
X	EC1 – SCHEDULING
X	EC2 – PRESERVATION EXISTING VEGETATION
	EC3 – HYDRAULIC MULCH
	EC4 – HYDROSEEDING
	EC5 – SOIL BINDERS
	EC6 – STRAW MULCH
	EC7 – GEOTEXTILES & MATS
	EC8 – WOOD MULCHING
	EC9 – EARTH DIKES & DRAINAGE SWALES
	EC10 – VELOCITY DISSIPATION DEV.
	EC11 – SLOPE DRAINS
	EC12 – STREAMBANK STABILIZATION
	EC14 – COMPOST BLANKETS
	EC15 – SOIL PREPARATION\ROUGHENING
	EC16 – NON-VEGETATED STABILIZATION
	TEMPORARY SEDIMENT CONTROL
X	SE1 – SILT FENCE
	SE2 – SEDIMENT BASIN
	SE3 – SEDIMENT TRAP
	SE4 – CHECK DAM
	SE5 – FIBER ROLLS
X	SE6 – GRAVEL BAG BERM
X	SE7 – STREET SWEEPING AND VACUUMING
X	SE8 – SANDBAG BARRIER
	SE9 – STRAW BALE BARRIER
X	SE10 – STORM DRAIN INLET PROTECTION
	SE11 – ACTIVE TREATMENT SYSTEMS
	SE12 – TEMPORARY SILT DIKE
	SE13 – COMPOST SOCKS & BERMS
	SE14 – BIOFILTER BAGS
	WIND EROSION CONTROL
X	WE1 – WIND EROSION CONTROL
	EQUIPMENT TRACKING
X	TC1 – STABILIZED CONSTRUCTION ENTRANCE EXIT
	TC2 – STABILIZED CONSTRUCTION ROADWAY
	TC3 – ENTRANCE/OUTLET TIRE WASH

	NON-STORMWATER MANAGEMENT
X	NS1 – WATER CONSERVATION PRACTICES
	NS2 – DEWATERING OPERATIONS
	NS3 – PAVING & GRINDING OPERATIONS
	NS4 – TEMPORARY STREAM CROSSING
	NS5 – CLEAR WATER DIVERSION
	NS6 – ILLICIT CONNECTION/DISCHARGE
	NS7 – POTABLE WATER/IRRIGATION
X	NS8 – VEHICLE & EQUIPMENT CLEANING
X	NS9 – VEHICLE & EQUIPMENT FUELING
X	NS10 – VEHICLE & EQUIPMENT MAINTENANCE
	NS11 – PILE DRIVING OPERATIONS
	NS12 – CONCRETE CURING
	NS13 – CONCRETE FINISHING
	NS14 – MATERIAL & EQUIPMENT USE
	NS15 – DEMOLITION ADJACENT TO WATER
	NS16 – TEMPORARY BATCH PLANTS
	WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL
X	WM1 – MATERIAL DELIVERY & STORAGE
	WM2 – MATERIAL USE
X	WM3 – STOCKPILE MANAGEMENT
X	WM4 – SPILL PREVENTION & CONTROL
X	WM5 – SOLID WASTE MANAGEMENT
	WM6 – HAZARDOUS WASTE MANAGEMENT
	WM7 – CONTAMINATION SOIL MANAGEMENT
X	WM8 – CONCRETE WASTE MANAGEMENT
X	WM9 – SANITARY/SEPTIC WASTE MANAGEMENT
	WM10 – LIQUID WASTE MANAGEMENT
	ADDITIONAL BMP'S SELECTED

TOP AND BOTTOM OF SLOPE SETBACK CRITERIA *



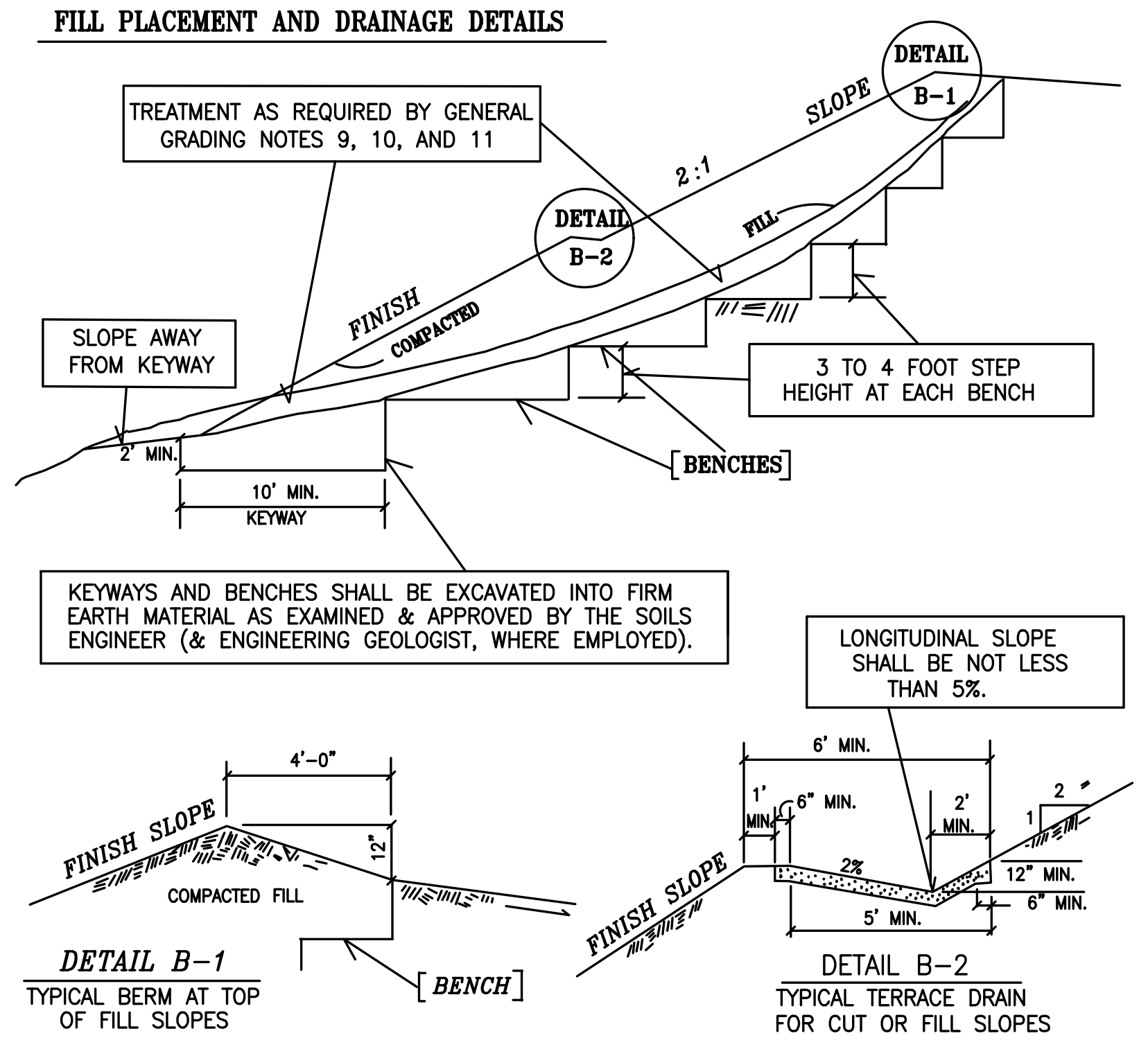
H(IN FEET)	a	b	c	d
ANY HEIGHT	2' MIN (H/2)' 20' MAX	2' MIN (H/5)' 10' MAX	(H/2)' 15' MAX	(H/3)' 40'MAX

* FROM C B C SEC. 1808.7 AND APPENDIX J – SEC. J109
PL (SITE BOUNDARY)

DETAIL A

NTS

FILL PLACEMENT AND DRAINAGE DETAILS



1) TERRACE DRAINS, INTERCEPTOR DRAINS & DOWNDRAINS SHALL BE CONSTRUCTED OF MINIMUM 3" REINFORCED CONCRETE REINFORCED WITH 6 x 6 x 10 x 10 W.W.M. & SHALL BE OF EITHER SEMI-CIRCULAR OR TRIANGULAR CROSS SECTION.

2) FOR INTERCEPTOR DRAIN AT TOP OF CUT SLOPES AND DOWN DRAINS, MINIMUM WIDTH OF 3 FEET.

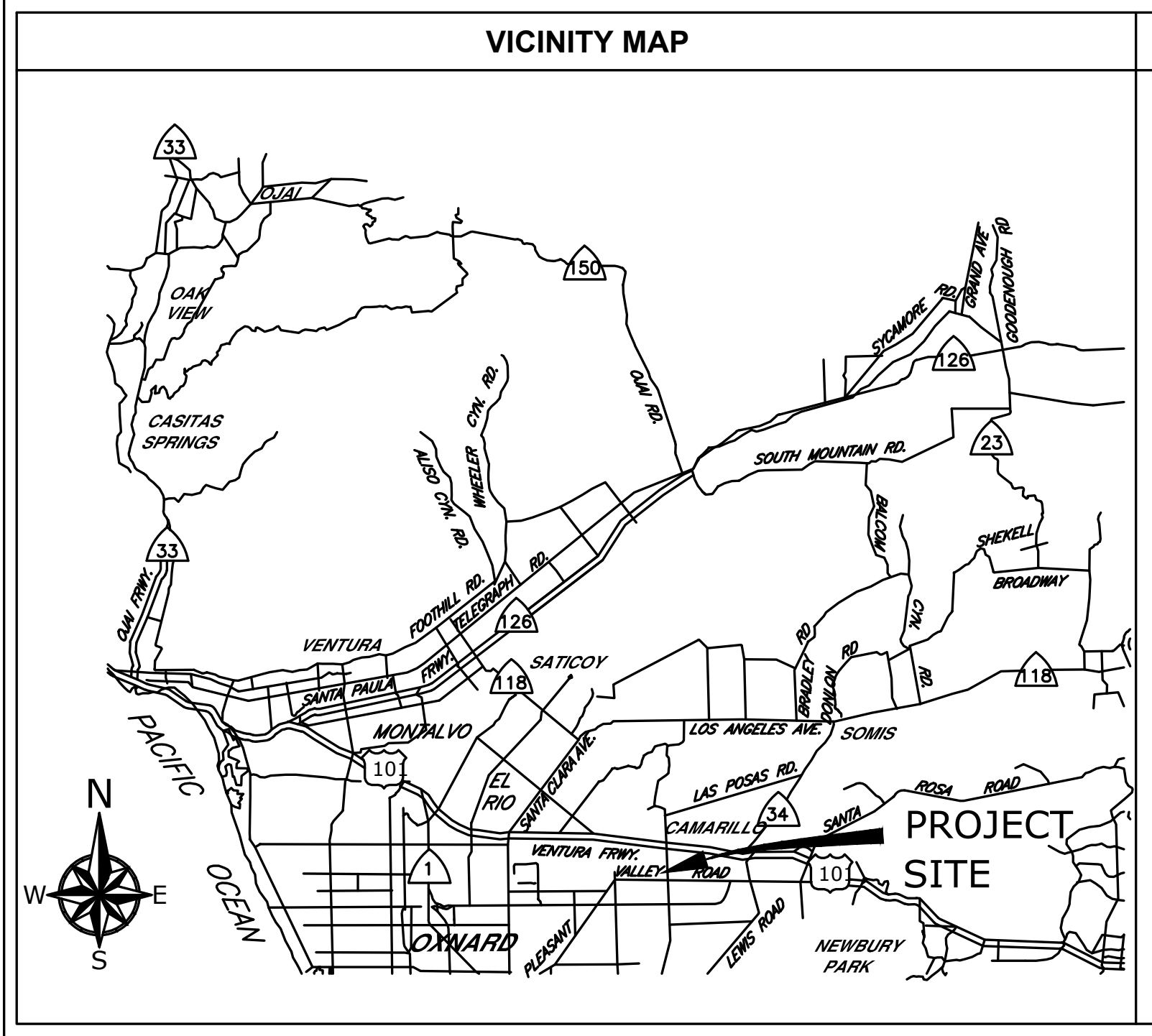
DETAIL B

NTS

GEOTECHNICAL GRADING NOTES:

1. ALL GRADING OPERATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY COTTON, SHIRES, AND ASSOCIATES INC. DATED JULY 14, 2020.
2. PRIOR TO COMMENCING GRADING OPERATIONS, SOIL MATERIALS CONTAINING DEBRIS, ORGANICS, PAVEMENT, OR OTHER UNSUITABLE MATERIALS SHOULD BE STRIPPED FROM BUILDING AREAS.
3. SOILS WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO REMOVE THE EXISTING ARTIFICIAL FILL AND ORGANIC SOIL WHICH IS ROUGHLY 3' DEEP AND LEAST 2' BELOW THE FOOTING BOTTOM, WHICHEVER IS DEEPER. THE EXCAVATION SHALL EXTEND TO A LATERAL DISTANCE OF AT LEAST 5' BEYOND THE EDGE OF THE PERIMETER FOOTINGS. DEPRESSIONS OF DISTURBED AREAS LEFT FROM THE REMOVAL OF SUCH MATERIAL SHALL BE REPLACED WITH COMPACTED FILL. AFTER OVER EXCAVATION THE EXPOSED SURFACE SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES, AERATED OR MOISTURE CONDITIONED TO AT OR ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% MINIMUM RELATIVE COMPACTION PER ASTM D1557. FOLLOWING COMPACTION OF THE OVER EXCAVATION BOTTOMS, BUILDING AREA MAY BE BACKFILLED WITH ENGINEERED, COMPACTED ONSITE EXCAVATED MATERIALS OR IMPORTED GRANULAR SELECT FILL MATERIALS. BACKFILL SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY UNIT WEIGHT PER ASTM D1557. BACKFILL SHALL BE PLACED AT A MOISTURE CONTENT WITHIN 3% ABOVE OPTIMUM MOISTURE CONTENT. SOFT OR YIELDING MATERIALS SHALL BE REMOVED AND REPLACED WITH PROPERLY COMPACTED FILL MATERIAL. ROCK, GRAVEL AND OTHER OVERSIZED MATERIAL GREATER THAN 4 INCHES IN DIAMETER SHALL BE REMOVED FROM THE FILL MATERIAL. ROCK LESS THANK 4 INCHES IN DIAMETER SHALL NOT BE NESTED AND VOIDS CAUSED BY INCLUSION OF ROCK IN THE FILL SHALL BE FILLED WITH SAND OR OTHER APPROVED MATERIAL. COMPACTED FILL MATERIALS SHALL BE SPREAD IN LIFTS NO THICKER THAN 8 INCHES PRIOR TO BEING COMPACTED.
4. CONCRETE PAVEMENT AREAS SHALL BE OVER EXCAVATED 3 FEET BELOW EXISTING GRADE OR 1 FOOT BELOW THE PROPOSED PAVEMENT SUBGRADE ELEVATION, WHICHEVER IS DEEPER. THE PRESENCE OF LOOSE, SOFT, WET OR OTHERWISE INCOMPETENT MATERIALS MAY REQUIRE DEEPENING OF THE OVER EXCAVATION. THE EXPOSED SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 8 INCHES, AERATED OR MOISTURE CONDITIONED TO WITHIN 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% MINIMUM RELATIVE COMPACTION PER ASTM D1557.
5. SPECIAL STABILIZATION MEASURES MAY BE REQUIRED TO PROVIDE A FIRM AND UNYIELDING SUBGRADE SURFACE IF SOFT OR PUMPING SUBGRADE IS ENCOUNTERED OR CREATED DURING GRADING ACTIVITIES. WHETHER THESE MEASURES ARE REQUIRED WILL DEPEND ON THE CONDITION OF THE SUBGRADE AT THE TIME OF CONSTRUCTION. AN ALTERNATIVE FOR EXCAVATION BOTTOM STABILIZATION IS THE TREATMENT OF ONSITE WET CLAY MATERIALS WITH CEMENT OR LIME TO REDUCE ELEVATED IN-PLACE MOISTURE CONTENT AND, FOR THE CEMENT OPTION TO EFFECT BRIDGING OVER YIELDING, UNSTABLE EXCAVATION BOTTOMS.
6. SOILS ENCOUNTERED WITHIN THE UPPER 5 FEET CONSIST PREDOMINANTLY OF LEAN CLAY AND CLAYEY SAND THAT MAY BE REUSED AS COMPACTED FILL. AS A RESULT OF THE HIGH MOISTURE CONTENT THE ONSITE CLAYEY MATERIALS, THE GEOTECHNICAL REPORT SUGGESTS THAT ONSITE EXCAVATED CLAY SOILS BE SPREAD THINLY TO AERATE PRIOR TO BEING PLACED AS FILL. OVER EXCAVATION BOTTOMS IN BUILDING AREAS SHOULD BE ANTICIPATED, AT A MINIMUM, TO REQUIRE EXTENDED AERATION PERIODS PRIOR TO COMPACTING.
7. GENERAL FILL SHALL BE FREE OF ORGANICS, OVERSIZED MATERIAL GREATER THAN 4 INCHES, TRASH, DEBRIS, AND OTHER DELETERIOUS MATERIAL. GENERAL FILL MATERIAL SHALL HAVE AN EXPANSION INDEX NO GREATER THAN 30, A PLASTICITY INDEX NO GREATER THAN 15, AND A PERCENTAGE FINER THAN THE NO. 200 SIEVE OF NO MORE THAN 35%.
8. SELECT FILL IF REQUIRED FOR THE PROJECT SHOULD BE WELL GRADED GRANULAR MATERIALS WITH THE FOLLOWING CHARACTERISTICS: NON EXPANSIVE (EI<20), FRICTION ANGLE > 30 DEGREES, MAXIMUM PARTICLE SIZE < 2 INCHES, PERCENTAGE PASSING NO. 4 SIEVE BETWEEN 60 AND 100, PERCENTAGE PASSING NO. 200 SIEVE BETWEEN 10 AND 30, PLASTICITY INDEX < 10.
9. SOILS WITHIN THE ASPHALT CONCRETE PAVEMENT AREAS SHALL BE OVER EXCAVATED TO A DEPTH OF 3' BELOW EXISTING GRADE OR AT LEAST 1 FOOT BELOW THE AGGREGATE BASE LAYER, WHICHEVER IS DEEPER. THE EXPOSED SURFACE SHALL BE SCARIFIED 12 INCHES MOISTURE CONDITIONED TO WITHIN 2 PERCENT ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM UNIT WEIGHT PER ASTM D1557. THE UPPER 1 FOOT OF PAVEMENT SUBGRADE SHALL CONSIST OF SELECT FILL COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY UNIT WEIGHT PER ASTM D1557.

VICINITY MAP



APPROVAL BY CONSULTANTS

THIS GRADING PLAN IS ACCEPTABLE IN REGARD TO SOILS (AND GEOLOGIC - IF APPLICABLE) CONDITIONS AND CONFORMS TO THE RECOMMENDATION OF THE SUPPORTIVE REPORT(S) DATED:

GEOTECHNICAL INVESTIGATION REPORTS: JULY 14 20 20

Matthew J Janousek
(GEOTECHNICAL ENGINEER SIGNATURE)
MATTHEW J. JANOUSEK (PRINT NAME) 3005 (RGE NO.)

COTTON, SHIRES, AND ASSOCIATES, INC.
699 HAMPSHIRE RD. #102,
THOUSAND OAKS, CA 91361
(805) 370-8710
MJANOUSEK@COTTONSHIRES.COM

____ (ENGINEERING GEOLOGIST SIGNATURE)
N/A (PRINT NAME) ____ CERT. NO.

I HEREBY STATE THAT THESE PLANS ARE IN COMPLIANCE WITH THE ADOPTED COUNTY STANDARDS, AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN THE PROFESSIONAL ENGINEERS ACT. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS BY THE COUNTY OF VENTURA IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF RECORD, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

(CIVIL ENGINEER SIGNATURE)
SAL CONTRERAS (PRINT NAME) 66,720 (RCE NO.)

ENCOMPASS CONSULTANT GROUP
333 N. LANTANA ST. #287,
CAMARILLO, CA 93010
(805) 322-4443
ADMIN@ECGCIVIL.COM

OWNER/APPLICANT

VENTURA COUNTY PUBLIC WORKS
800 S. VICTORIA AVE. #1670
VENTURA, CA 93009

BENCH MARK DATA

HORIZONTAL DATUM: NAD83, 2017.50 EPOCH CCS ZONE 5 (US FEET)
VERTICAL DATUM: NAVD 88, VEN. CO. PUB. 1992 (US FEET)
DATE OF SURVEY: NOVEMBER 2018
FIELD BOOK: VCFB 2018-052

TOPOGRAPHY DATA

ENCOMPASS CONSULTANT GROUP
333 N. LANTANA ST. #287,
CAMARILLO, CA 93010
805-322-4443
ADMIN@ECGCIVIL.COM

1. MAPPING
TOPOGRAPHIC MAPPING WAS COMPILED AT A SCALE OF 1"=20', WITH A 1 FOOT CONTOUR INTERVAL FROM DATA COLLECTED IN A FIELD SURVEY PERFORMED USING CONVENTIONAL EQUIPMENT AND PROCEDURES IN AUGUST 19, 2020, AT THE REQUEST OF MARY MCGRATH ARCHITECTS.

2. BASIS OF BEARINGS AND COORDINATES
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM NAD83, ZONE 5, EPOCH 2017.50 AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS) AND/OR CONTINUOUS OPERATING REFERENCE STATIONS (CORS) CSCI & VNCO BEING NORTH 56°18'25.86" WEST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC).

3. ELEVATIONS

THE VERTICAL DATUM OF THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), PER GPS TIES & GEOID MODELING (GEOID12B) TO CGPS STATION CSCI. ELLIPSOID HEIGHTS ARE CONSTRAINED PER CSRC. NO COUNTY BENCHMARKS WERE MEASURED IN THIS SURVEY.

4. UTILITIES
SURFACE UTILITY FEATURES SHOWN HEREON WERE LOCATED AS A PART OF THE FIELD SURVEY PERFORMED BY ECG BASED ON VISIBILITY ON THE DATE OF SURVEY. NO RESEARCH OR MAPPING OF SUBSURFACE UTILITIES HAS BEEN PERFORMED.

SHEET INDEX

SHEET NO.	SHEET TITLE
C-1	GRADING COVER SHEET
C-2	DEMOLITION PLAN
C-3	GRADING AND DRAINAGE INDEX
C-4	GRADING AND DRAINAGE PLAN
C-5	GRADING AND DRAINAGE PLAN
C-6	GRADING AND DRAINAGE PLAN
C-7	GRADING AND DRAINAGE PLAN
C-8	STORM DRAIN COVER SHEET
C-9	STORM DRAIN LINE "A" PLAN & PROFILE
C-10	STORM DRAIN LINE "A" & "B" PLAN & PROFILE
C-11	STORM DRAIN LINE "B" & "C" PLAN & PROFILE
C-12	STORM DRAIN LINE "D" PLAN & PROFILE
C-13	STORM DRAIN LATERAL PROFILES
C-14	WATER COVER SHEET
C-15	WATER PLAN AND PROFILE
C-16	WATER PLAN AND PROFILE
C-17	WATER PLAN AND PROFILE
C-18	CIVIL DETAILS AND SECTION
C-19	CIVIL DETAILS AND SECTION
C-20	CIVIL DETAILS AND SECTION
C-21	CIVIL DETAILS AND SECTION

811
Know what's below.
Call before you dig.

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

SALVADOR CONTRERAS, JR.
NO 66720
CIVIL

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

____ ____
LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY DL	**CHECKED BY** SC
CONSULTANT JOB NO 0248.01	**DATE** 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO **SHEET** 3 OF 123

SHEET TITLE
GRADING COVER SHEET

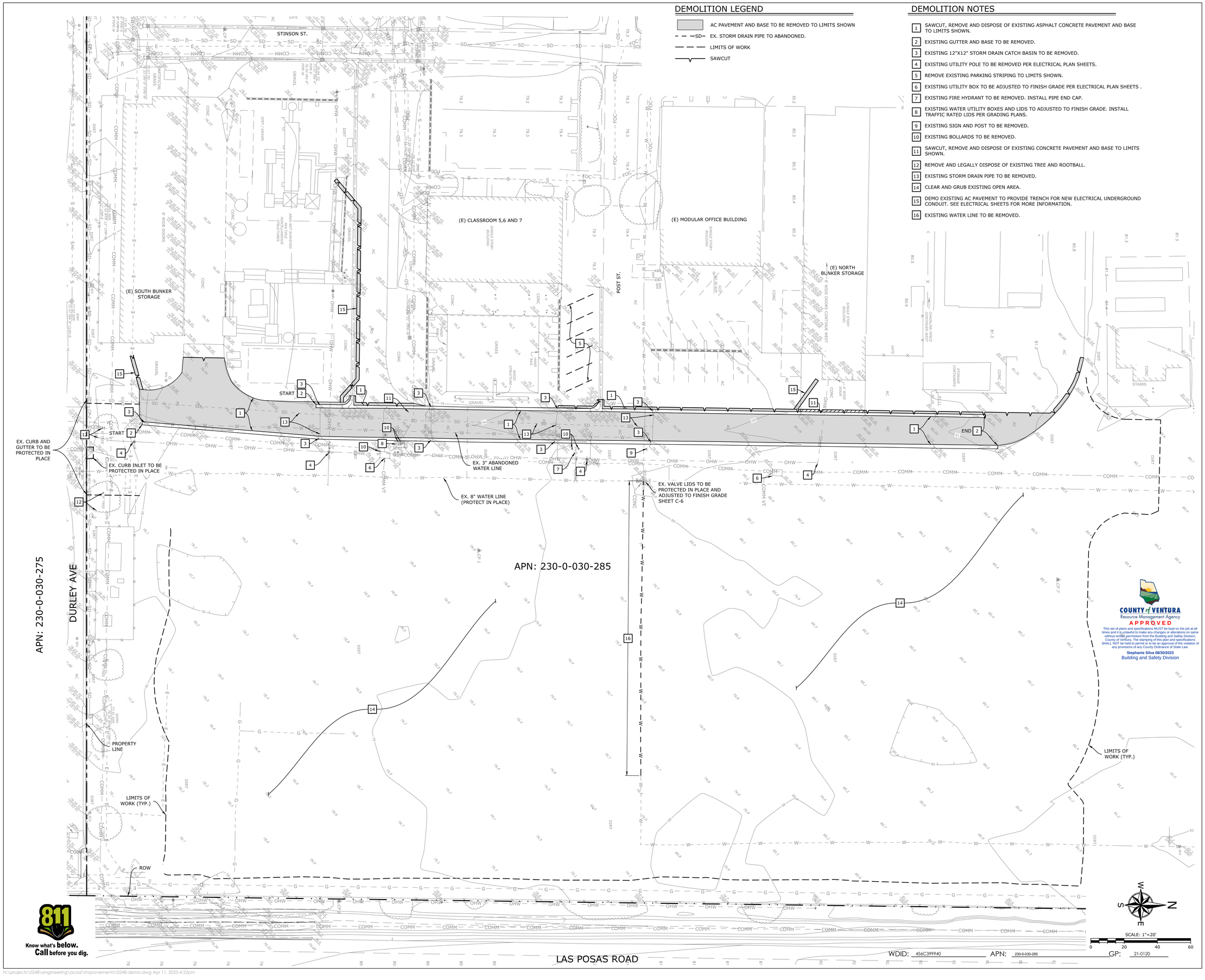
SHEET NO
C-1

DEMOLITION LEGEND

- AC PAVEMENT AND BASE TO BE REMOVED TO LIMITS SHOWN
- EX. STORM DRAIN PIPE TO ABANDONED.
- LIMITS OF WORK
- SAWCUT

DEMOLITION NOTES

1. SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT CONCRETE PAVEMENT AND BASE TO LIMITS SHOWN.
2. EXISTING GUTTER AND BASE TO BE REMOVED.
3. EXISTING 12"X12" STORM DRAIN CATCH BASIN TO BE REMOVED.
4. EXISTING UTILITY POLE TO BE REMOVED PER ELECTRICAL PLAN SHEETS.
5. REMOVE EXISTING PARKING STRIPING TO LIMITS SHOWN.
6. EXISTING UTILITY BOX TO BE ADJUSTED TO FINISH GRADE PER ELECTRICAL PLAN SHEETS .
7. EXISTING FIRE HYDRANT TO BE REMOVED. INSTALL PIPE END CAP.
8. EXISTING WATER UTILITY BOXES AND LIDS TO ADJUSTED TO FINISH GRADE. INSTALL TRAFFIC RATED LIDS PER GRADING PLANS.
9. EXISTING SIGN AND POST TO BE REMOVED.
10. EXISTING BOLLARDS TO BE REMOVED.
11. SAWCUT, REMOVE AND DISPOSE OF EXISTING CONCRETE PAVEMENT AND BASE TO LIMITS SHOWN.
12. REMOVE AND LEGALLY DISPOSE OF EXISTING TREE AND ROOTBALL.
13. EXISTING STORM DRAIN PIPE TO BE REMOVED.
14. CLEAR AND GRUB EXISTING OPEN AREA.
15. DEMO EXISTING AC PAVEMENT TO PROVIDE TRENCH FOR NEW ELECTRICAL UNDERGROUND CONDUIT. SEE ELECTRICAL SHEETS FOR MORE INFORMATION.
16. EXISTING WATER LINE TO BE REMOVED.



COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

Know what's below. Call before you dig.

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

N:\projects\0248\engineering\acad\improvements\0248-demo.dwg Apr 11, 2023-4:22pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
SALVADOR CONTRERAS, JR.
NO 66720
CIVIL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

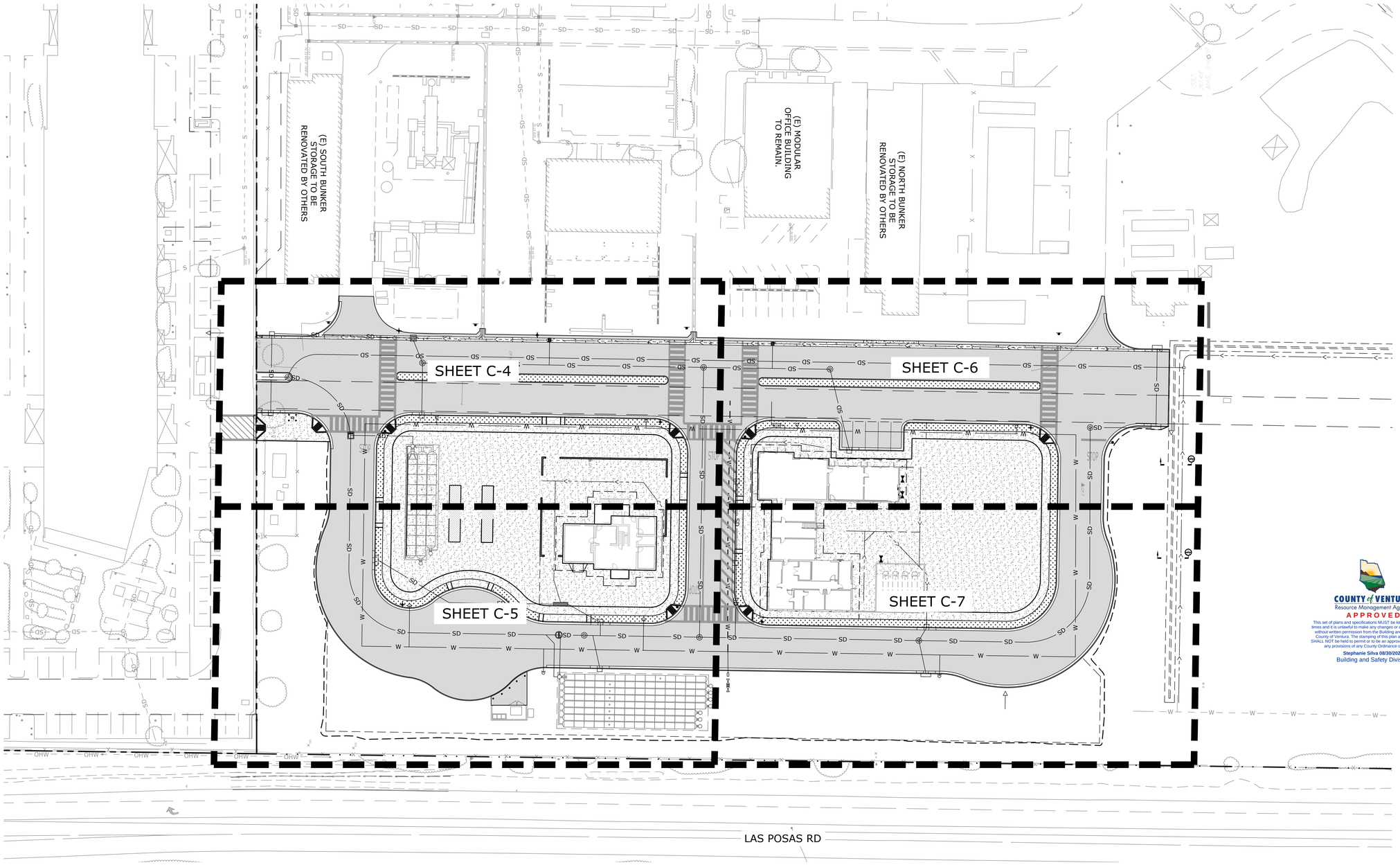
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 4 OF 123

SHEET TITLE

DEMOLITION PLAN

SHEET NO
C-2



INDEX MAP

SCALE: 1" = 30'

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

LEGEND

	AC PAVEMENT PER DETAIL A ON SHEET C-18	—— SD ——	PROPOSED STORMWATER PIPE PER UTILITY PLAN ON SHEETS C-8 THROUGH C-13
	CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18	—— W ——	PROPOSED WATER PIPE PER UTILITY PLAN ON SHEETS C-14 THROUGH C-15
	STAMPED CONCRETE SECTION PER DETAIL B ON SHEET C-18		

W S N E

SCALE: 1"=30'

0 30 60 90

Know what's **below.** **Call** before you dig.

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

N:\projects\0248\engineering\acad\improvements\0248-grad.dwg Aug 17, 2023-3:01pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

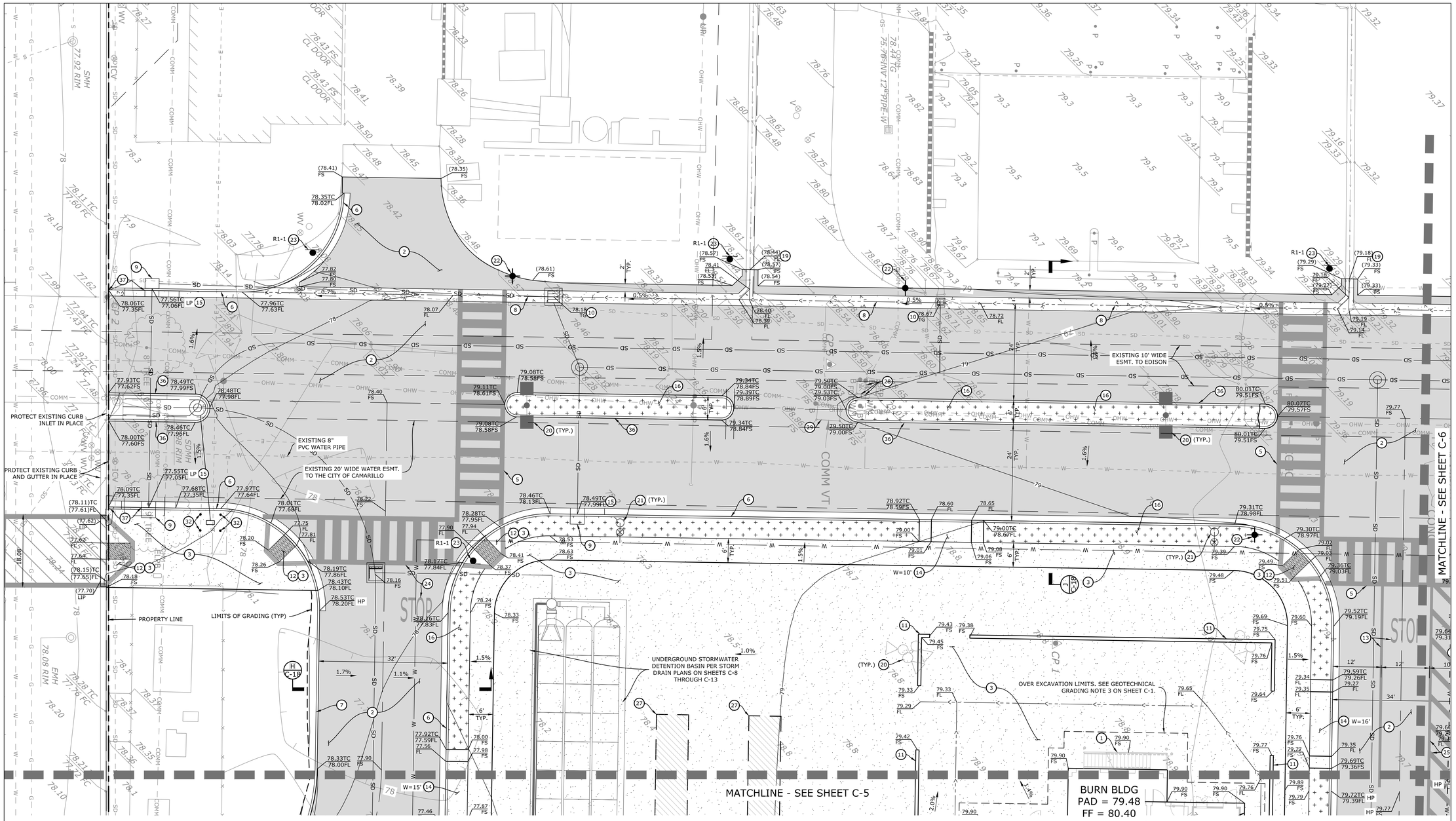
COUNTY DWG NO SHEET 5 OF 123

SHEET TITLE

GRADING AND DRAINAGE INDEX

SHEET NO

C-3



GENERAL NOTES

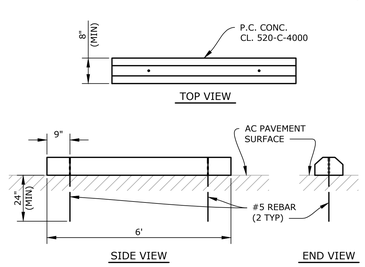
1. SOILS WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO REMOVE ARTIFICIAL FILL AND TO BE AT LEAST 2' BELOW THE FOOTING BOTTOMS, WHICHEVER IS GREATER. THE OVER EXCAVATION SHALL EXTEND TO A LATERAL DISTANCE OF AT LEAST 5' BEYOND THE OUTSIDE EDGE OF THE PERIMETER FOOTINGS. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
2. SOILS WITHIN IN THE PAVEMENT AREAS SHALL BE OVER EXCAVATED TO A DEPTH OF 3' BELOW THTE EXISTING GROUND OR TO AT LEAST 1 FOOT BELOW THE AGGREGATE BASE LAYER, WHICHEVER IS DEEPER. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

CONSTRUCTION NOTES

1. PROPOSED BURN BUILDING AND MASONRY WALLS PER ARCHITECTURAL PLAN SHEETS (PER SEPARATE PERMIT).
2. CONSTRUCT ASPHALT CONCRETE PAVEMENT PER DETAIL A ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1 PAVEMENT EDGE SHALL BE PER CALTRANS STD PLAN P76 WHERE ASPHALT ABUTS SOIL OR GRAVEL PAVEMENT.
3. CONSTRUCT PCC CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1.
5. FURNISH AND INSTALL CROSSWALK PAINTING PER SPPWC STANDARD PLAN 174-0.
6. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER, TYPE B2-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
7. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB, TYPE B1-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
8. CONSTRUCT 36" CONCRETE RIBBON GUTTER PER DETAIL F ON SHEET C-18.
9. CONSTRUCT CURB OPENING CATCH BASIN PER STORM DRAIN PLANS ON ON SHEETS C-8 THROUGH C-13.
10. CONSTRUCT CONCRETE CATCH BASIN PER STORM DRAIN PLANS ON SHEETS C-8 THROUGH C-13.
11. CONSTRUCT MASONRY WALL PER ARCHITECTURAL PLAN SHEETS (PER SEPARATE PERMIT).
12. CONSTRUCT CURB RAMP PER SPPWC STANDARD PLAN 111-5, CASE A, TYPE 1. GUTTER SLOPE AT CURB RAMP ENTRANCE SHALL BE 5% MAXIMUM.
13. FURNISH AND INSTALL "STOP" STRIPING PER SPPWC STD PLAN 172-0.
14. CONSTRUCT DRIVEWAY PER SPPWC STANDARD DETAIL 110-2, TYPE A. "W" PER PLAN.
15. CONSTRUCT LOCAL DEPRESSION AT CATCH BASIN PER SPPWC STANDARD PLAN 313-3 CASE E, H=2".
16. CONSTRUCT STAMPED CONCRETE COLOR GREEN. PAVEMENT SECTION SHALL BE PER DETAIL B ON SHEET C-18.
19. CONNECT EXISTING CONCRETE GUTTER TO NEW CONCRETE GUTTER. FLOWLINES SHALL MATCH.
20. LIGHT FIXTURES PER ELECTRACAL PLAN SHEET ES-103.
21. FIRE HYDRANT PER WATER PLANS ON SHEETS C-14 THROUGH C-17.
22. CONSTRUCT ROAD INTERSECTION STREET NAME SIGN PER VENTURA COUNTY STD PLATE F-4. STREET NAMES SHALL BE PER THE DIRECTION OF THE FIRE DEPARTMENT.
23. INSTALL SIGN POST PER VENTURA COUNTY STD PLATE F-3. SIGN PER PLAN.

CONSTRUCTION NOTES

24. FURNISH AND INSTALL "STOP" STRIPING PER SPPWC STD PLAN 172-0. MODIFY TO NOT INCLUDE "NO PASSING ZONES-TWO-DIRECTION" STRIPING.
27. DRAEGER PROPS PROVIDED AND INSTALLED BY OTHERS.
28. ADJUST WATER UTILITY BOXES AND LIDS TO FINISH GRADE. PROVIDE TRAFFIC RATED LIDS.
29. ADJUST UTILITY BOX TO FINISH GRADE AND PROVIDE TRAFFIC RATED LID PER SHEET ES-101.
30. FURNISH AND INSTALL PARKING STALLS WITH ACCESSIBLE PARKING SPACES ON EXISTING AC PAVEMENT PER SPPWC STD PLAN 180-0. DIMENSIONS AS SHOWN ON PLAN.
31. CONSTRUCT CONCRETE WHEEL STOP PER DETAIL "S" HEREON.
32. CONSTRUCT REMOVABLE BOLLARDS AROUND LIFT STATION CONTROL PANEL PEDESTAL, 4 TOTAL, PER DETAIL "T" HEREON. SEE SHEETS C-8 THORUGH C-13 FOR MORE INFORMATION ON THE LIFT STATION.
35. INSTALL ACCESSIBLE PARKING SIGNS PER DETAIL "T" HEREON.
36. CONSTRUCT 6" HIGH CONCRETE CURB, TYPE A1-6 PER SPPWC STANDARD PLAN 121-2.
37. CONSTRUCT CURB AND GUTTER HEIGHT TRANSITION. FROM 4" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER TO 6" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER PER SPPWC STANDARD PLAN 121-2.



CONCRETE WHEEL STOP DETAIL (S)
N.T.S.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

NOTE:
AREA OF SIGN TO BE 70 SQ. IN. (MIN)

SIGN TO BE CENTERED AT THE INTERIOR END OF PARKING SPACE. THE BOTTOM OF THE SIGN PANEL SHALL BE A MINIMUM OF 80" ABOVE THE FINISH SURFACE.

ACCESSIBLE PARKING SIGNAGE (T)
N.T.S.

LEGEND

- AC PAVEMENT PER DETAIL A ON SHEET C-18
- CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18
- STAMPED CONCRETE SECTION PER DETAIL B ON SHEET C-18
- SD — PROPOSED STORMWATER PIPE PER UTILITY PLAN ON SHEETS C-8 THROUGH C-13
- W — PROPOSED WATER PIPE PER UTILITY PLAN ON SHEETS C-14 THROUGH C-17
- LIGHT FIXTURES PER ELECTRAIL PLAN SHEET ES-103

SCALE: 1"=10'
0 10 20 30

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

811 Know what's below. Call before you dig.

N:\projects\0248\engineering\acad\improvements\0248-grad.dwg Apr 11, 2023-4:26pm

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER — SALVADOR CONTRERAS, JR. — NO 66720 — CIVIL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

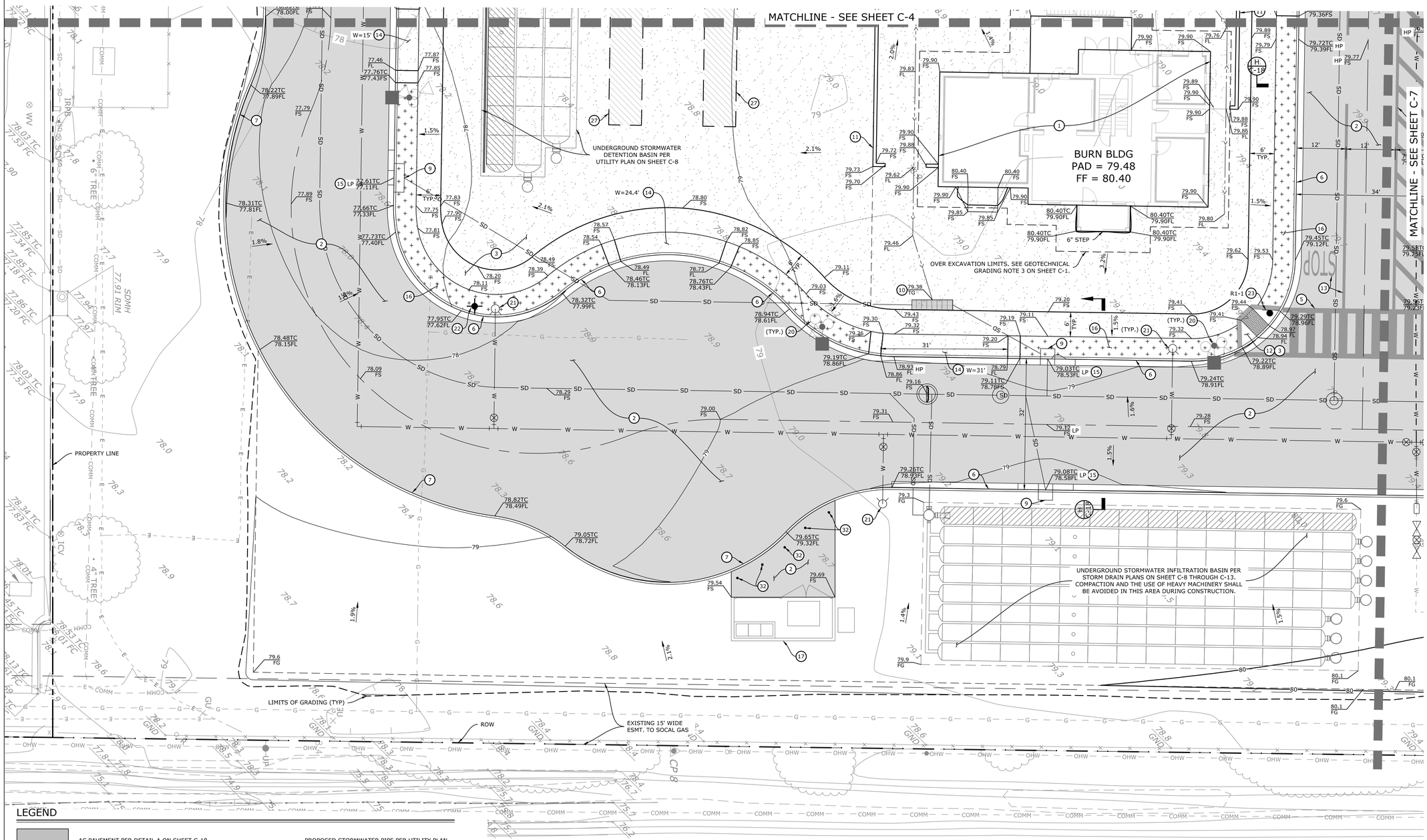
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO — SHEET 6 OF 123

SHEET TITLE
GRADING AND DRAINAGE PLAN

SHEET NO
C-4



LEGEND

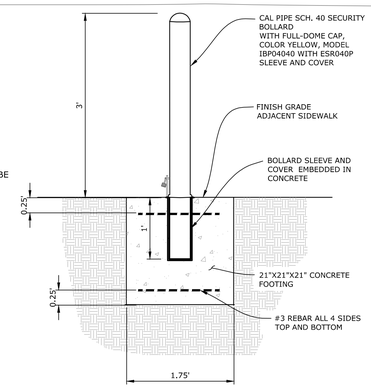
- AC PAVEMENT PER DETAIL A ON SHEET C-18
- CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18
- STAMPED CONCRETE SECTION PER DETAIL B ON SHEET C-18
- SD — PROPOSED STORMWATER PIPE PER UTILITY PLAN ON SHEETS C-8 THROUGH C-13
- W — PROPOSED WATER PIPE PER UTILITY PLAN ON SHEETS C-14 THROUGH C-17
- LIGHT FIXTURES PER ELECTRAIL PLAN SHEET ES-103

CONSTRUCTION NOTES

1. PROPOSED BURN BUILDING AND MASONRY WALLS PER ARCHITECTURAL PLAN SHEETS (PER SEPARATE PERMIT).
2. CONSTRUCT ASPHALT CONCRETE PAVEMENT PER DETAIL A ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1 PAVEMENT EDGE SHALL BE PER CALTRANS STD PLAN P76 WHERE ASPHALT ABUTS SOIL OR GRAVEL PAVEMENT.
3. CONSTRUCT PCC CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1.
4. FURNISH AND INSTALL 4" WIDE WHITE PAINTED PARKING STALL STRIPE. DIMENSIONS AS SHOWN ON PLAN.
5. FURNISH AND INSTALL CROSSWALK PAINTING PER SPPWC STANDARD PLAN 174-0.
6. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER, TYPE B2-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
7. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB, TYPE B1-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
9. CONSTRUCT CURB OPENING CATCH BASIN PER STORM DRAIN PLANS ON ON SHEETS C-8 THROUGH C-13.
10. CONSTRUCT CONCRETE CATCH BASIN PER STORM DRAIN PLANS ON SHEETS C-8 THROUGH C-13.
11. CONSTRUCT MASONRY WALL PER ARCHITECTURAL PLAN SHEETS (PER SEPARATE PERMIT).
12. CONSTRUCT CURB RAMP PER SPPWC STANDARD PLAN 111-5, CASE A, TYPE 1. GUTTER SLOPE AT CURB RAMP ENTRANCE SHALL BE 5% MAXIMUM.
13. FURNISH AND INSTALL "STOP" STRIPING PER SPPWC STD PLAN 172-0.
14. CONSTRUCT DRIVEWAY PER SPPWC STANDARD DETAIL 110-2, TYPE A. "W" PER PLAN.
15. CONSTRUCT LOCAL DEPRESSION AT CATCH BASIN PER SPPWC STANDARD PLAN 313-3 CASE E, H=2".
16. CONSTRUCT STAMPED CONCRETE COLOR GREEN. PAVEMENT SECTION SHALL BE PER DETAIL B ON SHEET C-18.
17. TRANSFORMER AND ENCLOSURE PER ELECTRICAL PLAN SHEETS.

CONSTRUCTION NOTES

20. LIGHT FIXTURES PER ELECTRACAL PLAN SHEET ES-103.
21. FIRE HYDRANT PER WATER PLANS ON SHEETS C-14 THROUGH C-17.
22. CONSTRUCT ROAD INTERSECTION STREET NAME SIGN PER VENTURA COUNTY STD PLATE F-4. STREET NAMES SHALL BE PER THE DIRECTION OF THE FIRE DEPARTMENT.
23. INSTALL SIGN POST PER VENTURA COUNTY STD PLATE F-3. SIGN PER PLAN.
27. DRAEGER PROPS PROVIDED AND INSTALLED BY OTHERS.



REMOVABLE BOLLARD
N.T.S.

LAS POSAS RD

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

GENERAL NOTES

1. SOILS WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO REMOVE ARTIFICIAL FILL AND TO BE AT LEAST 2' BELOW THE FOOTING BOTTOMS, WHICHEVER IS GREATER. THE OVER EXCAVATION SHALL EXTEND TO A LATERAL DISTANCE OF AT LEAST 5' BEYOND THE OUTSIDE EDGE OF THE PERIMETER FOOTINGS. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
2. SOILS WITHIN IN THE PAVEMENT AREAS SHALL BE OVER EXCAVATED TO A DEPTH OF 3' BELOW THTE EXISTING GROUND OR TO AT LEAST 1 FOOT BELOW THE AGGREGATE BASE LAYER, WHICHEVER IS DEEPER. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

SCALE: 1"=10'
0 10 20 30

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

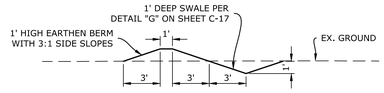
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 7 OF 123

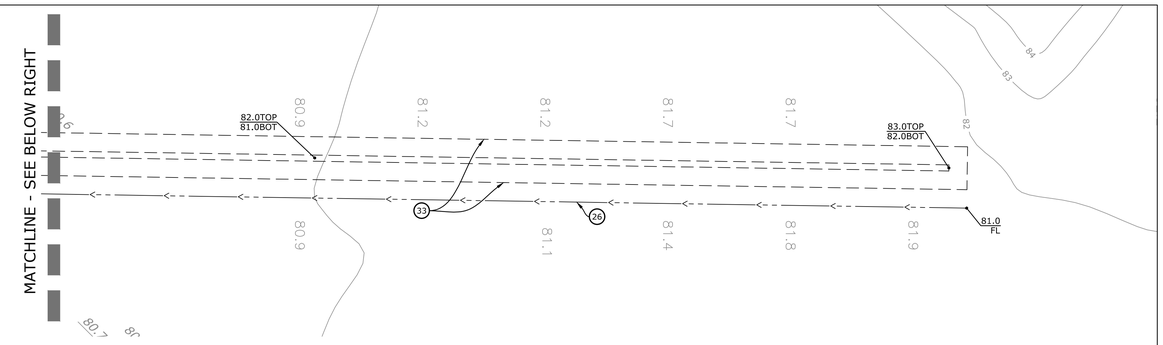
SHEET TITLE
GRADING AND DRAINAGE PLAN

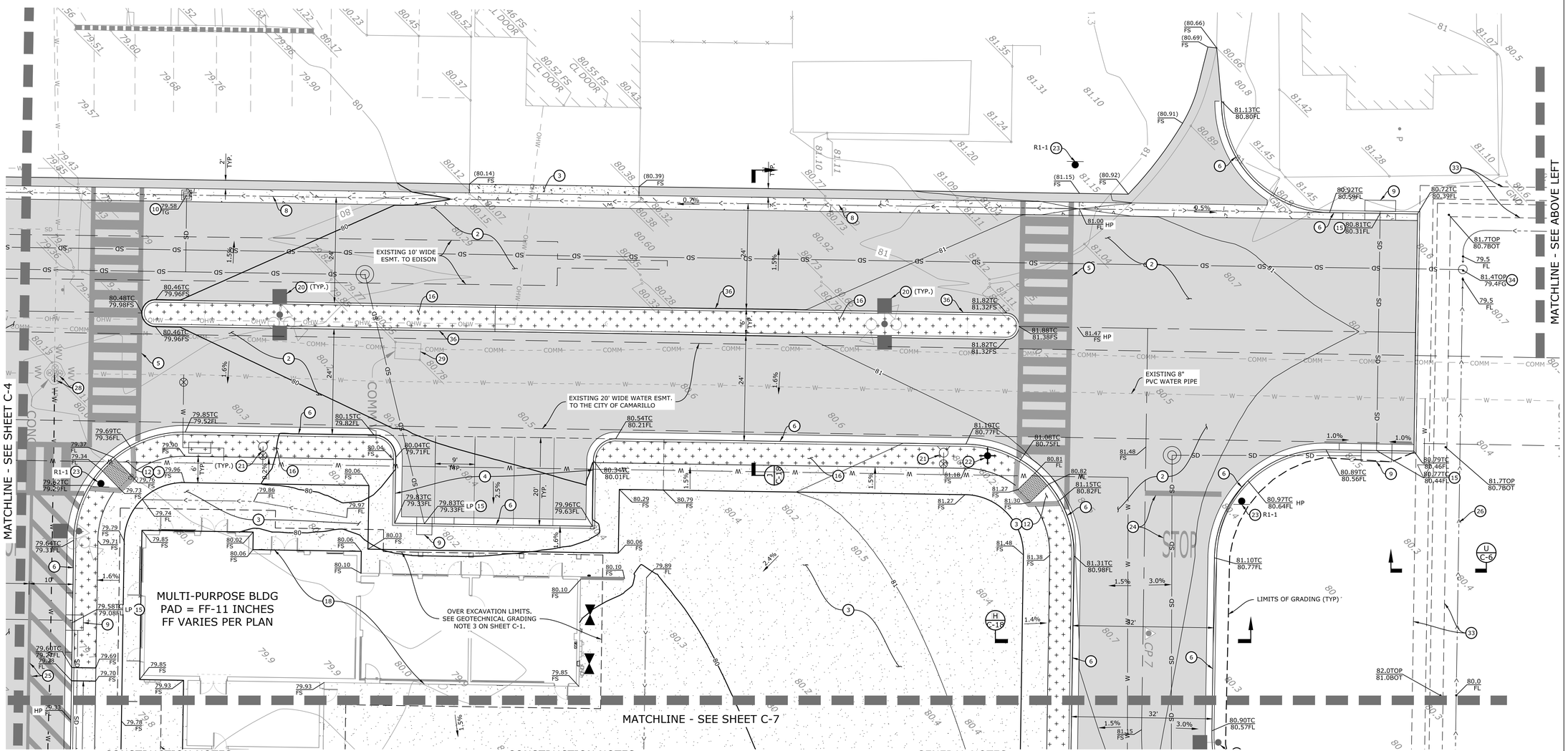
SHEET NO
C-5

\\apollo\ecgcam\projects\0248\engineering\acad\improvements\0248-grad.dwg May 10, 2023-2:44pm



BERM AND SWALE - SECTION "U"
N.T.S.





CONSTRUCTION NOTES

2. CONSTRUCT ASPHALT CONCRETE PAVEMENT PER DETAIL A ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1 PAVEMENT EDGE SHALL BE PER CALTRANS STD PLAN P76 WHERE ASPHALT ABUTS SOIL OR GRAVEL PAVEMENT.
3. CONSTRUCT PCC CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1.
4. FURNISH AND INSTALL 4" WIDE WHITE PAINTED PARKING STALL STRIPE. DIMENSIONS AS SHOWN ON PLAN.
5. FURNISH AND INSTALL CROSSWALK PAINTING PER SPPWC STANDARD PLAN 174-0.
6. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER, TYPE B2-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
7. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB, TYPE B1-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
8. CONSTRUCT 36" CONCRETE RIBBON GUTTER PER DETAIL F ON SHEET C-18.
9. CONSTRUCT CURB OPENING CATCH BASIN PER STORM DRAIN PLANS ON ON SHEETS C-8 THROUGH C-13.
10. CONSTRUCT CONCRETE CATCH BASIN PER STORM DRAIN PLANS ON SHEETS C-8 THROUGH C-13.
12. CONSTRUCT CURB RAMP PER SPPWC STANDARD PLAN 111-5, CASE A, TYPE 1. GUTTER SLOPE AT CURB RAMP ENTRANCE SHALL BE 5% MAXIMUM.
15. CONSTRUCT LOCAL DEPRESSION AT CATCH BASIN PER SPPWC STANDARD PLAN 313-3 CASE E, H=2".
16. CONSTRUCT STAMPED CONCRETE COLOR GREEN. PAVEMENT SECTION SHALL BE PER DETAIL B ON SHEET C-18.
18. PROPOSED MULTIPURPOSE BUILDING PER ARCHITECTURAL PLAN SHEETS.
19. CONNECT EXISTING CONCRETE GUTTER TO NEW CONCRETE GUTTER. FLOWLINES SHALL MATCH.
20. LIGHT FIXTURES PER ELECTRACAL PLAN SHEET ES-103.
21. FIRE HYDRANT PER WATER PLANS ON SHEETS C-14 THROUGH C-17.
22. CONSTRUCT ROAD INTERSECTION STREET NAME SIGN PER VENTURA COUNTY STD PLATE F-4. STREET NAMES SHALL BE PER THE DIRECTION OF THE FIRE DEPARTMENT.
23. INSTALL SIGN POST PER VENTURA COUNTY STD PLATE F-3. SIGN PER PLAN.
24. FURNISH AND INSTALL "STOP" STRIPING PER SPPWC STD PLAN 172-0. MODIFY TO NOT INCLUDE "NO PASSING ZONES-TWO-DIRECTION" STRIPING.

CONSTRUCTION NOTES

25. FURNISH AND INSTALL 6" WHITE BORDER STRIPE AND 12" DIAGONAL STRIPES AT 5' O.C.
26. CONSTRUCT GRADED SWALE PER DETAIL G ON SHEET C-18.
28. ADJUST WATER UTILITY BOXES AND LIDS TO FINISH GRADE. PROVIDE TRAFFIC RATED LIDS.
29. ADJUST UTILITY BOX TO FINISH GRADE AND PROVIDE TRAFFIC RATED LID PER SHEET ES-101.
33. CONSTRUCT 1' HIGH EARTHEN BERM WITH 3:1 SIDE SLOPES AND 1' WIDE FLAT TOP.
34. CONSTRUCT STORM DRAIN RISER INLET PER DETAIL "R" ON SHEET C-18.

GENERAL NOTES

1. SOILS WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO REMOVE ARTIFICIAL FILL AND TO BE AT LEAST 2' BELOW THE FOOTING BOTTOMS, WHICHEVER IS GREATER. THE OVER EXCAVATION SHALL EXTEND TO A LATERAL DISTANCE OF AT LEAST 5' BEYOND THE OUTSIDE EDGE OF THE PERIMETER FOOTINGS. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
2. SOILS WITHIN IN THE PAVEMENT AREAS SHALL BE OVER EXCAVATED TO A DEPTH OF 3' BELOW THTE EXISTING GROUND OR TO AT LEAST 1 FOOT BELOW THE AGGREGATE BASE LAYER, WHICHEVER IS DEEPER. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

LEGEND

- AC PAVEMENT PER DETAIL A ON SHEET C-18
- CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18
- STAMPED CONCRETE SECTION PER DETAIL B ON SHEET C-18
- SD — PROPOSED STORMWATER PIPE PER UTILITY PLAN ON SHEETS C-8 THROUGH C-13
- W — PROPOSED WATER PIPE PER UTILITY PLAN ON SHEETS C-14 THROUGH C-17
- LIGHT FIXTURES PER ELECTRAIL PLAN SHEET ES-103

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

SCALE: 1"=10'
0 10 20 30

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

N:\projects\0248\engineering\acad\improvements\0248-grad.dwg Apr 11, 2023-4:29pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER
SALVADOR CONTRERAS, JR.
NO 66720
CIVIL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
SAL CONTRERAS
DRAWN BY DL
CHECKED BY SC
CONSULTANT JOB NO 0248.01
DATE 4/23

PROJECT TITLE AND ADDRESS

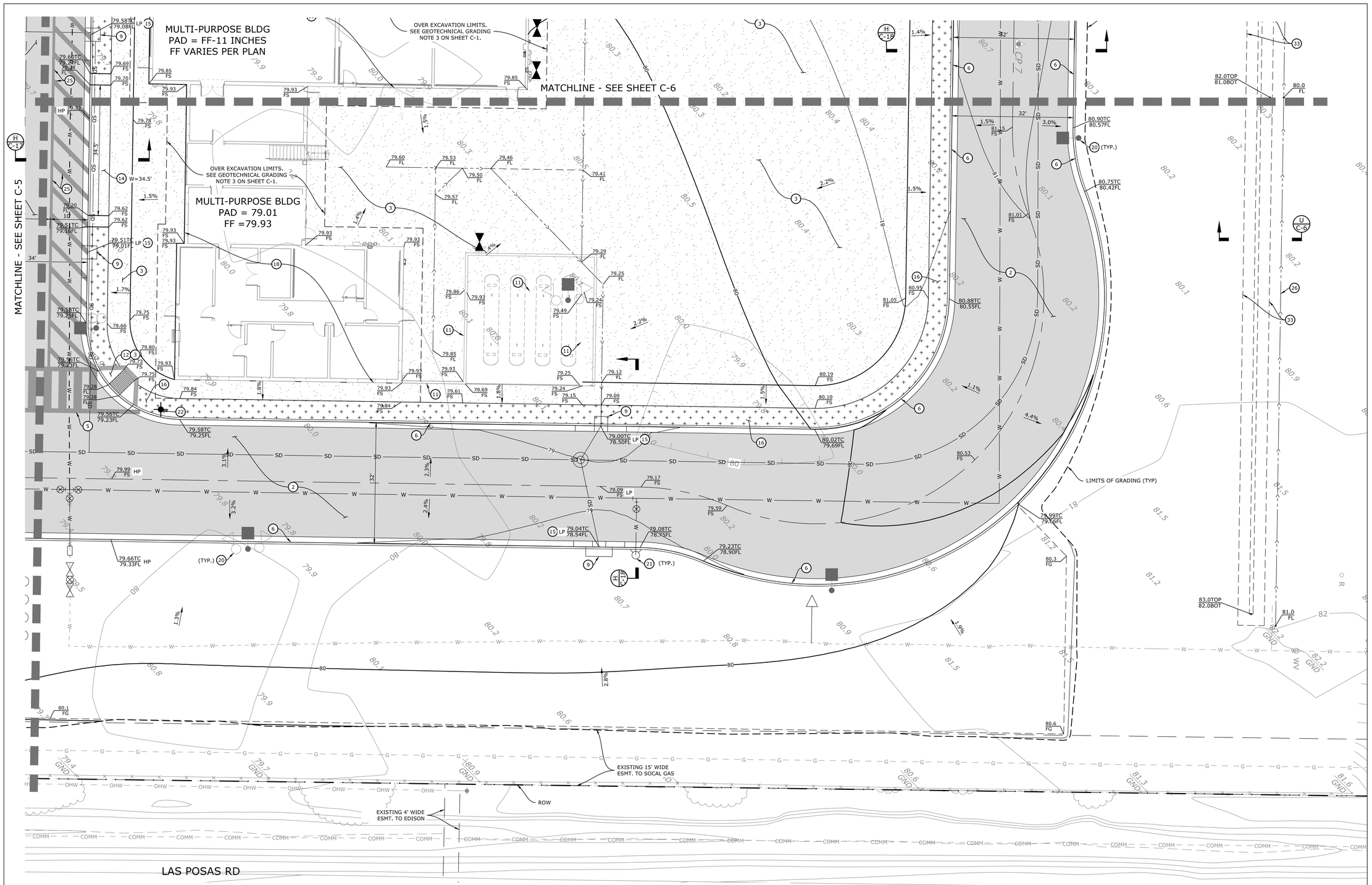
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO
SHEET 8 OF 123

SHEET TITLE
GRADING AND DRAINAGE PLAN

SHEET NO
C-6



CONSTRUCTION NOTES

2. CONSTRUCT ASPHALT CONCRETE PAVEMENT PER DETAIL A ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1 PAVEMENT EDGE SHALL BE PER CALTRANS STD PLAN P76 WHERE ASPHALT ABUTS SOIL OR GRAVEL PAVEMENT.
3. CONSTRUCT PCC CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18 AND PER GEOTECHNICAL NOTES ON SHEET C-1.
6. CONSTRUCT 4" HIGH CONCRETE MOUNTABLE CURB WITH 18" GUTTER, TYPE B2-4 PER MODIFIED SPPWC STANDARD PLAN 121-2.
9. CONSTRUCT CURB OPENING CATCH BASIN PER STORM DRAIN PLANS ON ON SHEETS C-8 THROUGH C-13.
11. CONSTRUCT MASONRY WALL PER ARCHITECTURAL PLAN SHEETS (PER SEPARATE PERMIT).
12. CONSTRUCT CURB RAMP PER SPPWC STANDARD PLAN 111-5, CASE A, TYPE 1. GUTTER SLOPE AT CURB RAMP ENTRANCE SHALL BE 5% MAXIMUM.
14. CONSTRUCT DRIVEWAY PER SPPWC STANDARD DETAIL 110-2, TYPE A. "W" PER PLAN.
15. CONSTRUCT LOCAL DEPRESSION AT CATCH BASIN PER SPPWC STANDARD PLAN 313-3 CASE E, H=2".
20. LIGHT FIXTURES PER ELECTRACAL PLAN SHEET ES-103.
21. FIRE HYDRANT PER WATER PLANS ON SHEETS C-14 THROUGH C-17.
22. CONSTRUCT ROAD INTERSECTION STREET NAME SIGN PER VENTURA COUNTY STD PLATE F-4. STREET NAMES SHALL BE PER THE DIRECTION OF THE FIRE DEPARTMENT.
25. FURNISH AND INSTALL 6" WHITE BORDER STRIPE AND 12" DIAGONAL STRIPES AT 5' O.C.
26. CONSTRUCT GRADED SWALE PER DETAIL G ON SHEET C-18.
33. CONSTRUCT 1' HIGH EARTHEN BERM WITH 3:1 SIDE SLOPES AND 1' WIDE FLAT TOP.

GENERAL NOTES

1. SOILS WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO REMOVE ARTIFICIAL FILL AND TO BE AT LEAST 2' BELOW THE FOOTING BOTTOMS, WHICHEVER IS GREATER. THE OVER EXCAVATION SHALL EXTEND TO A LATERAL DISTANCE OF AT LEAST 5' BEYOND THE OUTSIDE EDGE OF THE PERIMETER FOOTINGS. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
2. SOILS WITHIN IN THE PAVEMENT AREAS SHALL BE OVER EXCAVATED TO A DEPTH OF 3' BELOW THTE EXISTING GROUND OR TO AT LEAST 1 FOOT BELOW THE AGGREGATE BASE LAYER, WHICHEVER IS DEEPER. OVER EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

LEGEND

- AC PAVEMENT PER DETAIL A ON SHEET C-18
- CONCRETE PAVEMENT PER DETAIL B ON SHEET C-18
- STAMPED CONCRETE SECTION PER DETAIL B ON SHEET C-18
- SD — PROPOSED STORMWATER PIPE PER UTILITY PLAN ON SHEETS C-8 THROUGH C-13
- W — PROPOSED WATER PIPE PER UTILITY PLAN ON SHEETS C-14 THROUGH C-17
- LIGHT FIXTURES PER ELECTRAIL PLAN SHEET ES-103

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

SCALE: 1"=10'
0 10 20 30

Know what's below. Call before you dig.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
SALVADOR CONTRERAS, JR.
NO 66720
CIVIL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC

CONSULTANT JOB NO	DATE
0248.01	4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

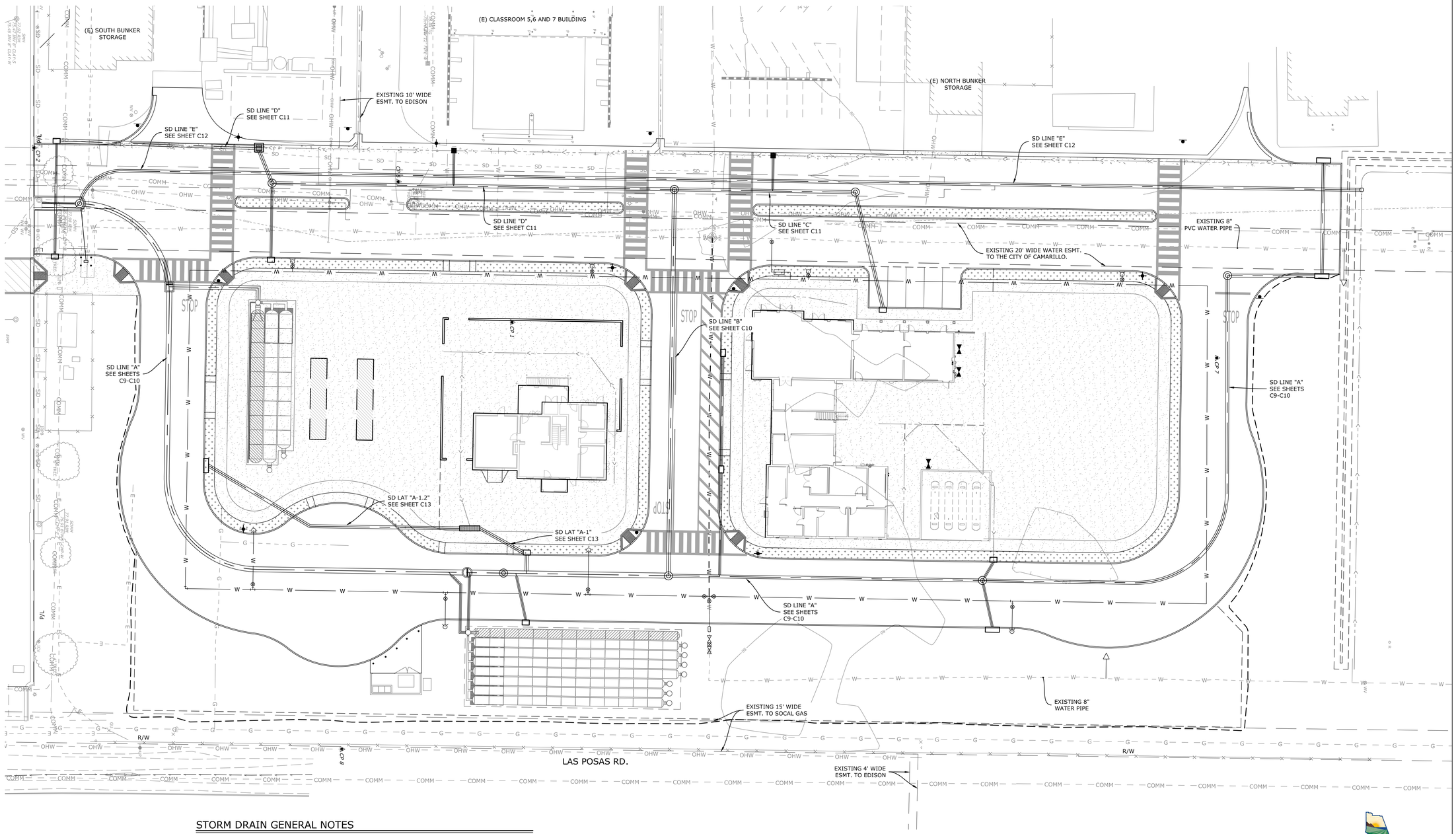
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 9 OF 123

SHEET TITLE
GRADING AND DRAINAGE PLAN

SHEET NO
C-7



STORM DRAIN GENERAL NOTES

1. ALL STORM DRAIN STATIONING IS ALONG THE CENTERLINE OF THE PIPE UNLESS OTHERWISE SHOWN.
2. THE CONTRACTOR SHALL KEEP A STRICT RECORD OF THE LOCATIONS OF ALL CONNECTIONS, INLETS AND MANHOLES AND SUBMIT TO THE VENTURA COUNTY INSPECTOR BEFORE FINAL ACCEPTANCE (AS-BUILT INFORMATION).
3. ALL UNDERGROUND UTILITIES SHALL BE PLACED PRIOR TO CONSTRUCTION OF CURBS, GUTTERS, SIDEWALKS, AND PAVEMENT, OR AS APPROVED BY THE VENTURA COUNTY INSPECTOR.
4. MANHOLE RIMS SHALL BE SET TO GRADE AS A PART OF THIS PROJECT.
5. SAW CUT ALL PAVEMENT REMOVALS.
6. BEDDING SHALL BE GOVERNED BY SECTION 306.1.21 OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION AND ALL SUPPLEMENTS. COMPACTION EFFORTS SHALL NOT DISTURB ADJACENT STREET STRUCTURAL SECTION. CONTRACTOR SHALL BE RESPONSIBLE TO ANY SUCH DAMAGES.
7. CONTACT THE PUBLIC WORKS DEPT. 48 HRS. PRIOR TO INSPECTION.
8. WHERE CLEARANCE BETWEEN UTILITIES AND THE STORM DRAIN IS LIMITED AND CRITICAL, THE CONTRACTOR SHALL DETERMINE BEFORE CONSTRUCTION (BY "POTHOLING" OR OTHER MEANS) THAT THE STORM DRAIN CONSTRUCTION CAN BE COMPLETED TO THE LINES AND GRADES SHOWN ON THESE PLANS.
9. SPECIAL BEVELED PIPE SHALL BE USED WHERE CURVE RADII EXCEEDS THE MANUFACTURER'S RECOMMENDATIONS FOR DEFLECTION.
10. AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE REGIONAL NOTIFICATION CENTER (UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA - U.S.A. AT 811) TO OBTAIN AN INQUIRY IDENTIFICATION NUMBER AND TO REQUEST THE UTILITY OWNERS TO MARK OR OTHERWISE INDICATE THE LOCATION OF THEIR SUBSURFACE FACILITIES. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND DEP1H OF ALL UTILITIES, INCLUDING ALL SERVICE CONNECTIONS, WHICH HAVE BEEN MARKED BY THE RESPECTIVIE OWNERS WHICH MAY AFFECT OR BE AFFECTED BY ITS OPERATIONS. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT ALL UTILITIES AND ALL STRUCTURES FOUND AT THE SITE.
11. ALL PERMITS NECESSARY PRIOR TO BEGINNING CONSTRUCTION SHALL BE OBTAINED BY THE CONTRACTOR.
12. THROUGHOUT ALL PHASES OF CONSTRUCTION, INCLUDING SUSPENSION OF WORK, UNTIL FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE BY CLEANING, SWEEPING AND SPRINKLING WITH WATER AND USING DUST FENCES OR OTHER METHODS AS DIRECTED BY THE CITY THROUGHOUT THE CONSTRUCTION OPERATION.
13. ALL DAMAGE CAUSED TO PUBLIC STREETS, INCLUDING HAUL ROUTES, ALLEYS, SIDEWALKS, CURBS OR STREET FURNISHINGS, OR TO PRIVATE PROPERTY SHALL BE REPAIRED AT THE SOLE EXPENSE OF THE CONTRACTOR TO THE ENGINEER'S SATISFACTION.
14. THE CONTRACTOR IS REQUIRED TO PROTECT ALL EXISTING SURVEY MONUMENTATION DURING GRADING AND ALL SUBSEQUENT CONSTRUCTION. CONTRACTOR SHALL REPLACE OR RELOCATE ANY EXISTING SURVEY MONUMENTATION AT THE DIRECTION OF THE COUNTY
15. VERTICAL TRENCH SHORING SHALL CONFORM WITH THE ORDERS OF THE STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY (DIS) AND O.S.H.A. STANDARDS.
16. ALL MANHOLE RIMS AND LIDS SHALL BE SET TO FINISH GRADE BY THE CONTRACTOR AS A PART OF THIS PROJECT.
17. WHERE CLEARANCE BETWEEN UTILITIES AND THE STORM DRAIN IS LIMITED AND CRITICAL, THE CONTRACTOR SHALL DETERMINE BEFORE CONSTRUCTION (BY "POTHOLING" OR OTHER MEANS) THAT THE STORM DRAIN CONSTRUCTION CAN BE COMPLETED TO THE LINES AND GRADES SHOWN ON THESE PLANS
18. SEPARATION OF SEWER, WATER, RECYCLED WATER, AND STORM DRAIN SHALL BE IN CONFORMANCE WL1H THE LATEST REQUIREMENTS OF THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH.

LEGEND

—— W ——	WATER LINE (SEE SHEETS C-14 AND C-15)
—— SD ——	STORM DRAIN LINE

811 Know what's below. Call before you dig.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

SCALE: 1"=20'
0 20 40 60

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS, JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

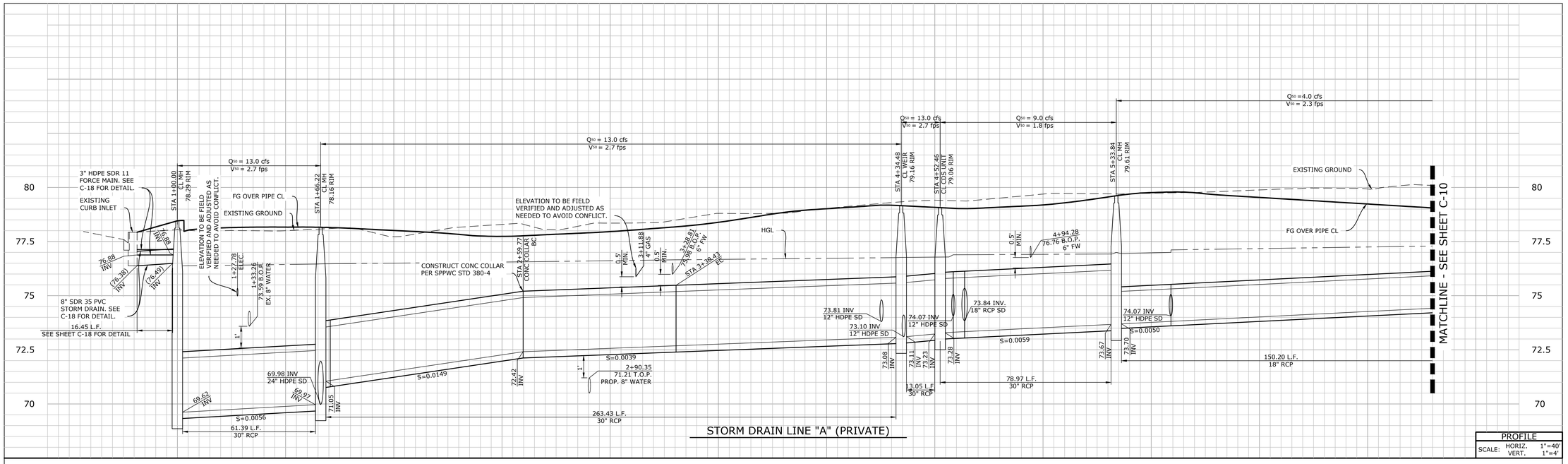
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER SAL CONTRERAS
DRAWN BY DL CHECKED BY SC
CONSULTANT JOB NO 0248.01 DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO SHEET 10 OF 123
SHEET TITLE STORM DRAIN COVER SHEET
SHEET NO C-8



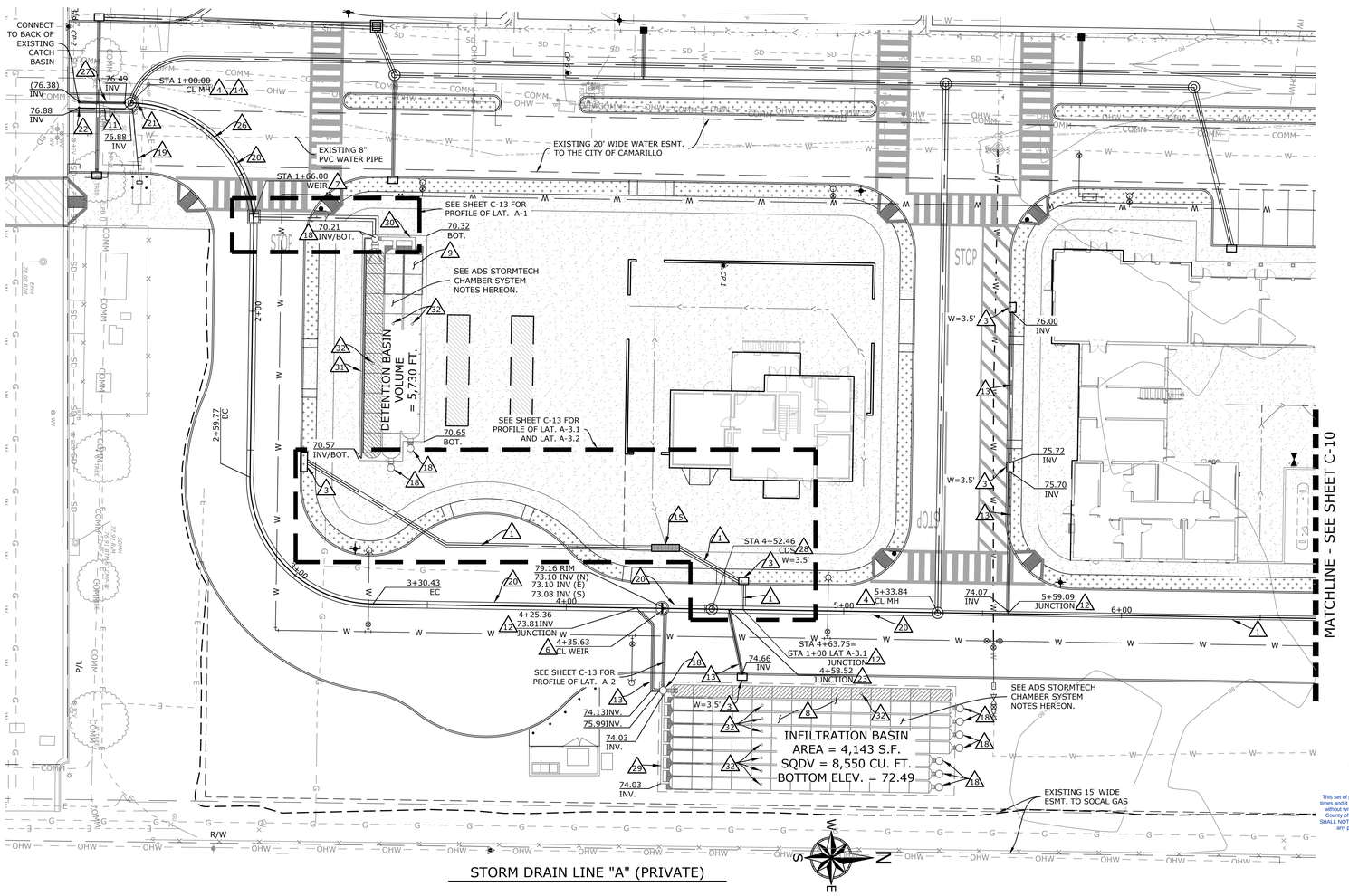
ADS STORMTECH CHAMBER SYSTEM NOTES

1. CONTRACTOR MUST CLEAN BOTH THE ENTIRE CHAMBER SYSTEMS AND ALL ASSOCIATED COMPONENTS AT THE END OF CONSTRUCTION. THIS IS TO ENSURE THAT ANY AND ALL SEDIMENT OR DEBRIS THAT COULD HAVE ENTERED THE SYSTEM DURING THE CONSTRUCTION TIMEFRAME IS REMOVED. THE CONTRACTOR SHALL PROVIDE PICTURES OF THE CLEANED INTERIOR CHAMBERS BEFORE THE OWNER WILL ACCEPT THE WORK.
2. AFTER CLEANING THE ENTIRE INFILTRATION CHAMBER SYSTEM THE CONTRACTOR SHALL WATER TEST IT FOR INFILTRATION IN THE PRESENCE OF THE OWNER TO ENSURE DESIGN-LEVEL OPERABILITY.
3. CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) STADIA RODS THAT TELESCOPE TO AT LEAST 6-FEET IN LENGTH AND CONTAIN GRADATION MARKINGS ON THE SIDE. OWNER TO UTILIZE THESE FOR LONG TERM OPERATIONS AND MAINTENANCE.
4. CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) SPECIALTY JETVAC NOZZLES RECOMMENDED BY ADS FOR SYSTEM MAINTENANCE THAT MEETS THE RECOMMENDED 2,000 PSI MAX NOZZLE PRESSURE FOR THE ISOLATOR ROW'S OPERATION AND MAINTENANCE.
5. COMPACTION AND THE USE OF HEAVY MACHINERY SHALL BE AVOIDED IN THE INFILTRATION AREA DURING CONSTRUCTION.

STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
2. CONSTRUCT 24" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
3. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STANDARD PLAN 300-3. "W" PER PLAN.
4. CONSTRUCT STORM DRAIN MANHOLE PER SPPWC STANDARD PLAN 321-2. INVERTS PER PLAN. MANHOLE FRAME AND COVER SHALL BE PER VCFCD STANDARD DRAWING NO. 3.
5. CONSTRUCT PCC PRECAST WEIR STRUCTURE FOR INFILTRATION BASIN (HIGH FLOW BYPASS) PER DETAIL "L" ON SHEET C-19.
6. CONSTRUCT PCC PRECAST DIVERSION WEIR STRUCTURE WITH MANHOLE PER DETAIL "M" ON SHEET C-19.
7. CONSTRUCT ADS STORMTECH SC-740 SUBTERRANEAN INFILTRATION CHAMBERS. PROVIDE ISOLATOR ROW PLUS CHAMBER AS FIRST ROW. PROVIDE AN INSPECTION PORT AT EVERY ROW OF CHAMBERS. SEE DETAIL "P" ON SHEET C-19 AND DETAILS "V" AND "W" ON SHEET C-21 FOR MORE INFORMATION.
8. CONSTRUCT ADS STORMTECH MC-3500 SUBTERRANEAN DETENTION CHAMBERS. PROVIDE ISOLATOR ROW PLUS CHAMBER AS FIRST ROW. PROVIDE AN INSPECTION PORT AT EVERY ROW OF CHAMBERS. SEE DETAIL "Q" ON SHEET C-19 AND DETAILS "V" AND "W" ON SHEET C-21 FOR MORE INFORMATION.
9. CONSTRUCT 3" HDPE SDR11 FORCE MAIN PER DETAIL "N" ON SHEET C-18.
10. CONSTRUCT STORM DRAIN JUNCTION STRUCTURE PER SPPWC STANDARD PLAN 331-3.
11. CONSTRUCT 12" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-19.
12. CONSTRUCT STORM DRAIN DUPLEX LIFT STATION PER DETAIL "K" ON SHEET C-18 AND DETAILS ON SHEET C-19.
13. CONSTRUCT PCC GRATING CATCH BASIN - ALLEY (TRANSVERSE) WITH (5) H-20 RATED GRATES PER SPPWC STANDARD PLANS 305-3 AND 311-3.
14. CONSTRUCT 24" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-19.
15. CONSTRUCT 36" NYLOPLAST BASIN WITH DUCTILE IRON TRAFFIC RATED FRAME AND SOLID GRATE.
16. PROVIDE POWER TO CONTROL PANEL AND PUMP PER ELECTRICAL PLAN SHEET ES-102 (PER SEPERATE PERMIT) .
17. CONSTRUCT 30" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
18. CONSTRUCT 30" TIDEFLEX INLINE CHECKMATE VALVE OR APPROVED EQUAL.
19. CONSTRUCT 3" WALL MOUNTED FLAP GATE AT EXISTING CATCH BASIN.
20. CONSTRUCT STORM DRAIN JUNCTION STRUCTURE PER SPPWC STANDARD PLAN 332-2.
21. ADJUST EXISTING WATER UTILITY TO AVOID UTILITY CROSSING CONFLICT. SEE WATER PLAN (SHEETS C-15 & C-16) FOR MORE INFORMATION.
22. PROTECT EXISTING UTILITY IN PLACE AT UTILITY CROSSING.
23. CONSTRUCT 8" DIA. SDR 35 PVC STORM DRAIN PER DETAIL "N" ON SHEET C-19.
24. CONSTRUCT CDS UNIT MODEL 2020-5 WITH M PER DETAIL "U" ON SHEET C-21.
25. CONSTRUCT 12" X 12" HDPE (N-12 WT) MANIFOLD.
26. CONSTRUCT 18" X 18" HDPE (N-12 WT) MANIFOLD.
27. CONSTRUCT 6" DUAL WALL PERFORATED HDPE UNDER DRAIN. SEE DETAIL "W" ON SHEET C-21 FOR MORE INFORMATION.
28. CONSTRUCT 10" INSPECTION PORT PER DETAIL "X" ON SHEET C-21. LOCATION OF THE INSPECTION PORT SHALL BE PER PLAN AND AS SHOWN ON DETAIL "W" ON SHEET C-21.

Know what's **below.** **Call** before you dig.



WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

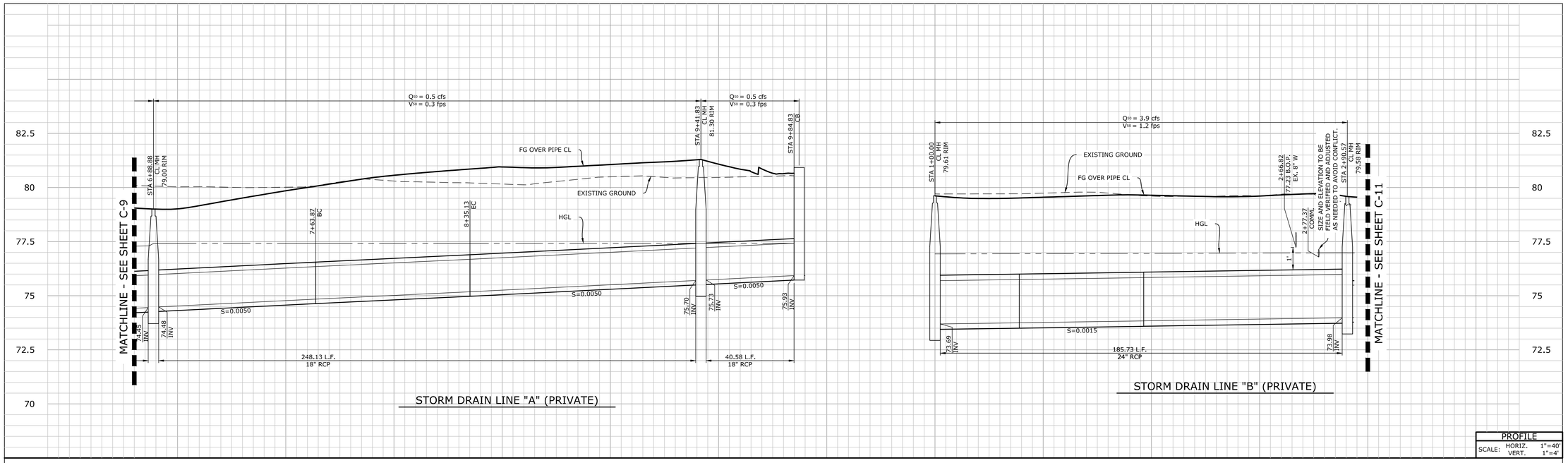
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 11 OF 123

SHEET TITLE
STORM DRAIN LINE "A" PLAN AND PROFILE

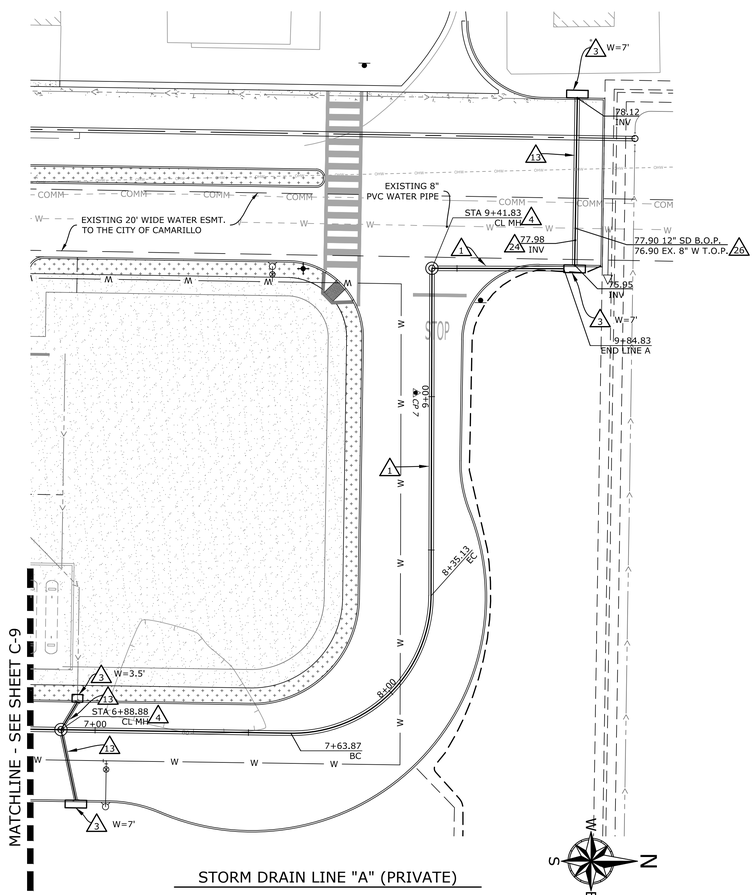
SHEET NO
C-9

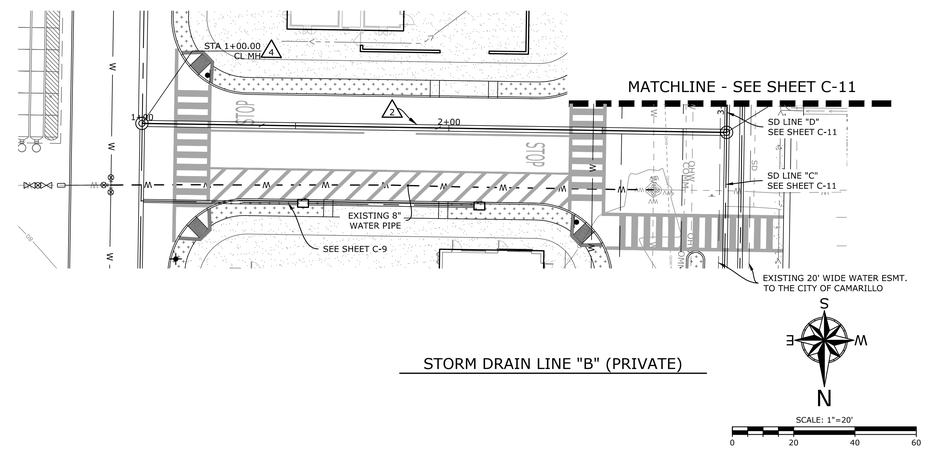
N:\projects\0248\engineering\acad\improvements\0248-C8-C13_util_.dwg Aug 17, 2023-3:01pm



PROFILE

SCALE: HORIZ. 1"=40'
VERT. 1"=4'





STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
2. CONSTRUCT 24" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
3. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STANDARD PLAN 300-3. "W" PER PLAN.
4. CONSTRUCT STORM DRAIN MANHOLE PER SPPWC STANDARD PLAN 321-2. INVERTS PER PLAN. MANHOLE FRAME AND COVER SHALL BE PER VCFCD STANDARD DRAWING NO. 3.
13. CONSTRUCT 3" HDPE SDR11 FORCE MAIN PER DETAIL "N" ON SHEET C-18.
15. CONSTRUCT STORM DRAIN JUNCTION STRUCTURE PER SPPWC STANDARD PLAN 331-3.
23. CONSTRUCT 12" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-18.
25. CONSTRUCT 12" HDPE (N-12 WT) 45° STORM DRAIN FITTING.
26. PROTECT EXISTING UTILITY IN PLACE AT UTILITY CROSSING.

Know what's **below.**
Call before you dig.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
SALVADOR CONTRERAS, JR.
NO 66720
CIVIL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY DL | CHECKED BY SC

CONSULTANT JOB NO 0248.01 | DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

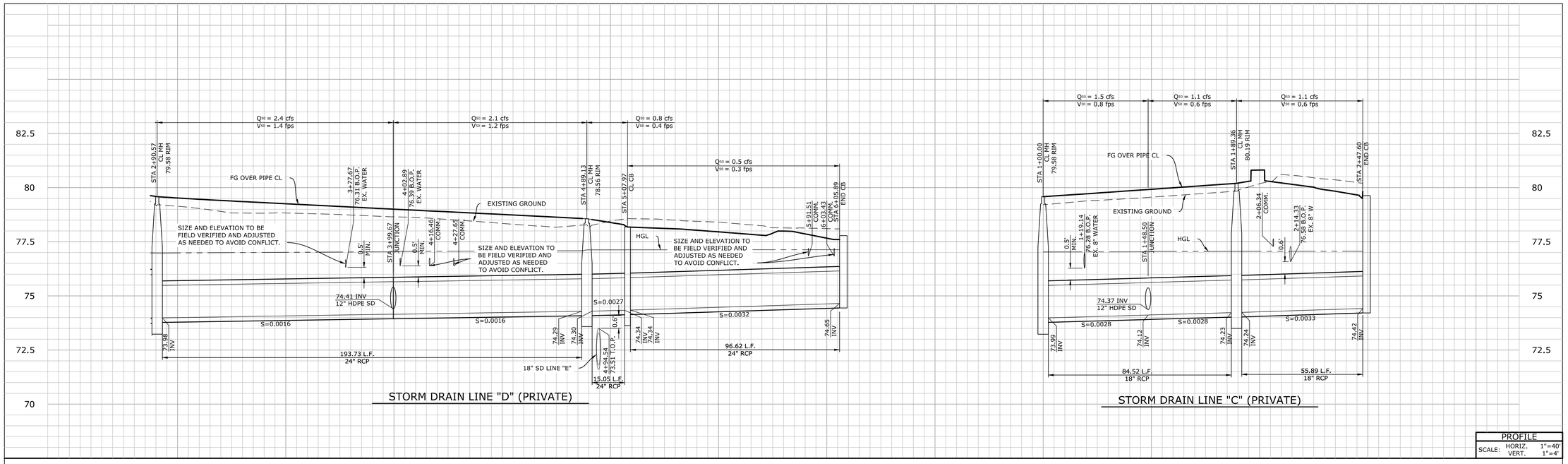
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

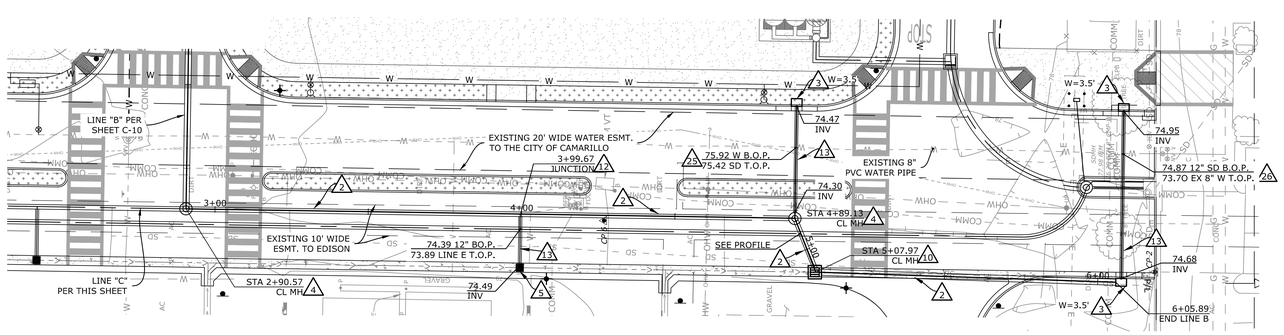
COUNTY DWG NO | SHEET 12 OF 123

SHEET TITLE
STORM DRAIN LINE "A" & "B" PLAN AND PROFILE

SHEET NO
C-10



PROFILE		
SCALE:	HORIZ.	1"=40'
	VERT.	1"=4'



STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
2. CONSTRUCT 24" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
3. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STANDARD PLAN 300-3. "W" PER PLAN.
4. CONSTRUCT STORM DRAIN MANHOLE PER SPPWC STANDARD PLAN 321-2. INVERTS PER PLAN. MANHOLE FRAME AND COVER SHALL BE PER VCFCD STANDARD DRAWING NO. 3.
5. CONSTRUCT 18" X 18" JENSEN PRECAST GRATED DROP INLET CATCH BASIN WITH CAST-IN FRAME AND H-20 RATED GRATE OR APPROVED EQUAL. INVERTS PER PLAN.
6. CONSTRUCT 24" X 24" JENSEN PRECAST GRATED DROP INLET CATCH BASIN WITH CAST-IN FRAME AND H-20 RATED GRATE OR APPROVED EQUAL. INVERTS PER PLAN.
7. CONSTRUCT STORM DRAIN JUNCTION STRUCTURE PER SPPWC STANDARD PLAN 331-3.
8. CONSTRUCT 12" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-18.
9. CONSTRUCT 12" HDPE (N-12 WT) 45° STORM DRAIN FITTING.
10. ADJUST EXISTING WATER UTILITY TO AVOID UTILITY CROSSING CONFLICT. SEE WATER PLAN (SHEETS C-15 & C-16) FOR MORE INFORMATION.
11. PROTECT EXISTING UTILITY IN PLACE AT UTILITY CROSSING.
12. CONSTRUCT 8" DIA. SDR 35 PVC STORM DRAIN PER DETAIL "N" ON SHEET C-19.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

Know what's below. Call before you dig.

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

N:\projects\0248\engineering\acad\improvements\0248-C8-C13_util_.dwg Apr 12, 2023-2:35pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO 0248.01	DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

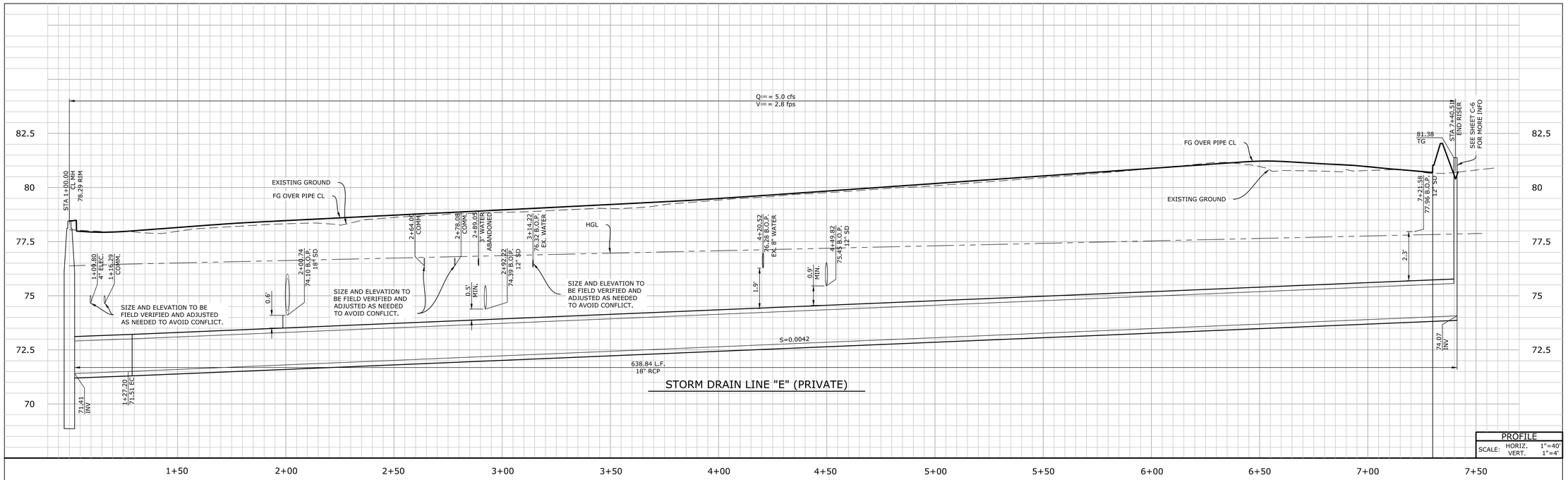
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

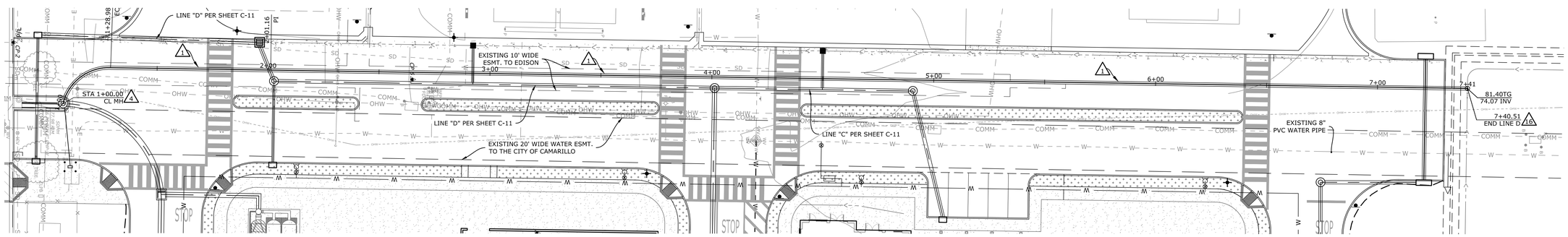
COUNTY DWG NO | SHEET 13 OF 123

SHEET TITLE
STORM DRAIN LINE "B" & "C" PLAN AND PROFILE

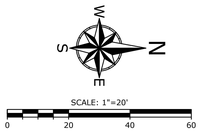
SHEET NO
C-11



STORM DRAIN LINE "E" (PRIVATE)



STORM DRAIN LINE "E" (PRIVATE)



STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
2. CONSTRUCT STORM DRAIN MANHOLE PER SPPWC STANDARD PLAN 321-2. INVERTS PER PLAN. MANHOLE FRAME AND COVER SHALL BE PER VCFCD STANDARD DRAWING NO. 3.
10. CONSTRUCT STORM DRAIN RISER INLET PER DETAIL "R" ON SHEET C-18.

Know what's **below.**
Call before you dig.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
SAL CONTRERAS
DRAWN BY DL
CHECKED BY SC
CONSULTANT JOB NO 0248.01
DATE 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

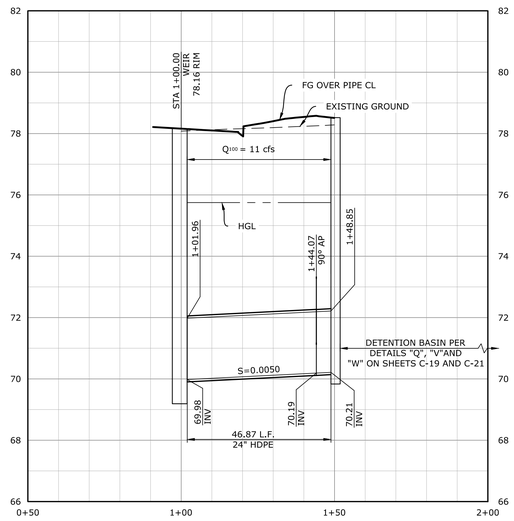
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO
SHEET 14 OF 123

SHEET TITLE
STORM DRAIN LINE "D"
PLAN AND PROFILE

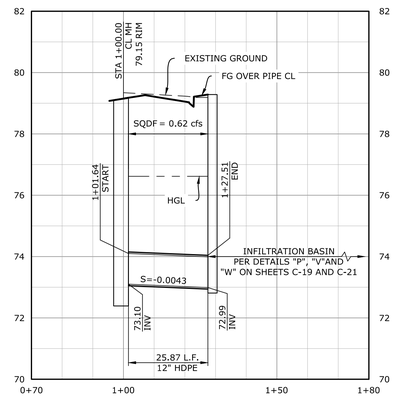
SHEET NO
C-12

N:\projects\0248\engineering\acad\improvements\0248-C8-C13_util_.dwg Apr 12, 2023-2:36pm



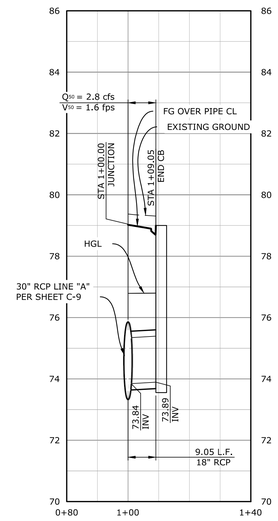
LATERAL "A-1" (PRIVATE)

SCALE: 1" = 20' (HORIZ.); 1" = 2' (VERT.)



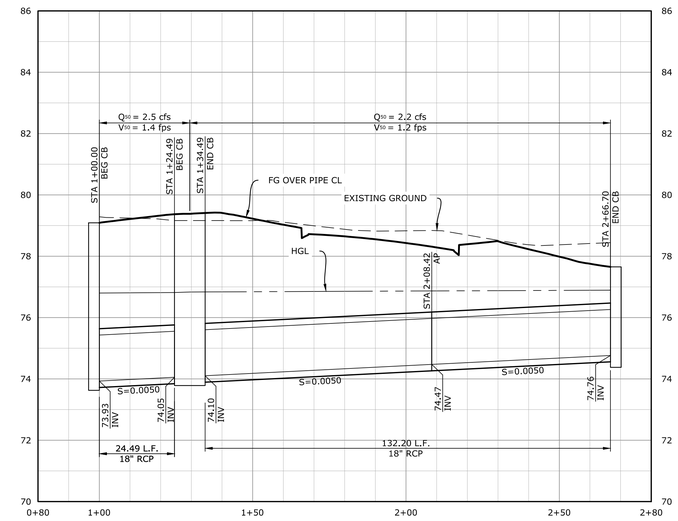
LATERAL "A-2" (PRIVATE)

SCALE: 1" = 20' (HORIZ.); 1" = 2' (VERT.)



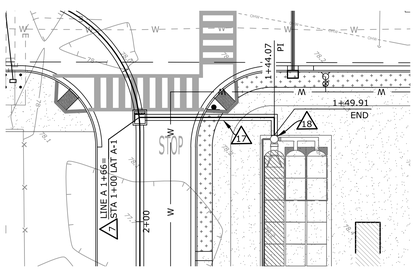
LATERAL "A-3.1" (PRIVATE)

SCALE: 1" = 20' (HORIZ.); 1" = 2' (VERT.)

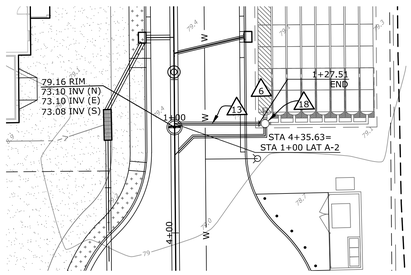


LATERAL "A-3.2" (PRIVATE)

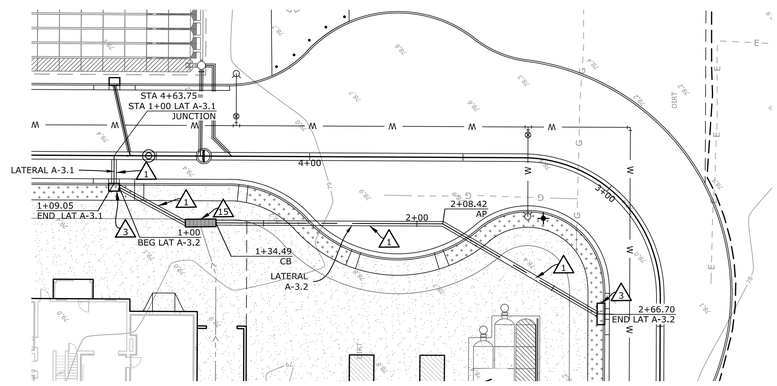
SCALE: 1" = 20' (HORIZ.); 1" = 2' (VERT.)



STORM DRAIN LATERAL "A-1" (PRIVATE)



STORM DRAIN LATERAL "A-2" (PRIVATE)



STORM DRAIN LATERAL "A-3.1" & "A-3.2" (PRIVATE)

STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP STORM DRAIN PER DETAIL "N" ON SHEET C-19.
3. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STANDARD PLAN 300-3. "W" PER PLAN.
6. CONSTRUCT PCC PRECAST WEIR STRUCTURE FOR INFILTRATION BASIN (HIGH FLOW BYPASS) PER DETAIL "L" ON SHEET C-19.
7. CONSTRUCT PCC PRECAST DIVERSION WEIR STRUCTURE WITH MANHOLE PER DETAIL "M" ON SHEET C-19.
13. CONSTRUCT 12" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-18.
15. CONSTRUCT PCC GRATING CATCH BASIN - ALLEY (TRANSVERSE) WITH (5) H-20 RATED GRATES PER SPPWC STANDARD PLANS 305-3 AND 311-3.
17. CONSTRUCT 24" HDPE (N-12 WT) STORM DRAIN PER DETAIL "N" ON SHEET C-19.
18. CONSTRUCT 36" NYLOPLAST BASIN WITH DUCTILE IRON TRAFFIC RATED FRAME AND SOLID GRATE.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

SCALE: 1"=20'
0 20 40 60

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

N:\projects\0248\engineering\acad\improvements\0248-C8-C13_util_.dwg Apr 12, 2023-3:37pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG
Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS, JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC
WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO	DATE
0248.01	4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO SHEET 15 OF 123

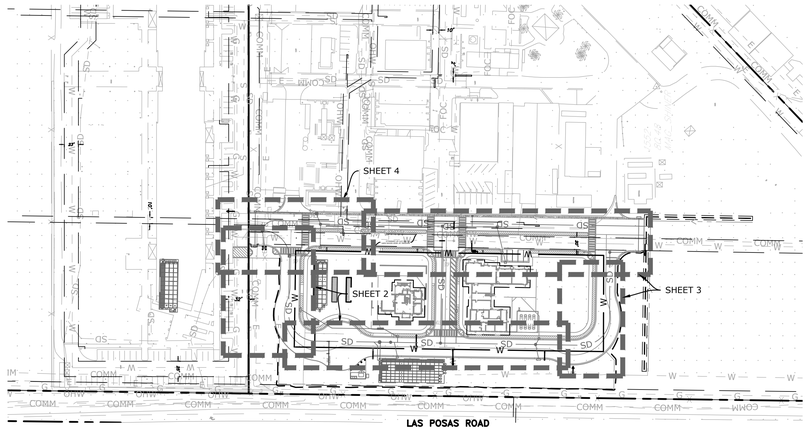
SHEET TITLE
STORM DRAIN LATERAL PROFILES

SHEET NO
C-13

VENTURA COUNTY FIRE TRAINING CENTER
WATER IMPROVEMENT PLANS

WATER IMPROVEMENTS GENERAL NOTES

1. ALL WATER FACILITY INSTALLATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF CAMARILLO WATER DIVISION MANUAL OF DESIGN AND CONSTRUCTION STANDARDS.
2. ALL STANDARD PLATES REFER TO CITY OF CAMARILLO MANUAL OF DESIGN AND CONSTRUCTION STANDARDS FOR THE WATER DIVISION.
3. CONTRACTOR SHALL NOTIFY WATER DIVISION AND ARRANGE FOR PRE-CONSTRUCTION CONFERENCES 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
4. CONTRACTOR SHALL NOTIFY THE WATER DIVISION 24 HOURS PRIOR TO ANY REQUIRED CONSTRUCTION SPECIAL INSPECTIONS.
5. STATIONING AS SHOWN IS ON THE CENTERLINE OF THE WATER LINE UNLESS OTHERWISE NOTED.
6. ALL PAVEMENT REMOVALS SHALL BE SAW CUT TO A NEAT VERTICAL LINE AS DIRECTED BY THE ENGINEER.
7. SEPARATION OF WATER AND SEWER LINES SHALL BE IN ACCORDANCE WITH VENTURA COUNTY ORDINANCE AS ADOPTED BY THE CITY OF CAMARILLO COUNCIL, DRAWING NO. W-2, AND THE MOST CURRENT STATE WATER SEPARATION REQUIREMENTS.
8. FOR SEPARATION OF ALL CROSSING OF SEWER AND WATER MAINS, SEE SEWER AND WATER PLANS FOR LOCATION.
9. WATER LATERALS SHALL BE PLACED 5 FEET UPSTREAM OF THE CENTERLINE OF EACH LOT WITH A MINIMUM CLEARANCE OF 10 FEET FROM THE SEWER LATERALS IN EVERY CASE.
10. WATER MAIN CROSSING BELOW STORM DRAINS SHALL BE IN ACCORDANCE WITH CITY OF CAMARILLO WATER DIVISION DRAWING NO. W-2 AND W-46, OR AS APPROVED BY CITY ENGINEER, AND THE MOST CURRENT STATE WATER SEPARATION REQUIREMENTS.
11. MINIMUM COVER OF 42" SHALL BE MAINTAINED FOR ALL MAIN LINES UNLESS OTHERWISE SPECIFIED ON APPROVED PLANS.
12. ALL WATER METERS, APPURTENANCES, AND FIRE HYDRANTS SHALL BE CONSTRUCTED PER STANDARD DRAWING NO. W-3 THROUGH W-31. WATER METER AND FIRE HYDRANTS SHALL BE PLACED PER STANDARD DRAWING W-7, W-8, W-11, W-12 AND W-13.
13. THRUST BLOCKS SHALL BE INSTALLED FOR ALL WATER SERVICE FITTINGS IN ACCORDANCE WITH PLATES W-3, W-4, W-7, W-18, W-26, W-38, W-47 THROUGH W-50, AND SIZED AS SPECIFIED BY THE DESIGN ENGINEER.
14. SERVICE LATERALS SHALL BE 1" MUNICIPEX PIPE WITH TRACING WIRE PER STANDARD DRAWING W-11.
15. ALL COPPER PIPE SHALL BE COVERED WITH 6 MIL PLASTIC SLEEVING WITH ENDS SEALED WITH 10 MIL TAPE. PLASTIC SLEEVING SHALL BE SPECIALTY PRODUCT P-3015 FOR 3/4" AND 1" PIPE, AND P-3016 FOR 2" AND 2-1/2" PIPE OR APPROVED EQUAL.
16. CATHODIC PROTECTION SHALL BE INSTALLED ON ALL COPPER PIPE FOR METER SERVICES, AIR VACS AND BLOW OFFS. CATHODIC PROTECTION SHALL BE A 9 LB., 5"x18" HIGH POTENTIAL MAGNESIUM ANODE ATTACHED WITH BRONZE CLAMP - MAXMAG 9D3GG OR APPROVED EQUAL.
17. MINIMUM COVER OF 30" SHALL BE MAINTAINED FOR ALL SERVICE CONNECTIONS.
18. SADDLES FOR ACP WILL BE DOUBLE-STRAPPED (BRONZE) FORD MODEL 202B OR EQUAL. SADDLES FOR C-900 SHALL BE DOUBLE STRAPPED (BRONZE) FORD MODEL 202BS OR EQUAL.
19. LOCATIONS OF ALL WATER SERVICES SHALL BE MARKED ON FACE OF CURB WITH THE LETTER "W" INSCRIBED 3" HIGH AND 3/16- DEEP IN A UNIFORM AND NEAT MANNER.
20. ALL WATER LINES SHALL BE STUBBED OUT TO PROPERTY LINES PRIOR TO THE INSTALLATION OF CURB, GUTTERS OR SIDEWALKS.
21. BACKFILL SHALL BE GOVERNED BY SECTION 306.1.3.3 OF THE 1997 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. COMPACTION WORK SHALL NOT DISTURB ADJACENT STREET STRUCTURAL SECTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES.
22. ALL VALVES SHALL BE STACKED WITH 8 INCHES OF NON-CORROSIVE MATERIALS AND TOPPED WITH A BINGHAM AND TAYLOR MARK V VALVE BOX MARKED WITH CITY LOGO.
23. APPROVAL OF BACTERIOLOGICAL SAMPLES MUST BE OBTAINED PRIOR TO TYING INTO THE EXISTING WATER SYSTEM. THE CITY OF CAMARILLO WILL OBTAIN ALL SAMPLES AND SEND THEM TO A LAB FOR TESTING. THE CONTRACTOR/DEVELOPER WILL PAY FOR ALL BACTERIOLOGICAL TESTING. EACH BACTERIOLOGICAL TEST REQUIRES A MINIMUM OF 48 HOURS.
24. ALL WATER LINES SHALL BE CHLORINATED AND PRESSURE TESTED PER AWWA STANDARDS TO MEET WATER DIVISION REQUIREMENTS AS FAR AS LEAKAGE PRIOR TO TYING INTO EXISTING SYSTEM.
25. NEW WATER MAINS WILL BE CHLORINATED AFTER THE LINE HAS BEEN THOROUGHLY FLUSHED. NO CONNECTION SHALL BE MADE TO THE EXISTING WATER MAIN UNTIL THE NEW PIPE HAS BEEN SUCCESSFULLY PRESSURE TESTED, CHLORINATED, FLUSHED (TO REDUCE CHLORINE TO SYSTEM RESIDUAL), AND PASSED COLIFORM BACTERIA EXAMINATION.
26. WATER SYSTEM SHALL BE FLUSHED UNDER THE DIRECTION OF THE WATER INSPECTOR AND SHALL NOT BE LEFT UNATTENDED DURING FLUSHING OPERATIONS.
27. THE HYDROSTATIC PRESSURE TEST WILL BE 225 PSI BETWEEN VALVES FOR ONE HOUR AND LEAKAGE TEST WILL BE 150 PSI FOR FOUR HOURS.
28. CONTRACTOR SHALL KEEP A STRICT RECORD OF ALL VALVES, TEES AND LATERAL STUBS TO BE SUBMITTED TO THE ENGINEER TO PREPARE "AS BUILT" PLANS PRIOR TO FINAL ACCEPTANCE OF IMPROVEMENTS.
29. POT HOLE (EXPOSE) PIPING AT ALL JOINT POINTS WITH EXISTING, TO VERIFY LOCATION AND ALIGNMENT BOTH VERTICAL AND HORIZONTAL PRIOR TO JOINING WITH EXISTING WATER.
30. BEDDING SHALL BE GOVERNED BY STANDARD SECTION 306-1.2.1 OF THE 1997 STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION AND SHALL BE FREE-DRAINING GRANULAR MATERIAL HAVING A SAND EQUIVALENT OF OR NOT LESS THAN 30.
31. ALL GATE VALVES TO BE RESILIENT SEATED (RW) TYPE CONSTRUCTION AND SHALL MEET THE REQUIREMENTS OF THE CITY OF CAMARILLO; ACCEPTABLE VALVES ARE: AMERICAN FLOW CONTROL, CLOW, AVK AND THOSE WHICH ARE EQUAL, HAVE FULL SIZE UNOBSTRUCTED WATER WAY AND THE VALVE GATE IS FULLY ENCAPSULATED WITH RUBBER.
32. FITTINGS SHALL MEET THE REQUIREMENT OF AWWA C-110/A21.10; CEMENT MORTAR LINING SHALL BE IN ACCORDANCE WITH AWWA C-1 04/ A21.4.
33. WATER MAIN LOCATION IN ROAD OR STREET. THE CENTERLINE OF THE WATER MAIN SHALL BE LOCATED IN PUBLIC STREETS PARALLEL TO AND FIVE FEET NORTH OR WEST OF THE STREET CENTERLINE.
34. LOCATION WIRE - INSTALL AN 8-GAUGE INSULATED LOCATION WIRE AFFIXED TO THE TOP OF THE NON-METALLIC WATER PIPE PER DRAWING NO. W-38.
35. UNDERGROUND PIPES AND UTILITIES - SHOW AND LABEL ON THE PLANS AND PROFILE THE SIZE AND OWNERSHIP OF ALL EXISTING UNDERGROUND UTILITIES THAT CROSS OR PARALLEL THE WATER MAIN. NON-EXISTING BUT PLANNED IMPROVEMENTS FOR UNDERGROUND UTILITIES SHALL ALSO BE SHOWN. ANY PIPE LINE WHICH CROSSES THE WATER MAIN AND ESPECIALLY WATER, SEWER, STORM DRAIN, OPEN CHANNEL, GAS, TELEPHONE, POWER, TELEVISION AND OIL LINES SHALL BE SHOWN AND LABELED ON THE PROFILE WITH STATION AND ELEVATION. CONTRACTOR SHALL CONTACT UTILITIES FOR EXACT LOCATION OF EXISTING UTILITIES.
36. PVC WATER PIPE SIZE 4 INCH SHALL BE C-90D CL-305, 6 INCH TO 12 INCH SHALL BE C-900, CL-235 OR CL-305. SIZES 14 INCH AND LARGER SHALL BE C-905 DR-18 CL-235.
37. IN CASES WHERE THE WATER MAIN PRESSURE IS BETWEEN 80 PSI AND 130 PSI. AN INDIVIDUAL PRESSURE REGULATOR IS REQUIRED ON THE CUSTOMER SIDE OF THE WATER METER CONNECTION TO MAINTAIN 80 PSI MAXIMUM PRESSURE PER CAMARILLO ORDINANCE NO. 361.
38. BUTTERFLY VALVES (BFV) SHALL COMPLY WITH THE LATEST REVISION OF AWWA STANDARD C-504.
39. ALL EXISTING WATER MAINS THAT ARE TO BE ABANDONED SHALL BE CUT AND THE END PLUGGED WITH CONCRETE. THE ABANDONED VALVES AND FITTINGS ARE TO BE REMOVED, SALVAGED AND DELIVERED TO THE CAMARILLO WATER DIVISION, LOCATED AT THE CORP. YARD - 283 S. GLENN DRIVE.
40. METER BOXES SHOWN ON THE DRAWINGS OR ON THE CITY OF CAMARILLO WATER DIVISION STANDARD PLATES SHALL BE THE ARMORCAST EQUIVALENT OF THE BOX SHOWN.



SHEET INDEX

SHEET NO.	SHEET TITLE
1	WATER IMPROVEMENT PLAN TITLE SHEET
2	WATER PLAN & PROFILE STA: 1+00 TO 7+00
3	WATER PLAN & PROFILE STA: 7+00 TO 13+00
4	WATER PLAN & PROFILE STA: 13+00 TO 14+20.28

CERTIFICATE OF ADEQUACY OF WATER SUPPLY SYSTEM

IT IS UNDERSTOOD BY ALL PERSONS SIGNING THIS CERTIFICATE THAT THE CITY WILL NOT CONSIDER APPROVAL OF THIS LAND DEVELOPMENT WITHOUT HAVING FIRST RECEIVED THE REPRESENTATIONS CONTAINED HEREIN.

1. I HOLD A CURRENTLY VALID CERTIFICATE OF REGISTRATION AS A CIVIL ENGINEER ISSUED PURSUANT TO SECTIONS 6700 et. seq. OF THE BUSINESS AND PROFESSIONS CODE, STATE OF CALIFORNIA. I AM FURTHER QUALIFIED BY EXPERIENCE TO DESIGN WATER SUPPLY SYSTEMS.
2. I AM FAMILIAR WITH THE TERMS OF THE STANDARD SPECIFICATIONS ESTABLISHING MINIMUM STANDARDS OF THE CITY FOR WATER SUPPLY AND WATER SYSTEMS MATERIALS AND CONSTRUCTION, AND SUPPLY REQUIREMENTS AS SET FORTH IN THE WATER WORKS MANUAL, ADOPTED BY THE CITY COUNCIL.
3. AFTER THOROUGHLY CHECKING, VERIFYING NECESSARY TESTS AND COMPUTATIONS, I FIND THAT THIS PROJECT CAN BE SERVED WITH A WATER SUPPLY MEETING THE CITY'S REQUIREMENTS WITHOUT REDUCING THE WATER SUPPLY TO PREVIOUSLY SERVED AREAS BELOW THE MINIMUM CITY STANDARDS; WHEN THE IMPROVEMENTS SHOWN ON THESE WATER PLANS AND THOSE OFFSITE WATER FACILITIES AS DESCRIBED IN CITY OF CAMARILLO DRAWING NUMBER(S) C-15799 HAVE BEEN CONSTRUCTED.
4. ALL DESIGN CRITERIA AND THE MATERIALS AND METHODS OF CONSTRUCTION SPECIFIED FOR USE IN THIS WATER SUPPLY SYSTEM MEET OR EXCEED STANDARDS ADOPTED BY THE CITY.

   _____ R.C.E. _____ DATE _____
   SIGNATURES REQUIRED PRIOR TO RECORDATION OF PARCEL MAP.
5. THE WATER COMPANY OR DISTRICT HEREBY AGREES TO INSTALL OR HAVE INSTALLED THE NECESSARY OFFSITE FACILITIES AS DESCRIBED IN CITY OF CAMARILLO DRAWING NUMBER(S) C-XXXXX PRIOR TO OCCUPANCY.

   CAMARILLO WATER DIVISION BY _____ DATE _____
   WATER COMPANY OR DISTRICT SIGNATURES REQUIRED PRIOR TO RECORDATION OF PARCEL MAP.
6. ALL IMPROVEMENTS SHOWN ON THE CITY OF CAMARILLO DRAWING NUMBER(S) C-15799 HAVE BEEN CONSTRUCTED AND PLACED IN OPERATION, AND THE WATER SUPPLY AVAILABLE EQUALS OR EXCEEDS THE MINIMUM CITY STANDARDS.

   _____ R.C.E. _____ DATE _____
   SIGNATURE REQUIRED UPON COMPLETION OF WATER SUPPLY SYSTEM SERVING THE PROJECT AND PRIOR TO ACCEPTANCE OF THE IMPROVEMENTS BY THE CITY.

SURVEY NOTES

1. MAPPING

TOPOGRAPHIC MAPPING WAS COMPILED AT A SCALE OF 1"=20', WITH A 1 FOOT CONTOUR INTERVAL FROM DATA COLLECTED IN A FIELD SURVEY PERFORMED USING CONVENTIONAL EQUIPMENT AND PROCEDURES IN NOVEMBER, 2022, AT THE REQUEST OF THE CITY OF CAMARILLO.

2. BASIS OF BEARINGS AND COORDINATES

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM NAD83, ZONE 5, EPOCH 2011.0 AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS) AND/OR CONTINUOUS OPERATING REFERENCE STATIONS (CORS) P720 & CSCI BEING 525-59-40E AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC).

3. ELEVATIONS

THE VERTICAL DATUM OF THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) EPOCH 1995 PER CONVENTIONAL TIES & GEOID MODELING (GEOID12B) TO VENTURA COUNTY BENCHMARK PID 127 BEING A BRASS DISK HAVING AN ELEVATION OF 226.15'.

4. UTILITIES

SURFACE UTILITY FEATURES SHOWN HEREON WERE LOCATED AS A PART OF THE FIELD SURVEY PERFORMED BY ECG BASED ON VISIBILITY ON THE DATE OF SURVEY. NO RESEARCH OR MAPPING OF SUBSURFACE UTILITIES HAS BEEN PERFORMED.

REV.	DESCRIPTION	APP'D	DATE

DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

VENTURA COUNTY
FIRE TRAINING CENTER
WATER IMPROVEMENT PLAN
TITLE SHEET

PLAN CHECK CONSULTANT
WILLDAN Engineering
374 POLI STREET, SUITE 101
VENTURA, CALIFORNIA 93001
(805) 653-6597

PREPARED BY: ECG Encompass Consultant Group, 333 N. LANTANA ST SUITE 287 CAMARILLO, CA 93010 PHONE: 805.322.4443 WWW.ECGCIVIL.COM

REGISTERED CIVIL ENGINEER RCE 61468 DATE

REVIEWED:
TRAFFIC ENGINEER DATE
REVIEWED:
DIRECTOR, COMMUNITY DEVELOPMENT DATE
REVIEWED:
STORMWATER PROGRAM MANAGER DATE

DRN BY: DES BY: CK'D BY: SC
APPROVED: 05/26/23
WATER SUPERINTENDENT DATE
DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO
RECOMMENDED BY:
SPEC. NUMBER: PROJ. NUMBER:
F.B. PG. SHEET 1 OF 4

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

DRAWING: N:\projects\0248\engineering\acad\improvements\0248-water-city_of_cam.dwg
SAVE DATE: 5/26/2023 9:39:43 AM PLOT BY: cbak PLOT DATE: 5/26/2023 9:50:03 AM

Ventura County Fire Department FIRE & RESCUE

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805-322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS, JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:
LAND DEVELOPMENT SERVICES ENGINEERING SERVICES VENTURA COUNTY PUBLIC WORKS AGENCY DATE

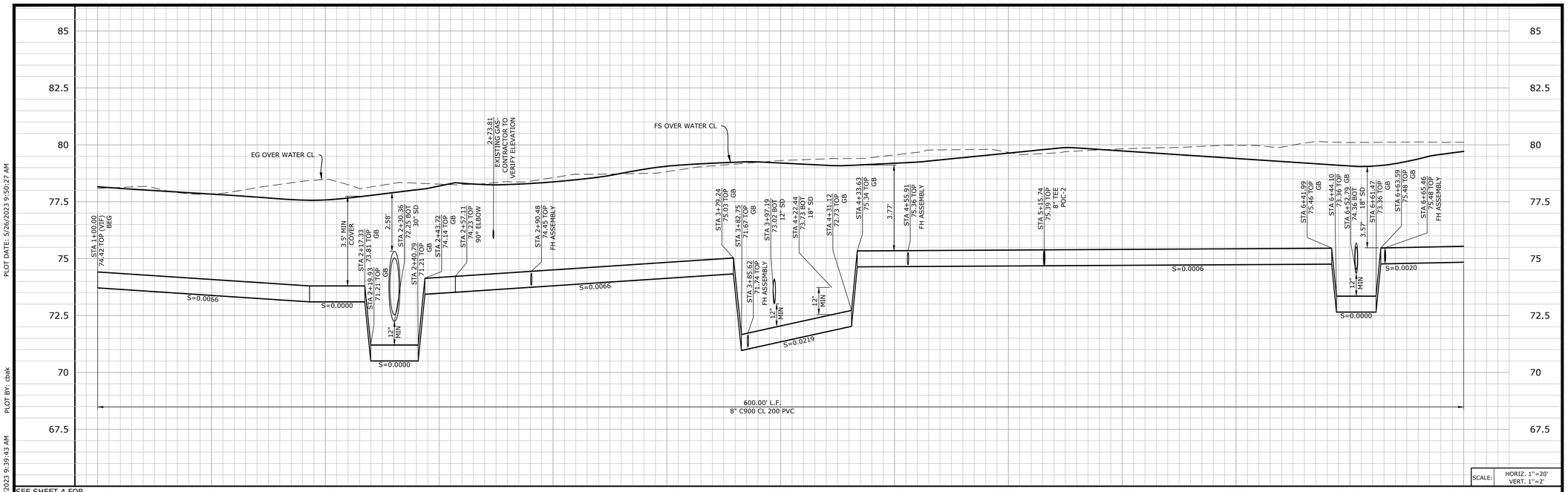
PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

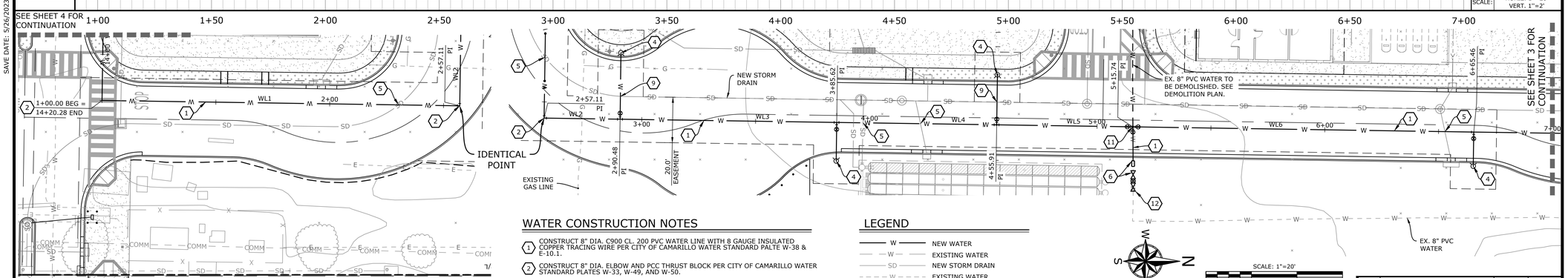
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER SAL CONTRERAS
DRAWN BY DL CHECKED BY SC
CONSULTANT JOB NO 0248.01 DATE 4/23
PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO SHEET 16 OF 123
SHEET TITLE WATER COVER SHEET
SHEET NO C-14



SCALE: HORIZ. 1"=20'
VERT. 1"=2'



WATER CONSTRUCTION NOTES

1. CONSTRUCT 8" DIA. C900 CL. 200 PVC WATER LINE WITH 8 GAUGE INSULATED COPPER TRACING WIRE PER CITY OF CAMARILLO WATER STANDARD PALTE W-38 & E-10.1.
2. CONSTRUCT 8" DIA. ELBOW AND PCC THRUST BLOCK PER CITY OF CAMARILLO WATER STANDARD PLATES W-33, W-49, AND W-50.
4. CONSTRUCT 8"x8"x6" TEE, FIRE HYDRANT, AND LATERAL PER CITY OF CAMARILLO WATER STANDARD PLATE W-7.
5. CONSTRUCT WATERLINE UTILITY CROSSING UNDER NEW STORM DRAIN PER CITY OF CAMARILLO WATER STANDARD PLATE W-45, MODIFIED TO MEET STATE STANDARDS.
6. CONSTRUCT 8" ZURN BF-375 BACKFLOW PREVENTER OR EQUAL, AND 8" BADGER COMPOUND WATER METER AND STRAINER OR EQUAL AT POINT OF CONNECTION PER CITY OF CAMARILLO STANDARD PLATE W-18.
9. CONSTRUCT WATERLINE UTILITY CROSSING OVER NEW STORM DRAIN PER CITY OF CAMARILLO STANDARD PLATE W-44 MODIFIED TO MEET STATE STANDARDS.
11. CONSTRUCT 8"X8" TEE WITH THREE (3) 8" (MJXFL) RW GV AND 8" FLANGE ADAPTER WITH THRUST BLOCK PER CITY OF CAMARILLO STANDARD PLATES W-35, W-36, W-38, W-48, W-49, & W-50.
12. CONNECT BACKFLOW PREVENTER TO EXISTING EAST WATER LINE PER DETAIL "A", THIS SHEET.

LEGEND

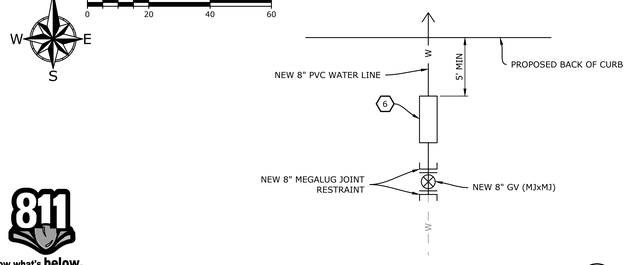
W	NEW WATER
W	EXISTING WATER
SD	NEW STORM DRAIN
W	EXISTING WATER
G	EXISTING GAS
COMM	EXISTING COMMUNICATIONS
OHW	EXISTING OVERHEAD WIRE
SD	EXISTING STORM DRAIN
E	EXISTING ELECTRICAL
FOC	EXISTING FIBER OPTIC

N W E S

SCALE: 1"=20'
0 20 40 60

LINE TABLE

LINE	BEARING	DISTANCE
WL1	S89°08'45"E	157.11
WL2	N0°51'15"E	33.38
WL3	N0°51'16"E	95.14
WL4	N0°51'14"E	70.28
WL5	N0°51'17"E	59.83
WL6	N0°52'57"E	149.72



8" EAST BACKFLOW ASSEMBLY DETAIL (A)

SCALE: N.T.S.

Know what's below. Call before you dig.

PLAN CHECK CONSULTANT
WILLDAN Engineering
374 POLI STREET, SUITE 101
VENTURA, CALIFORNIA 93001
(805) 653-6597

PREPARED BY:
ECG Encompass Consultant Group
333 N. LANTANA ST
SUITE 287
CAMARILLO, CA 93010
PHONE: 805.322.4443
WWW.ECGCIVIL.COM

REGISTERED CIVIL ENGINEER — DATE
RCE 61468

REVIEWED:
TRAFFIC ENGINEER — DATE

REVIEWED:
DIRECTOR, COMMUNITY DEVELOPMENT — DATE

REVIEWED:
STORMWATER PROGRAM MANAGER — DATE

REV.	DESCRIPTION	APP'D	DATE

DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

VENTURA COUNTY
FIRE TRAINING CENTER
WATER PLAN & PROFILE
STA: 1+00 TO 7+00

DRN BY: | DES BY: | CK'D BY: SC

APPROVED:
05/26/23
WATER SUPERINTENDENT — DATE
DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

RECOMMENDED BY:
SPEC. NUMBER: | PROJ. NUMBER:
F.B. | PG. | SHEET 2 OF 4

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

Ventura County Fire Department
FIRE & RESCUE

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrartharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS, JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES — DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER: SAL CONTRERAS
DRAWN BY: DL | CHECKED BY: SC
CONSULTANT JOB NO: 0248.01 | DATE: 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

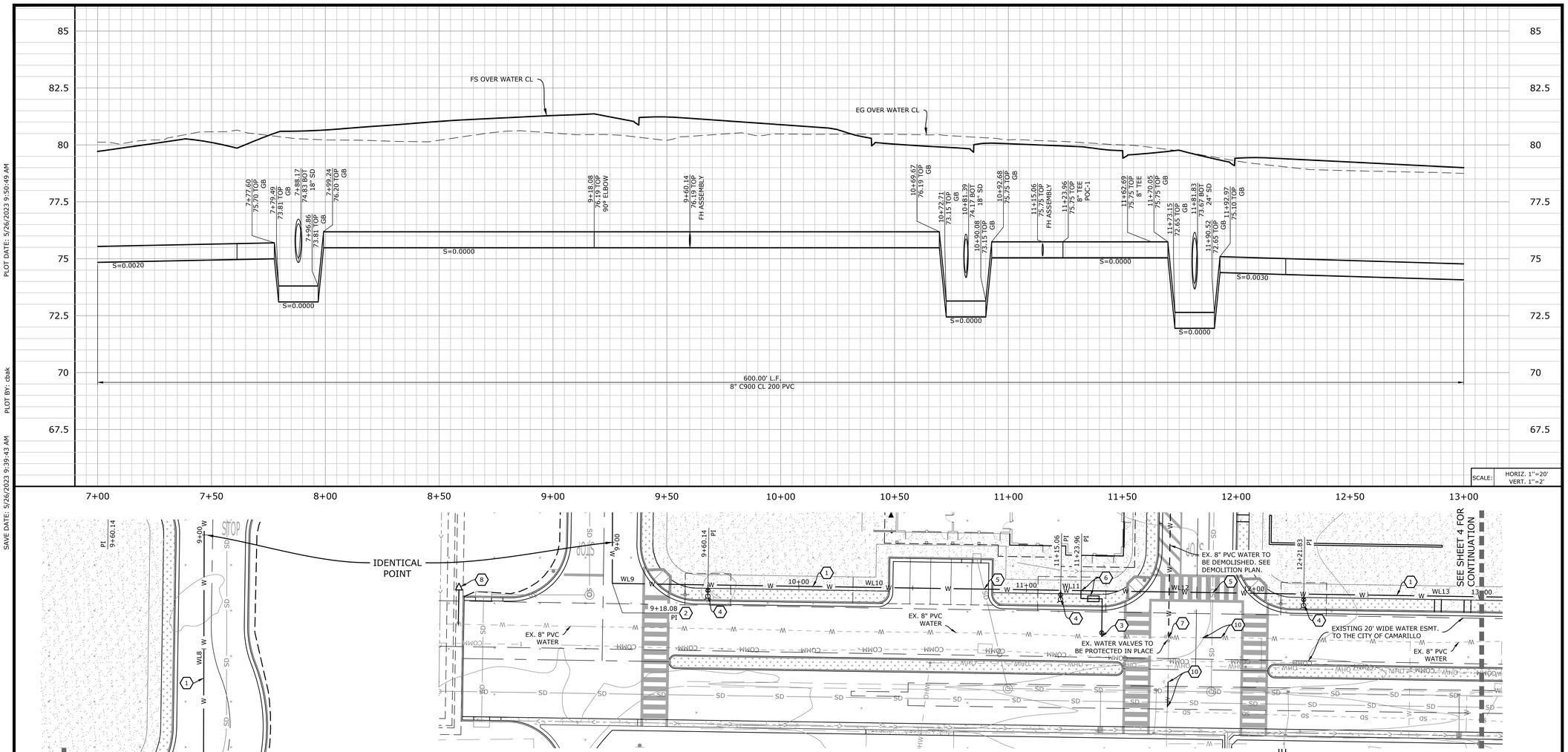
COUNTY SPEC NUMBER: CP23-02
COUNTY PROJECT NUMBER: P6T18021
COUNTY DWG NO | SHEET 17 OF 123

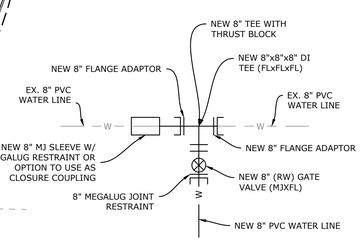
SHEET TITLE: WATER PLAN AND PROFILE

SHEET NO C-15

PLOT DATE: 5/26/2023 9:50:27 AM
PLOT BY: cbak
SAVE DATE: 5/26/2023 9:39:43 AM
DRAWING: N:\projects\0248\engineering\acad\improvements\0248-water-city_of_cam.dwg

C:\Users\cbak\appdata\local\temp\AcPublish_11416\0248-water-city_of_cam.dwg May 26, 2023-9:50am





8" TEE DETAIL (B)
SCALE: N.T.S.

WATER CONSTRUCTION NOTES

1. CONSTRUCT 8" DIA. C900 CL. 200 PVC WATER LINE WITH 8 GAUGE INSULATED COPPER TRACING WIRE PER CITY OF CAMARILLO WATER STANDARD PALTE W-38 & E-10.1.
2. CONSTRUCT 8" DIA. ELBOW AND PCC THRUST BLOCK PER CITY OF CAMARILLO WATER STANDARD PLATES W-33, W-49, AND W-50.
3. CONSTRUCT 8" TEE WITH COUPLING AND WITH 8" (RW)GV PER DETAIL "B", THIS SHEET AND CITY OF CAMARILLO WATER STANDARD PLATES W-35, W-36, W-38 & W-48.
4. CONSTRUCT 8"x8"x6" TEE , FIRE HYDRANT, AND LATERAL PER CITY OF CAMARILLO WATER STANDARD PLATE W-7.
5. CONSTRUCT WATERLINE UTILITY CROSSING UNDER NEW STORM DRAIN PER CITY OF CAMARILLO WATER STANDARD PLATE W-45, MODIFIED TO MEET STATE STANDARDS.
6. CONSTRUCT 8" ZURN BF-375 BACKFLOW PREVENTER OR EQUAL, AND 8" BADGER COMPOUND WATER METER AND STRAINER OR EQUAL AT POINT OF CONNECTION PER CITY OF CAMARILLO STANDARD PLATE W-18.
7. CONSTRUCT 8" BLIND FLANGE AND THRUST BLOCK PER CITY OF CAMARILLO WATER STANDARD PLATES W-48, W-49, & W-50 AT THE END OF EXISTING PIPE REMOVAL.
8. CONSTRUCT 2" COMBINATION AR/AV PER CITY OF CAMARILLO STANDARD PLATE W-5.
10. RECONSTRUCT EXISTING 8" WATER LINE TO LIMITS SHOWN. CONSTRUCT WATERLINE UTILITY CROSSING OVER NEW STORM DRAIN PER CITY OF CAMARILLO STANDARD PLATE W-44 MODIFIED TO MEET STATE STANDARDS.

LEGEND

W	NEW WATER
SD	NEW STORM DRAIN
W	EXISTING WATER
G	EXISTING GAS
COMM	EXISTING COMMUNICATIONS
OHW	EXISTING OVERHEAD WIRE
SD	EXISTING STORM DRAIN
E	EXISTING ELECTRICAL
FOC	EXISTING FIBER OPTIC

LINE TABLE

LINE	BEARING	DISTANCE
WL7	N0°48'37"E	95.75
WL8	N89°50'32"W	156.87
WL9	S0°52'57"W	42.05
WL10	S0°52'57"W	154.93
WL11	S0°44'24"W	8.90
WL12	S0°52'57"W	97.86
WL13	S0°52'57"W	147.91

SCALE: 1"=20'

REV.	DESCRIPTION	APP'D	DATE

DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

VENTURA COUNTY
FIRE TRAINING CENTER
WATER PLAN & PROFILE
STA: 7+00 TO 13+00

PLAN CHECK CONSULTANT: WILLDAN Engineering, 374 POLI STREET, SUITE 101, VENTURA, CALIFORNIA 93001, (805) 653-6597

PREPARED BY: ECG Encompass Consultant Group, 333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010, PHONE: 805.322.4443, WWW.ECGCIVIL.COM

REGISTERED CIVIL ENGINEER RCE 61468 — DATE

REVIEWED: TRAFFIC ENGINEER — DATE

REVIEWED: DIRECTOR, COMMUNITY DEVELOPMENT — DATE

REVIEWED: STORMWATER PROGRAM MANAGER — DATE

DRN BY: | DES BY: | CK'D BY: SC

APPROVED: WATER SUPERINTENDENT, DEPARTMENT OF PUBLIC WORKS, CITY OF CAMARILLO — DATE 05/26/23

RECOMMENDED BY:

SPEC. NUMBER: | PROJ. NUMBER:

F.B. | PG. | SHEET 3 OF 4

COUNTY of VENTURA Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

DRAWING: N:\projects\0248\engineering\acad\improvements\0248-water-city_of_cam.dwg
SAVE DATE: 5/26/2023 9:39:43 AM PLOT BY: cbak PLOT DATE: 5/26/2023 9:50:49 AM
C:\Users\cbak\appdata\local\temp\AcPublish_11416\0248-water-city_of_cam.dwg May 26, 2023-9:50am

Ventura County Fire Department — FIRE & RESCUE

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER — SALVADOR CONTRERAS JR — NO 66720 — CIVIL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:
LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

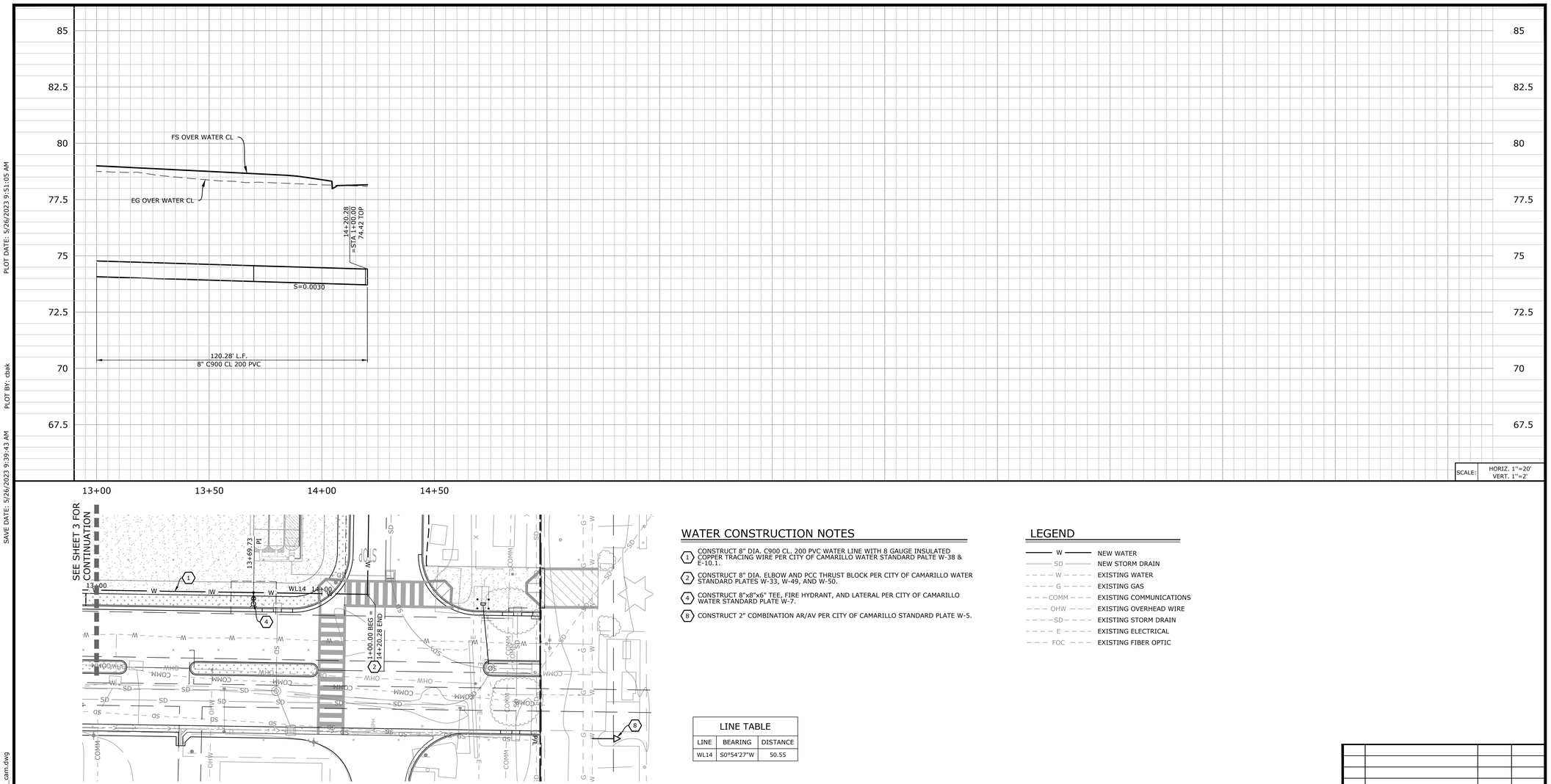
PUBLIC WORKS PROJECT MANAGER: Click here
CONSULTANT PROJECT MANAGER: SAL CONTRERAS
DRAWN BY: DL | CHECKED BY: SC
CONSULTANT JOB NO: 0248.01 | DATE: 4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02
COUNTY PROJECT NUMBER: P6T18021
COUNTY DWG NO | SHEET 18 OF 123
SHEET TITLE: WATER PLAN AND PROFILE
SHEET NO: C-16



WATER CONSTRUCTION NOTES

1. CONSTRUCT 8" DIA. C900 CL. 200 PVC WATER LINE WITH 8 GAUGE INSULATED COPPER TRACING WIRE PER CITY OF CAMARILLO WATER STANDARD PALTE W-38 & E-10.1.
2. CONSTRUCT 8" DIA. ELBOW AND PCC THRUST BLOCK PER CITY OF CAMARILLO WATER STANDARD PLATES W-33, W-49, AND W-50.
4. CONSTRUCT 8"x8"x6" TEE, FIRE HYDRANT, AND LATERAL PER CITY OF CAMARILLO WATER STANDARD PLATE W-7.
8. CONSTRUCT 2" COMBINATION AR/AV PER CITY OF CAMARILLO STANDARD PLATE W-5.

LEGEND

- W — NEW WATER
- SD — NEW STORM DRAIN
- W — EXISTING WATER
- G — EXISTING GAS
- COMM — EXISTING COMMUNICATIONS
- OHW — EXISTING OVERHEAD WIRE
- SD — EXISTING STORM DRAIN
- E — EXISTING ELECTRICAL
- FOC — EXISTING FIBER OPTIC

LINE TABLE		
LINE	BEARING	DISTANCE
WL14	S0°54'27"W	50.55

REV.	DESCRIPTION	APP'D	DATE

DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

VENTURA COUNTY
FIRE TRAINING CENTER
WATER PLAN & PROFILE
STA: 13+00 TO 14+20.28

DRN BY: | DES BY: | CK'D BY: SC

APPROVED: 05/26/23
WATER SUPERINTENDENT — DATE
DEPARTMENT OF PUBLIC WORKS
CITY OF CAMARILLO

RECOMMENDED BY:

SPEC. NUMBER: | PROJ. NUMBER:

F.B. | PG. | SHEET 4 OF 4

PLAN CHECK CONSULTANT
WILLDAN Engineering
374 POLI STREET, SUITE 101
VENTURA, CALIFORNIA 93001
(805) 653-6597

PREPARED BY: ECG Encompass Consultant Group
333 N. LANTANA ST
SUITE 287
CAMARILLO, CA 93010
PHONE: 805.322.4443
WWW.ECGCIVIL.COM

REGISTERED CIVIL ENGINEER — DATE
RCE 61468

REVIEWED:
TRAFFIC ENGINEER — DATE

REVIEWED:
DIRECTOR, COMMUNITY DEVELOPMENT — DATE

REVIEWED:
STORMWATER PROGRAM MANAGER — DATE

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Know what's below. Call before you dig.

DRAWING: N:\projects\0248\engineering\acad\improvements\0248-water-city_of_cam.dwg
SAVE DATE: 5/26/2023 9:39:43 AM PLOT BY: cbak PLOT DATE: 5/26/2023 9:51:05 AM

Ventura County Fire Department
FIRE & RESCUE

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	DL	CHECKED BY	SC
CONSULTANT JOB NO 0248.01		DATE	4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

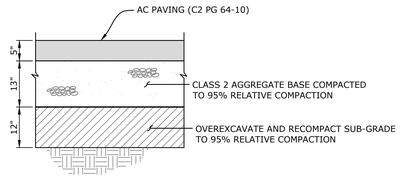
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 19 OF 123

SHEET TITLE
WATER PLAN AND PROFILE

SHEET NO
C-17

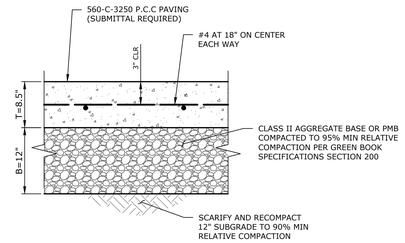
C:\Users\cbak\appdata\local\temp\AcPublish_11416\0248-water-city_of_cam.dwg May 26, 2023-9:51am



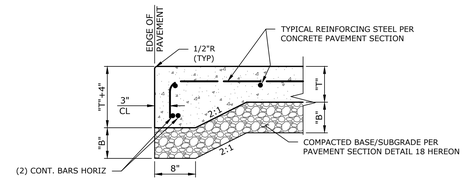
R-VALUE = 16
TI = 7

NOTE: STRUCTURAL SECTIONS SHOWN ARE PRELIMINARY. R-VALUE TESTS SHALL BE PERFORMED AT THE COMPLETION OF GRADING TO DETERMINE FINAL STRUCTURAL SECTION.

AC PAVEMENT SECTION (A)
N.T.S.

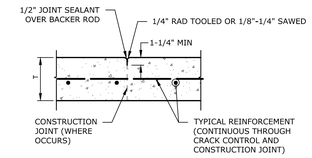


CONCRETE PAVEMENT SECTION (B)
N.T.S.



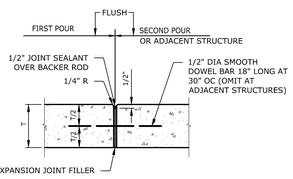
NOTES:
1. SEE PAVEMENT SECTION FOR THICKNESS, B.
2. SEE PAVEMENT SECTION FOR THICKNESS, T.

CONCRETE PAVEMENT THICKENED EDGE (C)
N.T.S.



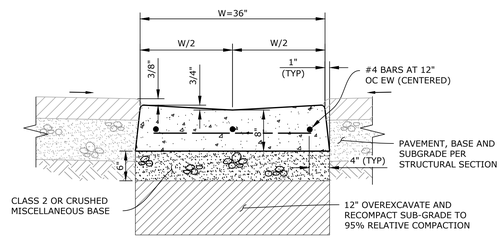
1. CONSTRUCTION JOINTS SHALL ONLY BE LOCATED WHERE A CRACK CONTROL JOINT OR OTHER JOINT WOULD OTHERWISE HAVE BEEN REQUIRED.
2. CRACK CONTROL JOINTS TO BE SPACED AT 12'-15' MAX O.C. E.W.
3. JOINTS SHALL BE SEALED WITH A UV-RESISTANT, FLEXIBLE SEALANT (SIKAFLEX-2C SL BY SIKA OR MASTERSEAL SL 2 BY BASF OR APPROVED EQUIVALENT) PLACED OVER THE JOINT.
4. SEE PAVEMENT SECTION FOR THICKNESS, T.

CONSTRUCTION/CRACK CONTROL JOINT (D)
N.T.S.



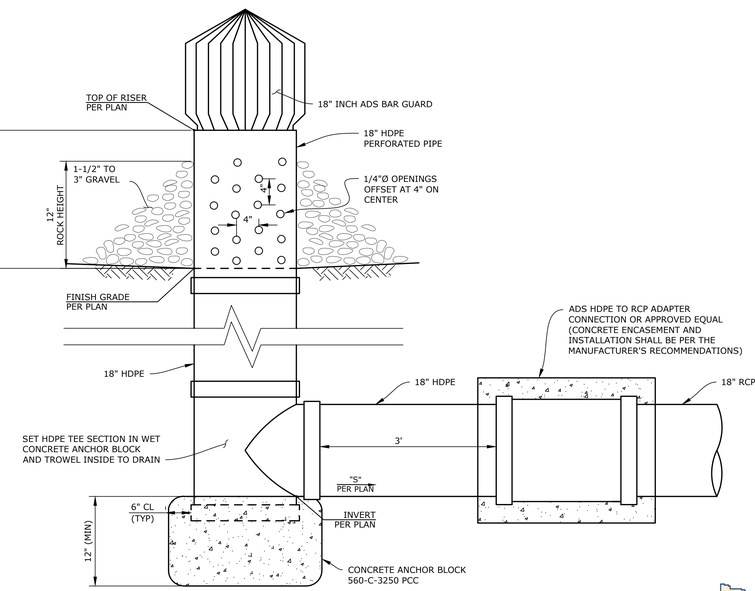
NOTES:
1. EXPANSION JOINTS SHALL BE PLACED AT ABUTTING STRUCTURES AND EXISTING PAVEMENT JOINS.
2. EXPANSION JOINT MATERIAL SHALL BE ASPHALT IMPREGNATED FIBER NON-EXTRUDING JOINT MATERIAL (W.R. MEADOWS FIBER EXPANSION JOINT MATERIAL OR APPROVED EQUIVALENT).
3. EXPANSION JOINTS SHALL BE SEALED WITH A UV-RESISTANT, FLEXIBLE SEALANT (SIKAFLEX-2C SL BY SIKA OR MASTERSEAL SL 2 BY BASF OR APPROVED EQUIVALENT) PLACED OVER THE JOINT.
4. USE SMOOTH BARS FOR DOWELS COATED TO PREVENT BOND, GREASE ONE END PRIOR TO SECOND POUR.
5. SEE PAVEMENT SECTION FOR THICKNESS, T.
6. PROVIDE ADEQUATE SUPPORT FOR DOWELS TO ENSURE THEY REMAIN LEVEL WITH FINISH SURFACE.
7. STOP SLAB REINFORCING AT EXPANSION JOINTS.

SLAB EXPANSION JOINT (E)
N.T.S.

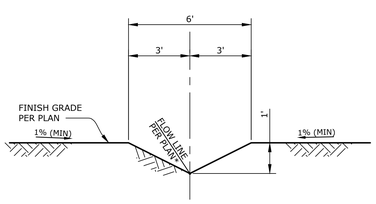


NOTES:
1. CONCRETE SHALL BE CLASS 532-CFW-3250.
2. EXPOSED EDGES SHALL HAVE A 1/2" TOOLED RADIUS.
3. SUBGRADE SOILS SHALL BE COMPACTED TO 95% RELATIVE DENSITY.
4. INSTALL CRACK CONTROL JOINTS AT 12' MAX SPACING PER DETAIL "D", THIS SHEET.
5. INSTALL EXPANSION JOINTS AT 24' MAX. SPACING PER DETAIL "E", THIS SHEET.

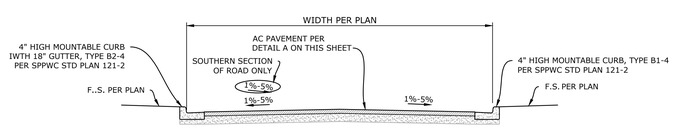
CONCRETE RIBBON GUTTER DETAIL (F)
N.T.S.



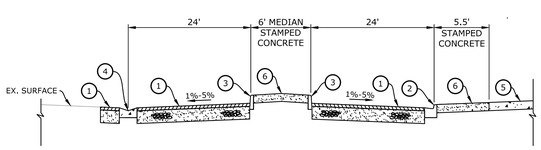
PVC RISER INLET DETAIL (R)
N.T.S.



GRADED SWALE (G)
N.T.S.



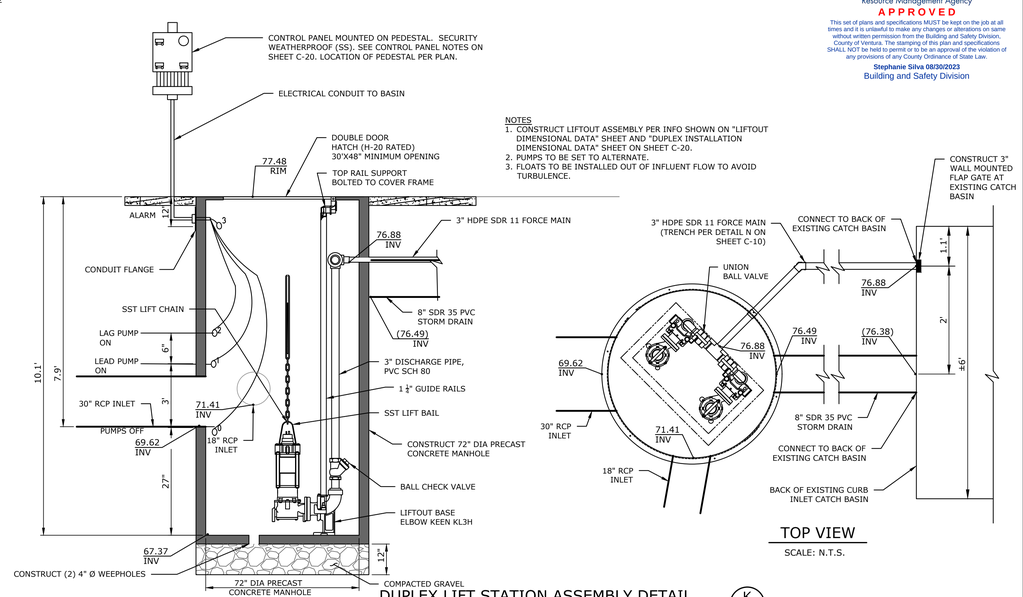
ROAD SECTION - H (H)
N.T.S.



CONSTRUCTION NOTES

1. CONSTRUCT ASPHALT CONCRETE PAVEMENT PER DETAIL A ON THIS SHEET.
2. CONSTRUCT 4" CONCRETE MOUNTABLE CURB WITH 18" GUTTER,TYPE B2-4 PER SPPWC STANDARD PLAN 121-2.
3. CONSTRUCT 4" CONCRETE MOUNTABLE CURB,TYPE B1-4 PER SPPWC STANDARD PLAN 121-2.
4. CONSTRUCT 36" CONCRETE RIBBON GUTTER PER DETAIL F ON THIS SHEET.
5. CONSTRUCT CONCRETE PAVEMENT PER DETAIL B ON THIS SHEET.
6. CONSTRUCT STAMPED CONCRETE. COLOR SHALL BE GREEN. PAVEMENT SECTION SHALL BE PER DETAIL B ON THIS SHEET.

ROAD SECTION - J (J)
N.T.S.



NOTES
1. CONSTRUCT LIFTOUT ASSEMBLY PER INFO SHOWN ON "LIFTOUT DIMENSIONAL DATA" SHEET AND "DUPLEX INSTALLATION DIMENSIONAL DATA" SHEET ON SHEET C-20.
2. PUMPS TO BE SET TO ALTERNATE.
3. FLOATS TO BE INSTALLED OUT OF INFLUENT FLOW TO AVOID TURBULENCE.

TOP VIEW
SCALE: N.T.S.

DUPLEX LIFT STATION ASSEMBLY DETAIL (K)
SCALE: N.T.S.

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

Know what's below. Call before you dig.

N:\projects\0248\engineering\acad\improvements\0248-sec-detail-1.dwg Apr 11, 2023-4:31pm

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS JR NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

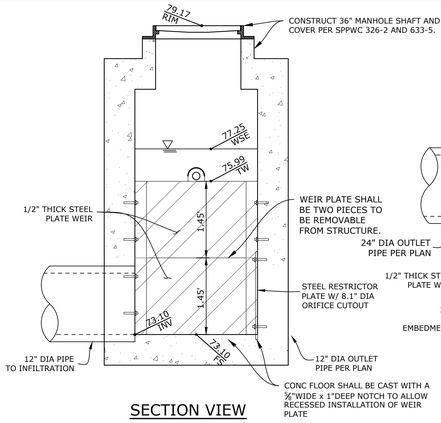
NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER SAL CONTRERAS
DRAWN BY DL CHECKED BY SC
CONSULTANT JOB NO 0248.01 DATE 4/23
PROJECT TITLE AND ADDRESS

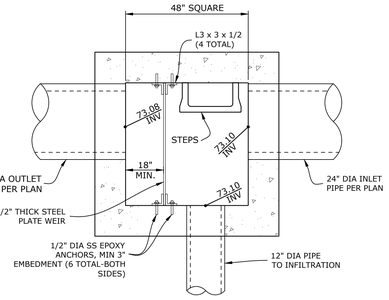
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO SHEET 19 OF 123
SHEET TITLE
CIVIL DETAILS AND SECTIONS
SHEET NO C-18



SECTION VIEW



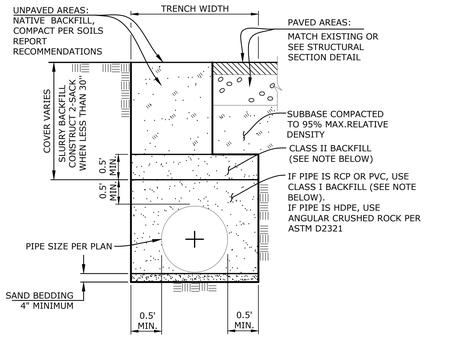
PLAN VIEW

NOTES:
1. THE PRECAST MANUFACTURER SHALL PROVIDE THE ADEQUATE WALL THICKNESS AND NECESSARY REBAR TO WITHSTAND ALL APPLICABLE LOADING INCLUDING BUT NOT LIMITED TO HS20 AND PAVEMENT LOADING.
2. PRIOR TO FABRICATION OF THE STRUCTURE THE CONTRACTOR SHALL SUBMIT STRUCTURAL ENGINEERING CALCULATIONS AND SHOP DRAWINGS PREPARED BY A CALIFORNIA REGISTERED CIVIL ENGINEER FOR PUBLIC WORKS AGENCY PROJECT MANAGER TO REVIEW AND APPROVE.

PRE-CAST WEIR STRUCTURE - INFILTRATION

N.T.S.

L



NOTE:
CLASS I BACKFILL:
BACKFILL MATERIAL SHALL HAVE A SAND EQUIVALENT 20 OR GREATER, SHALL HAVE A 100% PASSING THE 2" SIEVE AND 35% TO 100% PASSING THE #4 SIEVE. THIS MATERIAL SHALL NOT BE END DUMPED OR DOZED INTO THE TRENCH. THE MATERIAL SHALL BE BROUGHT UP EQUALLY ON BOTH SIDES OF THE PIPE TO 12" ABOVE THE HIGHEST POINT OF THE PIPE. THIS MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY TEST METHOD ASTM D 1557-78 METHOD "A", "B", "C", OR "D". THE THICKNESS OF EACH LAYER OF BACKFILL SHALL NOT EXCEED 12" BEFORE COMPACTION.

CLASS II BACKFILL:
BACKFILL MATERIAL SHALL CONTAIN NO STONES OR PAVEMENT PIECES IN EXCESS OF 6" IN GREATEST DIAMETER. BACKFILL MATERIAL SHALL BE COMPACTED TO 90% MAXIMUM DENSITY, AS DETERMINED BY TEST METHOD ASTM D 1557-78 METHOD "A", "B", "C", OR "D". THE THICKNESS OF EACH LAYER OF BACKFILL SHALL NOT EXCEED 12" BEFORE COMPACTION.

TYPICAL STORM DRAIN TRENCH DETAIL

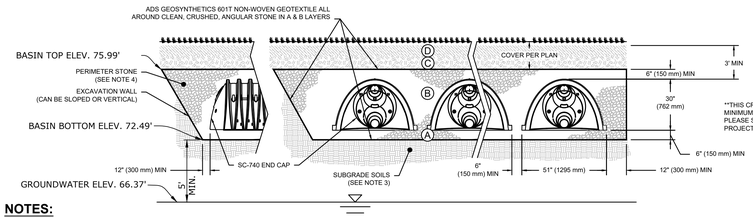
N.T.S.

N

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



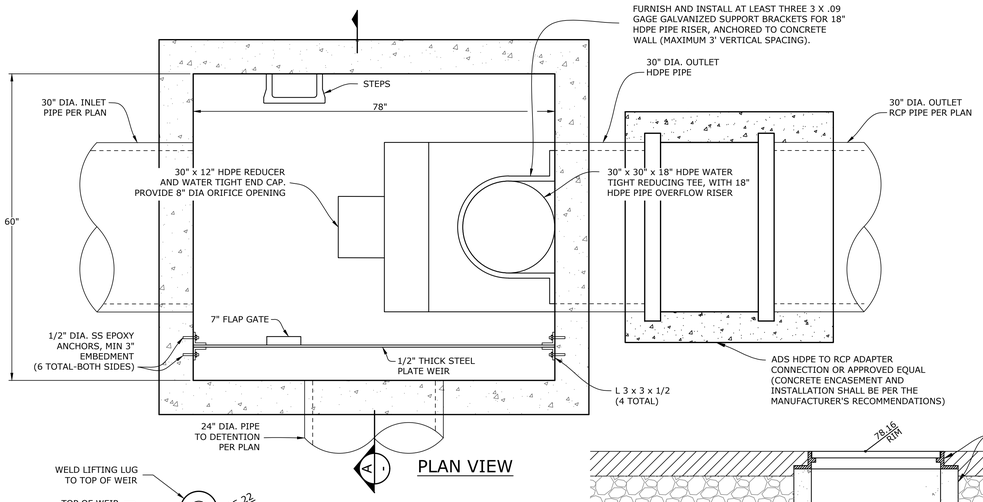
NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
6. COMPACTION AND THE USE OF HEAVY MACHINERY SHALL BE AVOIDED IN THE INFILTRATION AREA DURING CONSTRUCTION.
7. CONTRACTOR MUST CLEAN THE ENTIRE CHAMBER SYSTEM AND ALL ASSOCIATED COMPONENTS AT THE END OF CONSTRUCTION. THIS IS TO ENSURE THAT ANY AND ALL SEDIMENT OR DEBRIS THAT COULD HAVE ENTERED THE SYSTEM DURING THE CONSTRUCTION TIMEFRAME IS REMOVED. THE CONTRACTOR SHALL PROVIDE PICTURES OF THE CLEANED INTERIOR CHAMBERS BEFORE THE OWNER WILL ACCEPT THE WORK.
8. AFTER CLEANING THE ENTIRE INFILTRATION CHAMBER SYSTEM THE CONTRACTOR SHALL WATER TEST IT FOR INFILTRATION IN THE PRESENCE OF THE OWNER TO ENSURE DESIGN-LEVEL OPERABILITY.

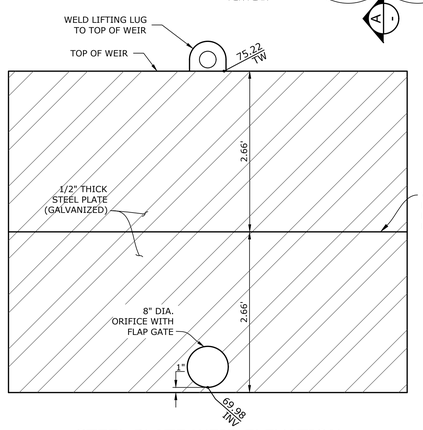
ADS STORMTECH SC-740 INFILTRATION CHAMBER

N.T.S.

P



PLAN VIEW



STEEL PLATE WEIR ELEVATION

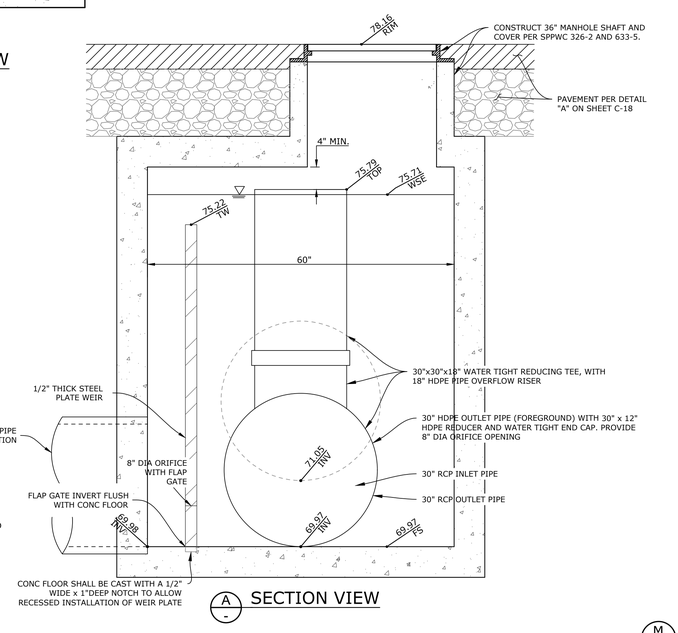
NOTES:
1. THE PRECAST MANUFACTURER SHALL PROVIDE THE ADEQUATE WALL THICKNESS AND NECESSARY REBAR TO WITHSTAND ALL APPLICABLE LOADING INCLUDING BUT NOT LIMITED TO HS20 AND PAVEMENT LOADING.
2. PRIOR TO FABRICATION OF THE STRUCTURE THE CONTRACTOR SHALL SUBMIT STRUCTURAL ENGINEERING CALCULATIONS AND SHOP DRAWINGS PREPARED BY A CALIFORNIA REGISTERED CIVIL ENGINEER FOR PUBLIC WORKS AGENCY PROJECT MANAGER TO REVIEW AND APPROVE.

Know what's below. Call before you dig.

PRE-CAST WEIR STRUCTURE - DETENTION

N.T.S.

M



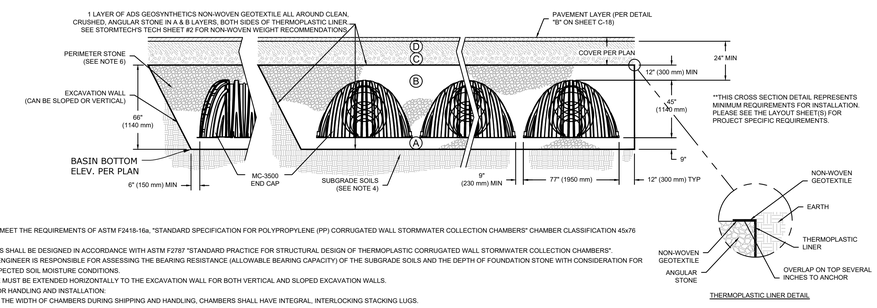
SECTION VIEW

A

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION 55.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
6. CONTRACTOR MUST CLEAN THE ENTIRE CHAMBER SYSTEM AND ALL ASSOCIATED COMPONENTS AT THE END OF CONSTRUCTION. THIS IS TO ENSURE THAT ANY AND ALL SEDIMENT OR DEBRIS THAT COULD HAVE ENTERED THE SYSTEM DURING THE CONSTRUCTION TIMEFRAME IS REMOVED. THE CONTRACTOR SHALL PROVIDE PICTURES OF THE CLEANED INTERIOR CHAMBERS BEFORE THE OWNER WILL ACCEPT THE WORK.

ADS STORMTECH MC-3500 DETENTION CHAMBER

N.T.S.

Q

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER SALVADOR CONTRERAS, JR. NO 66720 CIVIL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC

CONSULTANT JOB NO	DATE
0248.01	4/23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 20 OF 123

SHEET TITLE
CIVIL DETAILS AND SECTIONS

SHEET NO
C-19

Pump Data Sheet - Keen Pump Inc.

Company: Signa Mechanical
Name: Joe
Date: 03/08/2021

K3VN rate 300 GPM @ 10' TDH

KEEN PUMP

Pump:

Size:	K3VN	Dimensions:	
Type:	Submersible Sewage	Suction:	3 in
Synch Speed:	1200 rpm	Discharge:	3 in
Dia:	6.375 in		
Curve:	---		

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Pump Limits:

Temperature:	---	Sphere Size:	3 in
Wkg Pressure:	---		

Search Criteria:

Flow:	300 US gpm	Near Miss:	---
Head:	10 ft	Static Head:	5 ft

Motor:

Standard:	NEMA	Size:	2 hp
Enclosure:	TEFC	Speed:	1200 rpm
Frame:	184T		
Sizing Criteria:	Sized by User		

Pump Selection Warnings:
None

--- Duty Point ---

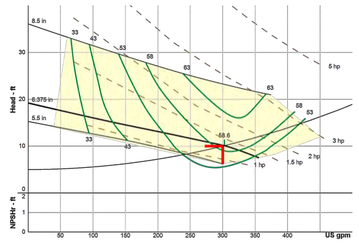
Flow:	303 US gpm
Head:	10.1 ft
Eff:	58.6%
Power:	1.32 hp
NPSHr:	---
Speed:	1150 rpm

--- Design Curve ---

Shutoff Head:	19.2 ft
Shutoff dP:	8.32 psi
Min Flow:	--- US gpm

BEP: 58.6% @ 303 US gpm
NOL Power:
1.33 hp @ 356 US gpm

--- Max Curve ---
Max Power:
3.15 hp @ 374 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr
360	1150	---	---	---	---
300	1150	10.2	58.5	1.32	---
240	1150	11.9	55.2	1.29	---
180	1150	13.7	49.3	1.23	---
120	1150	15.4	40.6	1.14	---

Selected from catalog: Keen.60, Vers 1.3.0

Solids-Handling Pumps

KEEN PUMP®

K3VN(X)

FM APPROVED

3" Submersible, Enclosed Impeller
(Class 1, Div. 1, Groups C & D Hazardous Location)

2-VANE ENCLOSED IMPELLER
- Efficient Operation, Non-clogging
- Pump-Out Vanes Prevent Material Build-up
- Pressure Balance on Shaft Seal for Long Life
- Positive Pumping Action through Impeller

STRONG PERFORMANCE
- Ideal for Higher Flows, Lower Heads
- Operate to Shut-off Head without Damage
- Non-Overloading Performance Curve
- 3-Bearing Shaft Support

LONG SERVICE LIFE
- Dual Silicon Carbide Shaft Seals
- Low Motor Operation Temperatures
- Continuously Lubricated Ball Bearings

LOW MAINTENANCE
- Easily Replaceable Impeller Wear Ring Restores Original Pump Performance
- Unobstructed Impeller Passageway
- Grit-Resistant Silicon Carbide Shaft Seals
- Large, 3" diameter Solids-Handling
- High Service factor Motor Handles Tough Electrical Operating Conditions

CAPABILITIES:
- Flows---------- to 700 GPM
- Heads---------- to 76 Feet
- HP Range---------- 1 - 10 HP
- Voltage / Phase Options---------- 208/230 V, 1 Phase - 208/230/460 V, 3 Phase
- Discharge Connections---------- 3" ANSI Class 125 Horizontal Flange
- Motor Speeds---------- 1150 / 1750 RPM
- Solids-Handling---------- 3"
- Impeller---------- Balanced, Enclosed, 2-Vane
- Motor Service Factor---------- 1.20

Rev. 03/2018

Features and Benefits

K3VN(X)

1. Watertight Cable Entrance
Agency-approved, watertight strain relief cord grips with compression grommets protects outer cord jacket. Epoxy-filled inner cord cap provides anti-wicking moisture protection to the motor even if power cable is cut or damaged. 40' UL power & control cords.

2. Modular Pump Design
Commonality of parts across the Keen product line minimizes the amount of parts required for servicing. Heavy-duty ASTM A48, Class 35 cast iron components.

3. Strong Motor (U.S. Motor Manufacturer)
Powerful high-torque motor for strong pumping.
208/230 Volt, 1-phase
208/230/460 Volt, 3-phase
Slip-Fit stator efficiently transfers heat to cast housing. Class F construction with overload protection in oil-filled chamber for cool operation and long motor life.

3a. Oil
Proprietary Keen oil ensures industry-low operating temperatures.

4. Solid 3-Bearing Support
Motor / Pump shaft securely held with upper and lower ball bearings, plus additional sleeve bearing in lower seal chamber. Rated for 50,000 hour B-10 life.

5. Severe Duty Dual Mechanical Seals
Dual silicon carbide mechanical shaft seals provide twice the moisture and grit protection for the motor. Dual seals are housed in a secondary oil-filled seal chamber. Tougher silicon carbide seals better handle sand, grit and abrasive materials.

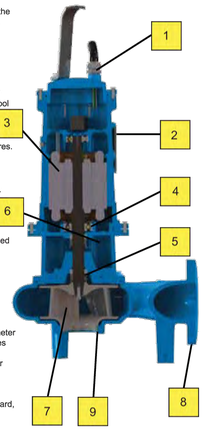
6. Moisture Detection
Seal leak probe signals alarm in control panel for scheduled maintenance.

7. High Efficiency Hydraulic Design
Highly efficient enclosed 2-vane impeller easily passes 3" diameter solids without blockage. The strong ductile iron impeller features backside pump-out vanes, keeping lower seal clean and pressure-compensated for longer life. Dynamically balanced for smooth, quiet operation and long bearing life.

8. Standard Flange Connection
3" Horizontal, Class 125 ANSI discharge flange. Industry standard, 4-bolt pattern.

9. High Performance Wear Ring
Assists impeller in providing higher performance efficiencies and prevention of recirculation losses. Bronze ring will not corrode or deteriorate from liquid being pumped. Bronze ring reduces wear to stronger ductile iron impeller in sandy or gritty applications. Easily serviceable and replaceable.

Rev. 03/2018



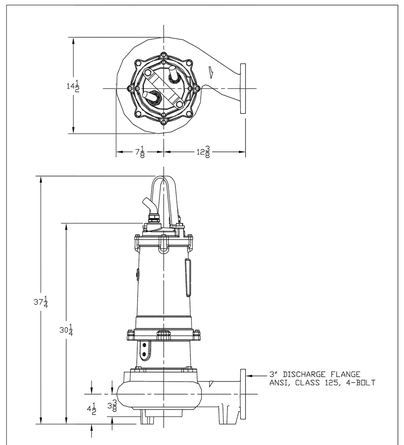
KEEN PUMP®
471 US HWY 250 East · Ashland, Ohio 44805
419.207.9400 fax 419.207.8031
www.keenpump.com

KEEN PUMP®

Section ENCLOSED
Date MAR 2015

Pump Series	K3VN	3" SUBMERSIBLE SEWAGE PUMPS

DIMENSIONAL DATA



Note: All dimensions in inches unless noted.
Dimensions may vary due to normal manufacturing tolerances.

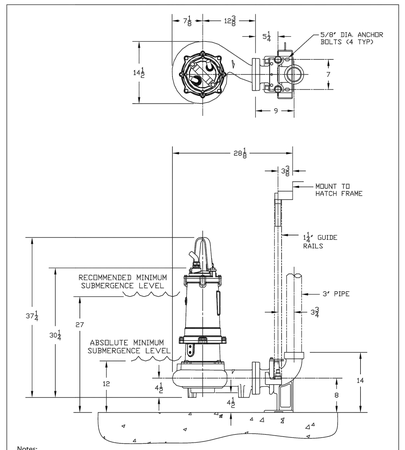
File: K3VN Dimensions

KEEN PUMP®

Section ENCLOSED
Date MAR 2015

Pump Series	K3VN	3" SUBMERSIBLE SEWAGE PUMPS

LIFTOUT DIMENSIONAL DATA



Notes:
1. All dimensions in inches unless noted.
2. Discharge flange 3" NPT.
3. Absolute minimum and recommended minimum submergence levels noted.
4. Dimensions may vary due to normal manufacturing tolerances.
5. If discharge pipe is larger than discharge elbow, eccentric reducer must be used limited to 2X larger maximum.

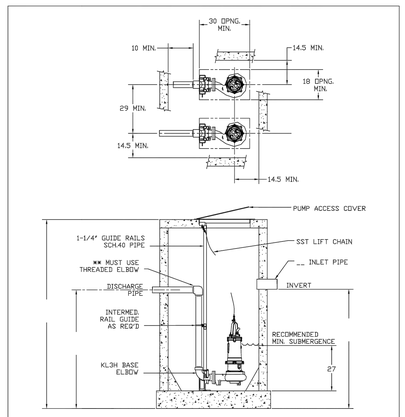
File: K3VN Liftout Dimensions

KEEN PUMP®

Section ENCLOSED
Date MAR 2015

Pump Series	K3VN	3" SUBMERSIBLE SEWAGE PUMPS

DUPLEX INSTALLATION DIMENSIONAL DATA



Notes:
1. All dimensions in inches unless noted.
2. Refer to pump dimension and liftout dimension sheets for more details.
3. Recommended minimum submergence levels noted.
4. Discharge base elbow must be placed above sump bottom as noted.
5. Dimensions may vary due to normal manufacturing tolerances.
6. If discharge pipe is larger than discharge elbow, eccentric reducer must be used limited to 2X larger maximum.

File: K3VN Install Dimensions

KEEN PUMP

Section SOLIDS-HANDLING
Dated July 2017

Pump Model: **K3VN**

Physical Data:	
Discharge Size	ANSI 3" Horizontal
Solids Size	3"
Impeller Type	Balanced, Enclosed, 2 Vane
Power/Control Cable Length	40' Standard
Paint	Blue, Water Reducible Enamel, One Coat, Air Dried – Standard
Motor Construction:	
Motor Type	Enclosed Submersible Oil Filled
NEMA Insulation Code	Class F
Service Factor	1.2
NEMA Design Type	B (3Ø) L (1Ø)
Single Phase Configuration	External Start and Run Components
Motor Protection	Thermal Sensors Embedded in the Windings
Maximum Stator Temperature	311°F (155°C)
Power Cord Type	SOOW - 600V, 90° C; Type W - 2000V, 90° C
Control Cord Type	18-5 - SOOW - 600V, 90° C
Materials of Construction:	
Cord Entry	Cast Iron, ASTM A48, Class 35
Motor Housing	Cast Iron, ASTM A48, Class 35
Bearing Housing	Cast Iron, ASTM A48, Class 35
Volute	Cast Iron, ASTM A48, Class 35
Impeller	Ductile Iron, ASTM A536, 60-40-18
Volute Wear Ring	Bronze, CDA 836
Shaft	ANSI 400 Stainless Steel
Inboard Mechanical Seal	Silicone Carbide / Silicone Carbide
Outboard Mechanical Seal	Silicone Carbide / Silicone Carbide
Fasteners	ANSI 18-8 Stainless Steel
O-Rings	Nitrile Rubber
Upper Bearing	Conrad Style Single Row Deep Groove Ball Bearing
Lower Bearing	Conrad Style Single Row Deep Groove Ball Bearing
Line Bearing	Bronze, CDA 836

K3VN_M46_PG1

KEEN PUMP

Section SOLIDS-HANDLING
Dated MAR 2017

Pump Model: **K3VN – 1150 RPM**

Thermal Data:

Maximum Liquid		140° F (60° C)		
Maximum Stator		311° F (155° C)		
Heat Sensor	**Open:**	257° F (125° C) Max. / 239° F (115° C) Min.		
	Closed:	194° F (90° C) Max. / 119° F (48° C) Min.		
Oil Flash Point		390° F (199° C)		
Electrical Data:				
RPM		**1150**		
Electrical Ratings		Heat Sensor	24VDC 5AMPS	115VAC 5AMPS	230VAC 5AMPS
		Seal Fail	300VAC 5mAMPS		
Voltage Tolerance		± 10%			

HP	Voltage	Phase	NEC Code	Service Factor	Full Load AMPS	SF Amps	Locked Rotor AMPS	Run KW	Start KVA	Run KVA
1	208	1	H	1.2	9.6	11.5	33.6	2.0	7.0	2.6
	230				8.6	10.4	30.3			
1	208	3	J	1.2	6.6	7.9	21.0	1.7	7.6	2.1
	230				6.2	7.4	18.9			
	460				3.1	3.7	9.5			
2	208	1	H	1.2	18.9	22.7	66.2	13.8	5.1	5.1
	230				17.0	20.4	59.6			
2	208	3	G	1.2	9.9	11.9	34.7	2.8	12.5	3.5
	230				8.9	10.7	31.2			
	460				4.5	5.4	15.6			
3	208	1	F	1.0	22.7	22.7	79.5	4.7	16.5	6.1
	230				20.5	20.5	71.6			
3	208	3	G	1.0	14.3	14.3	50.1	4.1	18.0	6.0
	230				12.9	12.9	45.1			
	460				6.4	6.4	22.5			

Motor Efficiencies & Power Factor

HP	Phase	Motor Efficiency % Service Factor Load	Motor Efficiency % 100% Load	Motor Efficiency % 75% Load	Motor Efficiency % 50% Load	Power Factor % Service Factor Load	Power Factor % 100% Load	Power Factor % 75% Load	Power Factor % 50% Load
1	1	60	60	59	53	75	73	66	57
1	3	65	62	56	52	75	72	67	61
2	1	63	61	60	50	76	74	70	62
2	3	65	64	60	52	78	76	71	60
3	1	68	65	59	55	75	70	64	54
3	3	65	64	60	57	79	78	71	59

K3VN_M6_PG2

CONTROL PANEL NOTES

CONTROL PANEL TO BE 240V DUPLEX SINGLE PHASE PANEL FOR GRINDERS AND SOLIDS HANDLING, 230 VOLT, 2HP INCLUDING THE FOLLOWING:

1. UL LISTED NEMA 4X ENCLOSURE WITH STAINLESS STEEL LOCKABLE HASPS
2. LABELED COMPONENTS FOR EASY IDENTIFICATION
3. COLOR CODED WIRING DIAGRAM
4. PUMP AND CONTROL CIRCUIT BREAKERS
5. PUMPSTART KIT (CAPACITORS AND RELAY SWITCH)
6. PUMP RUN LIGHT AND HAND/OFF/AUTO SELECTOR SWITCH
7. DUAL SEAL PROBE DETECTION AND SEAL LEAK LIGHT
8. THERMAL SENSOR TERMINAL CONNECTIONS
9. ALARM "TEST" AND "ON" SELECTOR SWITCH
10. VISUAL/AUDIBLE ALARMS, WITH SILENCE SWITCH
11. IMPACT RESISTANT RED HIGH WATER LEVEL ALARM LIGHT
12. USER FRIENDLY TERMINAL STRIP LOCATION
13. MOTOR STARTER (CONTRACTOR AND OVERLOAD) FOR EACH PUMP
14. ALTERNATING RELAY FOR DUPLEX PANELS
15. GROUND LUGS
16. CONTROL PANEL LOCATION TO BE COORDINATED WITH ELECTRICAL AND CIVIL ENGINEERS AND OWNER PRIOR TO INSTALLATION.

811 Know what's below. Call before you dig.

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER — SALVADOR CONTRERAS, JR. — NO 66720 — CIVIL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER SAL CONTRERAS
DRAWN BY DL CHECKED BY SC
CONSULTANT JOB NO 0248.01 DATE 4/23

PROJECT TITLE AND ADDRESS

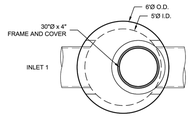
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

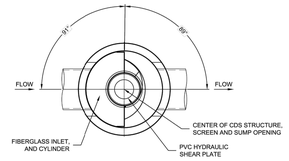
COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO SHEET 22 OF 123

SHEET TITLE
CIVIL DETAILS AND SECTIONS

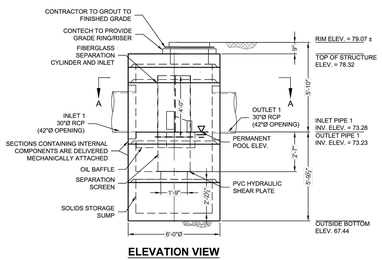
SHEET NO
C-20



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	4700 micron, 2' O.D. x 2.25' SEP. SCREEN	CONTECH
1	HARDWARE KIT	CONTECH
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1 PLC	GRADE RINGS/RISERS	CONTRACTOR
1	30"Ø x 4" FRAME AND COVER, NON-VENTED EJM001810119A01, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

SITE DESIGN DATA

WATER QUALITY FLOW RATE	1 CFS
PEAK FLOW RATE 1⅓	14 CFS
RETURN PERIOD OF PEAK FLOW	TBD YRS

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 9000 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø6'

CONTECH
PROPOSAL
DRAWING

REV	REVISION DESCRIPTION	DRAWN	DATE

CDS2020-5-C - 737587-10
VC FIRE TRAINING
VALENCIA, CA
####

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Drive, Suite 400, West Chester, OH 45069
(800) 338-1122 www.ContechES.com

This drawing and information, either in hard copy or electronic format, is the property of CONTECH Engineered Solutions LLC and is to be used only for the purpose and project for which it was prepared by CONTECH Engineered Solutions LLC. Any other use, or the reproduction of any part of this drawing or information, is prohibited without the express written consent of CONTECH Engineered Solutions LLC.

DATE: 01/05/23	SCALE: 1/4" = 1'-0"
DESIGNED: MAN	DRAWN: MAN
CHECKED:	APPROVED:
PROJECT No.: 737587	SEQUENCE No.: 10
SHEET: 1 OF 1	

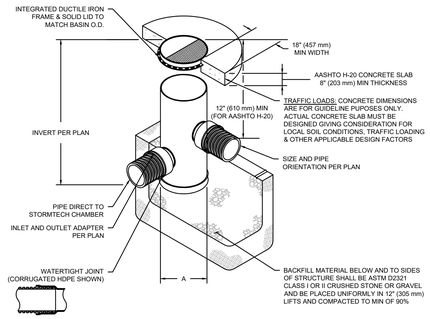
OLSAZ
5944 / 570484
LAYOUT: 1A
2020-5-F.DIB

PM 10.1 REV 6 - 9/2020 - ENG PROJECTS\2020-PROJECTS\CDS\CDS2020-5-C-737587-10 VC FIRE TRAINING VALENCIA CA\CDS2020-5-C-737587-10 VC FIRE TRAINING.DWG

CDS2020-5C UNIT AND MOSQUITO SCREEN INSERT DETAIL

N.T.S.

U -



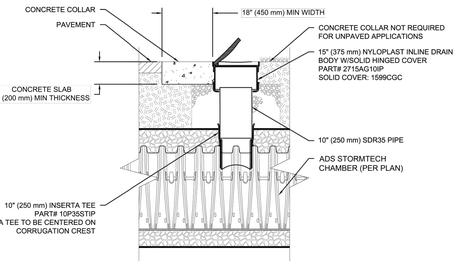
NOTES
1. SOLID LID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. FRAME SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

NYLOPLAST BASIN
NTS

30" NYLOPLAST BASIN DETAIL

N.T.S.

V -

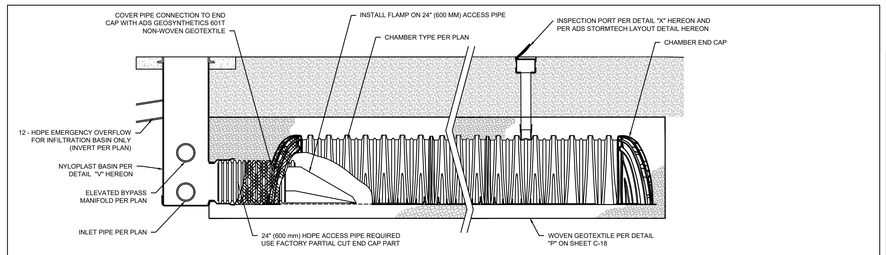


10" (250 mm) INSPECTION PORT DETAIL
NTS

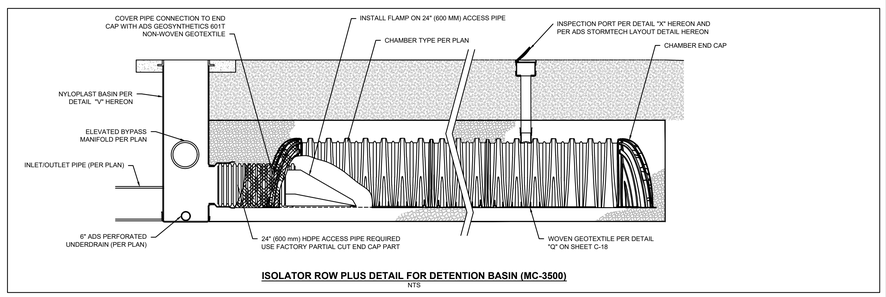
10" INSPECTION PORT DETAIL

N.T.S.

X -

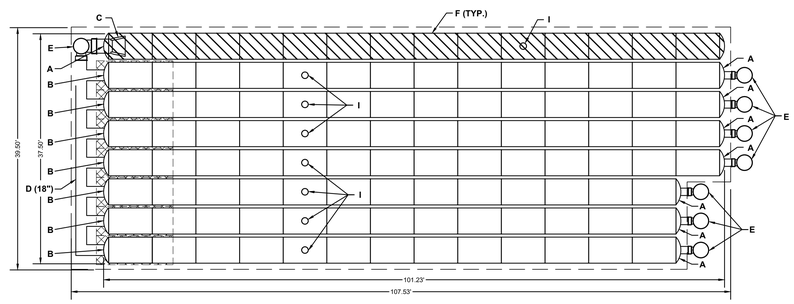


ISOLATOR ROW PLUS DETAIL FOR INFILTRATION BASIN (SC-740)
NTS

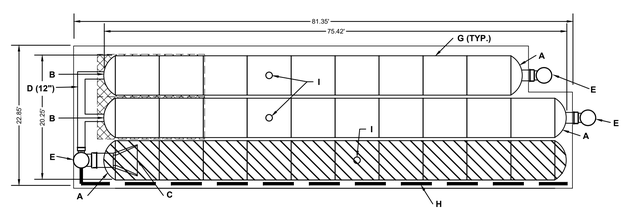


ISOLATOR ROW PLUS DETAIL FOR DETENTION BASIN (MC-3500)
NTS

ITEM ON LAYOUT	PART TYPE	DESCRIPTION
A	PREFABRICATED END CAP BOTTOM CORED	24" BOTTOM CORED END CAP / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS
B	PREFABRICATED END CAP TOP CORED	TOP CORED END CAP / TYP OF ALL TOP CONNECTIONS
C	FLAMP	INSTALL FLAMP ON 24" ACCESS PIPE
D	MANIFOLD	TOP MANIFOLD, ADS N-12 (SIZE PER PLAN)
E	NYLOPLAST BASIN	30" DIAMETER
F	STORMTECH SC-740 CHAMBERS	CHAMBERS
G	STORMTECH MC-3500 CHAMBERS	CHAMBERS
H	6" ADS N-12 DUAL WALL PERFORATE HDPE UNDERDRAIN	UNDERDRAIN (SEE DETAIL HEREON)
I	10" INSPECTION PORT	10" INSPECTION PORT PER DETAIL "X" HEREON



ADS STORMTECH SC-740 INFILTRATION BASIN LAYOUT DETAIL
NTS



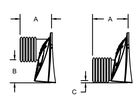
ADS STORMTECH MC-3500 DETENTION BASIN LAYOUT DETAIL
NTS

ISOLATOR ROW PLUS (SEE DETAIL)

PLACE ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

Perimeter

NOTES
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY VARY DEPENDING ON SOIL CONDITIONS AND STRUCTURAL REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) STADIA RODS THAT TELESCOPE TO AT LEAST 6-FEET IN LENGTH AND CONTAIN GRADATION MARKINGS ON THE SIDE. OWNER TO UTILIZE THESE FOR LONG TERM OPERATIONS AND MAINTENANCE.
- CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) SPECIALTY JETVAC NOZZLES RECOMMENDED BY ADS FOR SYSTEM MAINTENANCE THAT MEETS THE RECOMMENDED 2,000 PSI MAX NOZZLE PRESSURE FOR THE ISOLATOR ROW'S OPERATION AND MAINTENANCE.

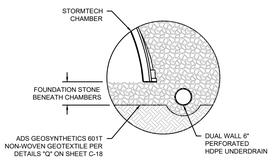


PART #	STUB	A	B	C
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	--
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	0"	0.1" (3 mm)

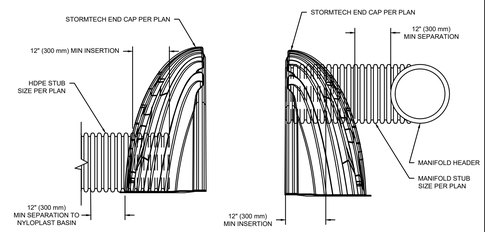
* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

INFILTRATION BASIN (SC-740) END CAP INSERTION DETAIL
NTS



ADS STORMTECH (MC-3500) DETENTION BASIN UNDERDRAIN DETAIL
NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

DETENTION BASIN (MC-3500) END CAP INSERTION DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS:
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.3. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.4. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

811 Know what's **below.** **Call** before you dig.

ADS STORMTECH INFILTRATION AND DETENTION BASIN DETAILS

N.T.S.

W -

WDID: 456C399940 APN: 230-0-030-285 GP: 21-0120

\\apollo\ecgcam\projects\0248\engineering\acad\improvements\0248-sec-detail-3.dwg May 10, 2023-2:38pm

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS AGENCY — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS — MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

ECG — Encompass Consultant Group
333 N. LANTANA ST, SUITE 287, CAMARILLO, CA 93010
PHONE: 805.322.4443 WEBSITE: WWW.ECGCIVIL.COM

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER — SALVADOR CONTRERAS, JR. — NO 66720 — CIVIL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP
APPROVED FOR GRADING & DRAINAGE IMPROVEMENTS:

LAND DEVELOPMENT SERVICES DATE
ENGINEERING SERVICES
VENTURA COUNTY PUBLIC WORKS AGENCY

PERMIT NO GP21-0120

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER: SAL CONTRERAS

DRAWN BY	CHECKED BY
DL	SC
CONSULTANT JOB NO: 0248.01	DATE: 4/23

PROJECT TITLE AND ADDRESS

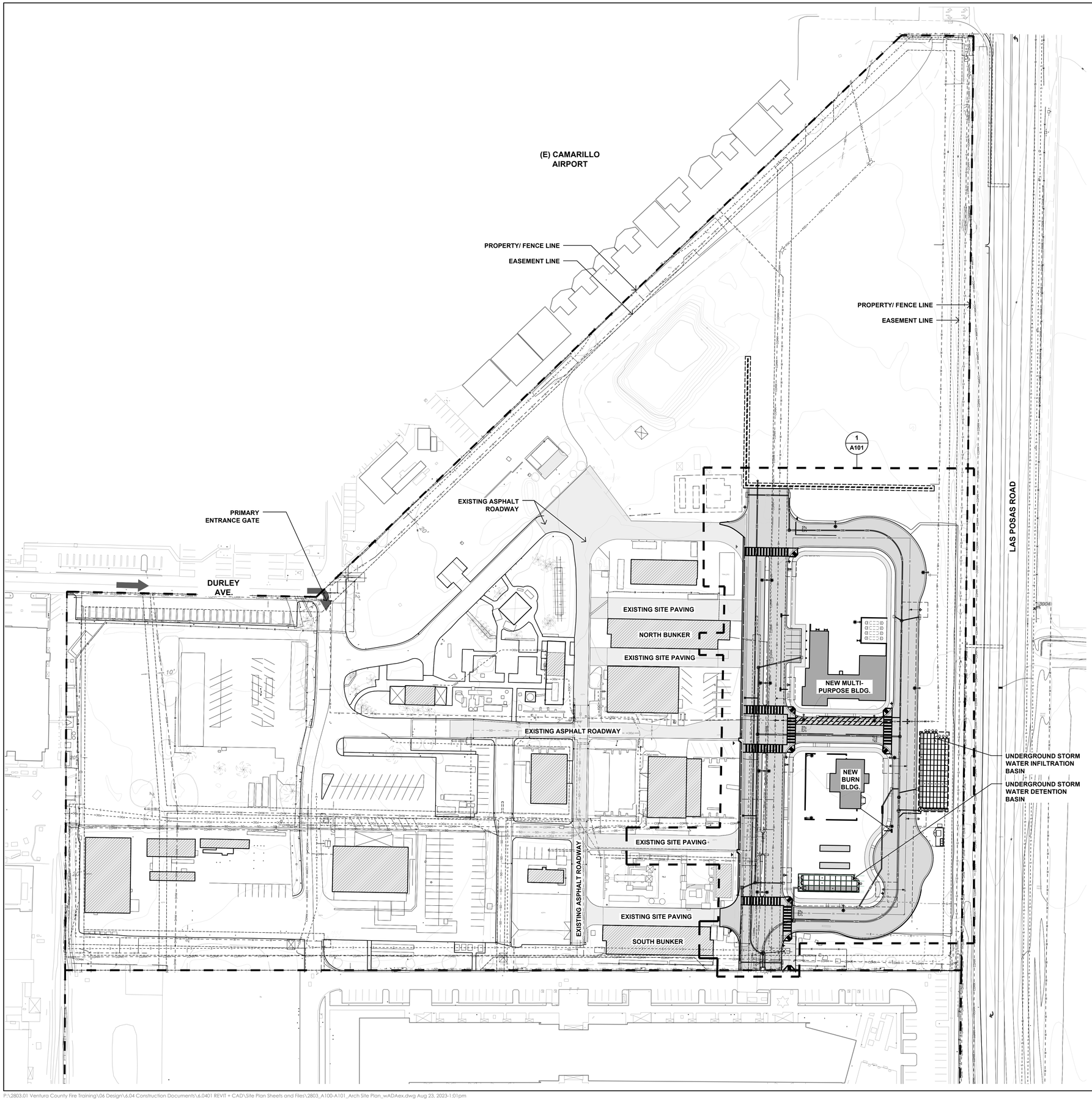
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02
COUNTY PROJECT NUMBER: P6T18021
COUNTY DWG NO
SHEET 23 OF 123

SHEET TITLE: CIVIL DETAILS AND SECTIONS

SHEET NO: C-21



GENERAL NOTES:

1. REFER TO CIVIL DRAWINGS FOR GRADING WORK AND SITE IMPROVEMENTS.
2. REFER TO ELECTRICAL PLAN FOR SITE & EXTERIOR BLDG. LIGHTING, INTERIOR LIGHTING, POWER AND COMMUNICATIONS.
3. REFER TO LANDSCAPE DRAWING FOR LANDSCAPE IMPROVEMENTS.
4. REFER TO HORIZONTAL CONTROL PLAN FOR BUILDING LOCATIONS, SETBACK NOTES ON ARCHITECTURAL SITE PLAN FOR REFERENCE ONLY.
5. REFER TO STRUCTURAL DRAWINGS FOR MORE INFORMATION.

LEGEND:

- EXISTING BUILDING
- EXISTING BLDG. TO BE RELOCATED
- NEW ROAD IMPROVEMENT
- NEW BUILDING PROPS
- NEW FIRE HYDRANTS
- NEW LP STUB UP
- NEW POWER POLES
- NEW STREET/SITE LIGHTING

1 **OVERALL ARCHITECTURAL SITE PLAN**
1" = 50'

SCALE: 1"=50'
0 50 100 150

N

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
SL	MM
CONSULTANT JOB NO 123-456-789	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

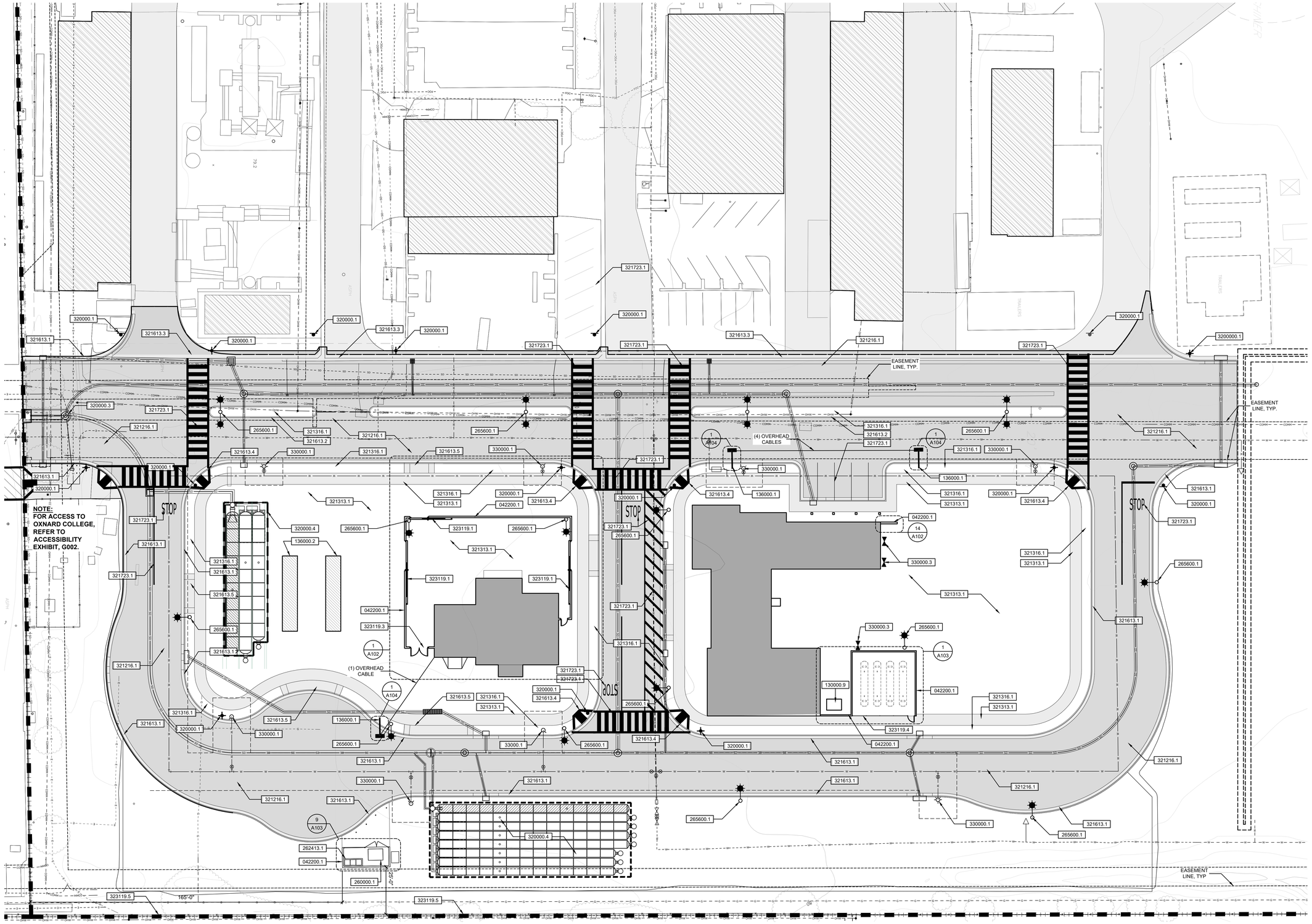
SHEET 24 OF 123

SHEET TITLE
OVERALL ARCHITECTURAL SITE PLAN

SHEET NO
A100

KEYNOTES

042200.1 8" REINFORCED CMU BLOCK WALL. SEE DETAIL 6/A103 & 5/S104.
130000.9 LPG DUMPSTER FIRE PROP
136000.1 POWER POLE PROP. FURNISHED & INSTALLED BY SOUTHERN CALIFORNIA EDISON CONTRACTOR TO COORDINATE.
136000.2 NEW CLASS A CONEX BURN PROP, OWNER FURNISHED, OWNER INSTALLED
260000.1 NEW TRANSFORMER AND PAD. SEE ELECTRICAL SHEET ES-102
260000.2 NEW PULL BOX. SEE ELECTRICAL SHEET ES-102
262413.1 NEW MAIN ELECTRICAL SWITCHBOARD, SEE ELECTRICAL DETAIL 1/E-004
265600.1 SITE LIGHTING. SEE ELECTRICAL SHEET ES-103
320000.1 STREET SIGN POST AND SIGNAGE, SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
320000.3 STORM DRAIN LIFT STATION, SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
320000.4 UNDERGROUND WATER RETENTION AREA. SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
321216.1 ASPHALT CONCRETE PAVEMENT. SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
321313.1 PCC CONCRETE PAVEMENT. SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
321316.1 STAMPED CONCRETE GREEN COLOR. SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
321613.1 CONCRETE MOUNTABLE CURB WITH GUTTER. SEE CIVIL GRADING & DRAINAGE PLANS
321613.2 CONCRETE MOUNTABLE CURB. SEE CIVIL GRADING & DRAINAGE PLANS
321613.3 CONCRETE RIBBON GUTTER, SEE CIVIL GRADING & DRAINAGE PLANS
321613.4 CURB RAMP. SEE CIVIL GRADING & DRAINAGE PLANS
321613.5 DRIVEWAY, SEE CIVIL GRADING & DRAINAGE PLANS
321723.1 PAVEMENT MARKINGS. SEE CIVIL GRADING & DRAINAGE PLANS
323119.1 METAL SLIDING GATE. SEE 9/A102
323119.3 METAL SWINGING DOUBLE LEAF GATE. SEE 7/A102
323119.4 METAL FENCE WITH PERSON GATE. SEE 7/A103
323119.5 EXISTING FENCE, PROTECT IN PLACE & REPAIR AT AREAS OF NEW WORK
330000.1 FIRE HYDRANT. SEE CIVIL DWGS. GRADING & DRAINAGE PLANS
330000.3 GAS STUB UP. SEE DTL. 2/A104, PLUMB'G DWG B2-P100 & ELEC DWG. ES-102.



1 **ENLARGED ARCHITECTURAL SITE PLAN**
1" = 20'

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathar chitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

LICENSED ARCHITECT MARY C. MCGRATH C-24435 REN. 08-30-23 STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
SL	MM
CONSULTANT JOB NO 123-456-789	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

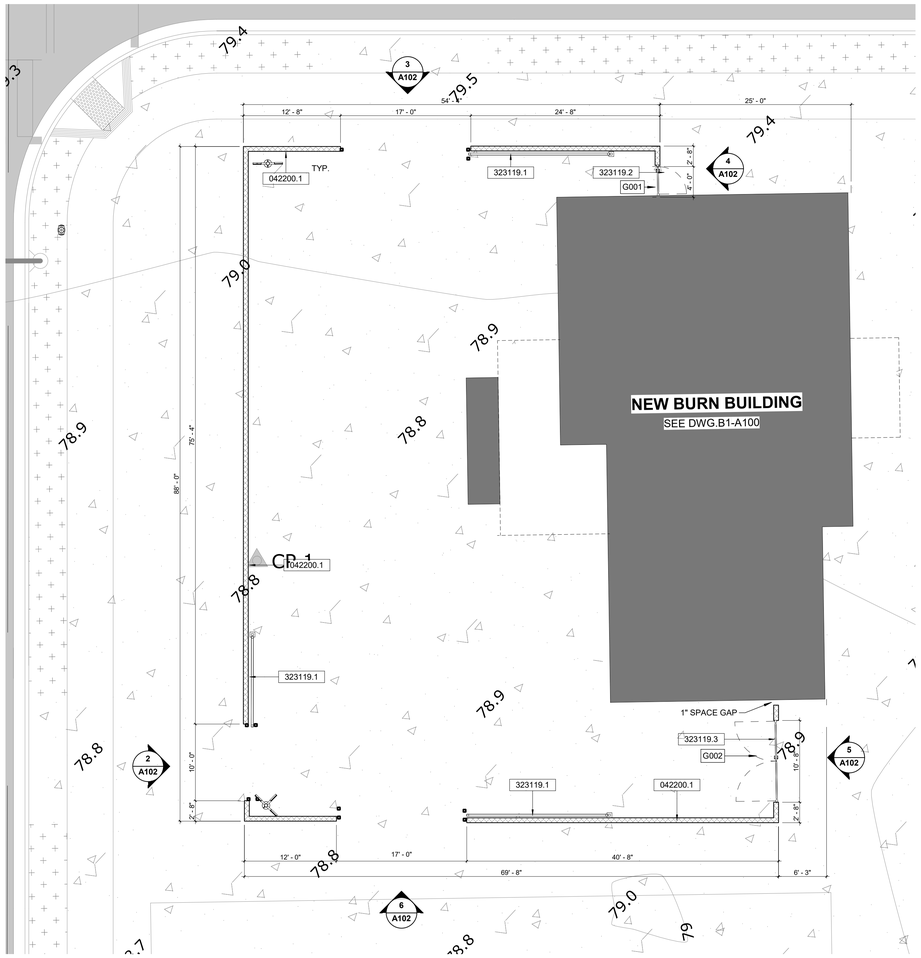
SHEET 25 OF 123

SHEET TITLE
ENLARGED ARCHITECTURAL SITE PLAN

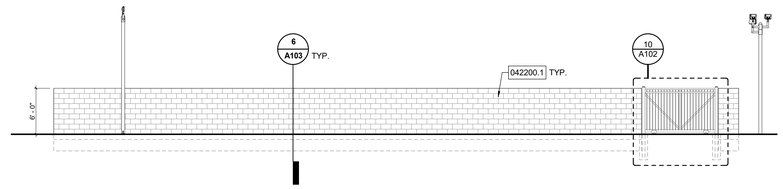
SHEET NO
A101

KEY

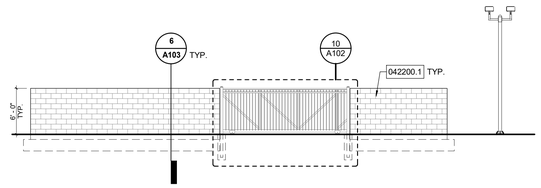
VALUE	KEYNOTE TEXT
042200.1	8" REINFORCED CMU BLOCK WALL FILLED SOLID. SEE DETAIL 6/A103.
323119.1	METAL SLIDING GATE
323119.2	METAL SWINGING PERSON GATE
323119.3	METAL SWINGING DOUBLE LEAF GATE



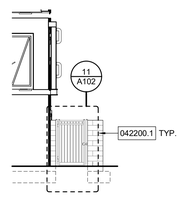
1 **CLASS A SITE PLAN**
1/8" = 1'-0"



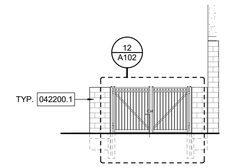
2 **SITE WALL ELEVATION - CLASS A BUILDING - WEST SIDE**
1/8" = 1'-0"



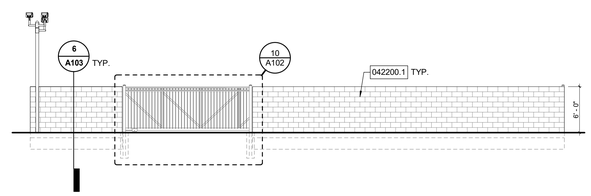
3 **SITE WALL ELEVATION - NORTH SIDE**
1/8" = 1'-0"



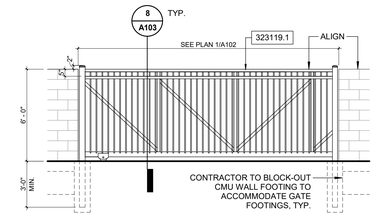
4 **SITE WALL ELEVATION - NORTH SIDE PERSON GATE**
1/8" = 1'-0"



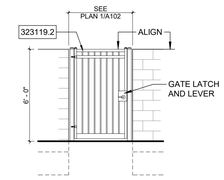
5 **SITE WALL ELEVATION - SOUTH SITE SWINGING GATE**
1/8" = 1'-0"



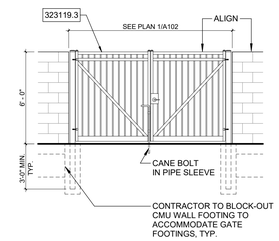
6 **SITE WALL ELEVATION - SOUTH SIDE**
1/8" = 1'-0"



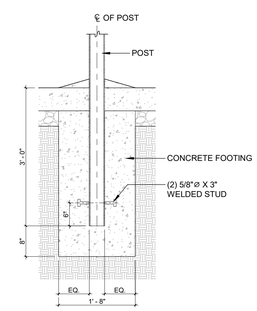
10 **SLIDING GATE ELEVATION**
1/4" = 1'-0"



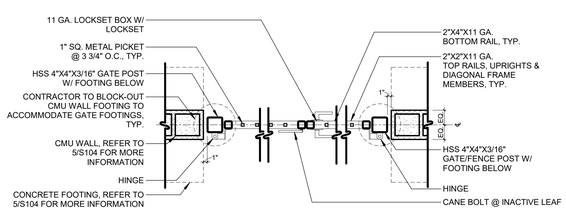
11 **PERSON GATE ELEVATION**
1/4" = 1'-0"



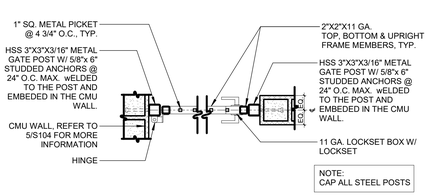
12 **DOUBLE LEAF SWING GATE ELEV.**
1/4" = 1'-0"



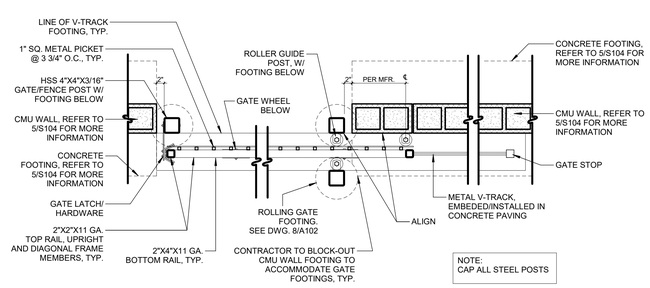
13 **TYP. GATE FOOTING POST SECTION DETAIL**
3/4" = 1'-0"



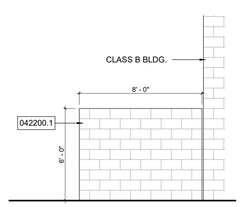
7 **DETAIL - DOUBLE LEAF SWING GATE JAMB**
3/4" = 1'-0"



8 **DETAIL - PERSON GATE JAMB**
3/4" = 1'-0"



9 **DETAIL - SLIDING GATE JAMB**
3/4" = 1'-0"



14 **SITE WALL ELEVATION - CLASS B BUILDING**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO.	DESCRIPTION	DATE
-	BID SET	08-21-2023

FIRE DEPT. BUSINESS SERVICES MANAGER

DIRECTOR OF PUBLIC WORKS

DEPUTY DIRECTOR OF PUBLIC WORKS

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
Author	Checker
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

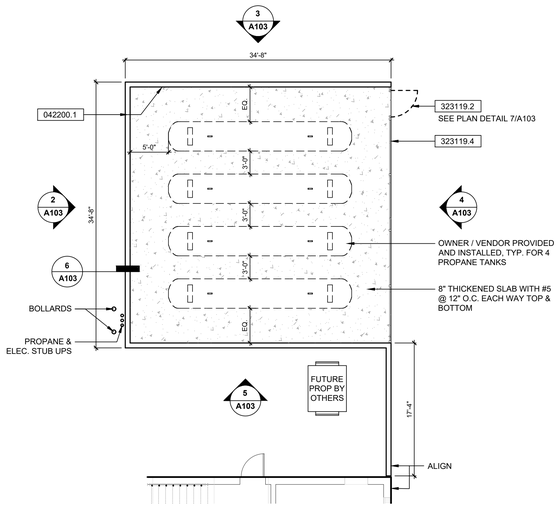
COUNTY DWG NO | SHEET 26 OF 123

SHEET TITLE
CLASS A SITE - ENLARGED PLAN

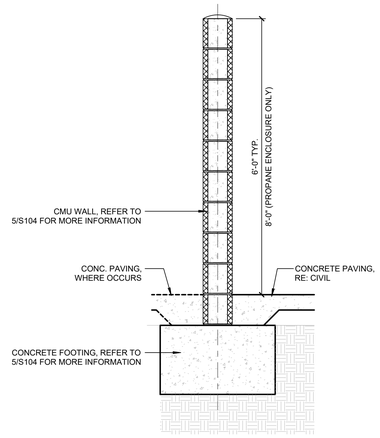
SHEET NO
A102

BID SET

KEY VALUE	KEYNOTE TEXT
042200.1	8" REINFORCED CMU BLOCK WALL FILLED SOLID. SEE DETAIL 6/A103.
323119.2	METAL SWINGING PERSON GATE
323119.4	METAL FENCE WITH PERSON GATE
323119.3	METAL SWINGING DOUBLE LEAF GATE



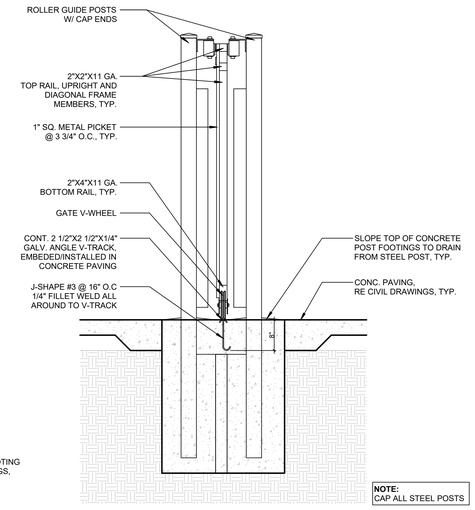
1 CLASS B - PROPANE ENCLOSURE PLAN
1/8" = 1'-0"



NOTE:

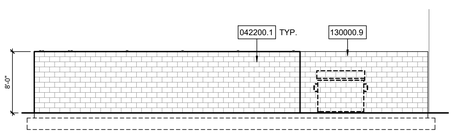
CONTRACTOR TO BLOCK-OUT FOOTING TO ACCOMMODATE GATE FOOTINGS, TYPICAL

6 SECTION - TYPICAL CMU SITE WALL - M8
3/4" = 1'-0"

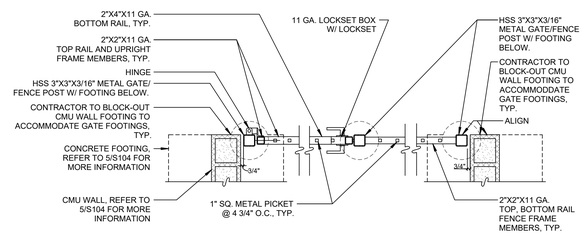


NOTE:
CAP ALL STEEL POSTS

8 SECTION - SLIDING GATE DETAIL
3/4" = 1'-0"



2 SITE WALL ELEVATION - PROPANE ENCLOSURE - WEST SIDE
1/8" = 1'-0"

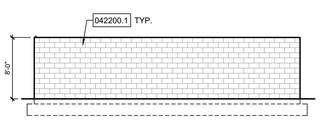


NOTE:
CAP ALL STEEL POSTS

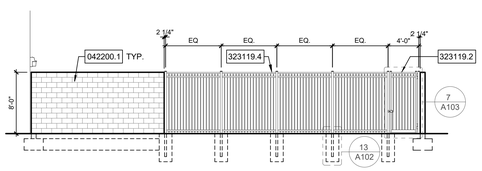
7 DETAIL - PROPANE ENCLOSURE GATE/FENCE JAMB
3/4" = 1'-0"

DOOR GATE SCHEDULE

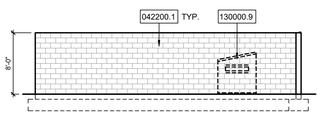
	AREA NAME	SIZE		TYPE	MATERIAL	FINISH	DETAIL	HARDWARE GROUP	REMARKS
		WIDTH	HEIGHT						
G001	BURN BUILDING	3'-4"	6'-0"	SINGLE LEAF	METAL	PRE-FINISH & PAINT	8/A102	REFER TO HARDWARE SPECIFICATIONS	
G002	BURN BUILDING	9'-9"	6'-0"	DOUBLE LEAF	METAL	PRE-FINISH & PAINT	7/A102		
G003	PROPANE ENCLOSURE	3'-4"	6'-0"	SINGLE LEAF	METAL	PRE-FINISH & PAINT	7/A103		
G004	ELECTRICAL ENCLOSURE	11'-0"	6'-0"	DOUBLE LEAF	METAL	PRE-FINISH & PAINT	12/A102, SIM.		
G005	ELECTRICAL ENCLOSURE	11'-0"	6'-0"	DOUBLE LEAF	METAL	PRE-FINISH & PAINT	12/A102, SIM.		



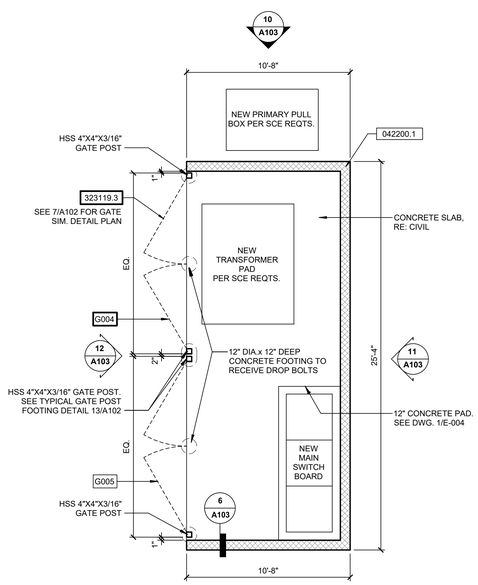
3 SITE WALL ELEVATION - PROPANE ENCLOSURE - NORTH SIDE
1/8" = 1'-0"



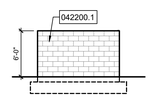
4 SITE WALL ELEVATION - PROPANE ENCLOSURE - EAST SIDE
1/8" = 1'-0"



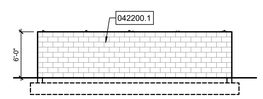
5 SITE WALL ELEVATION - PROPANE ENCLOSURE - SOUTH SIDE
1/8" = 1'-0"



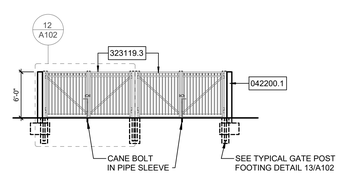
9 ELECTRICAL ENCLOSURE - PLAN
1/4" = 1'-0"



10 SITE WALL ELEVATION - ELEC ENCLOSURE - NORTH SIDE (SIM. SOUTH)
1/8" = 1'-0"



11 SITE WALL ELEVATION - ELEC ENCLOSURE - EAST SIDE
1/8" = 1'-0"



12 SITE WALL ELEVATION - ELEC ENCLOSURE - WEST SIDE
1/8" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO.	DESCRIPTION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
Author	Checker
CONSULTANT JOB NO 20-126	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

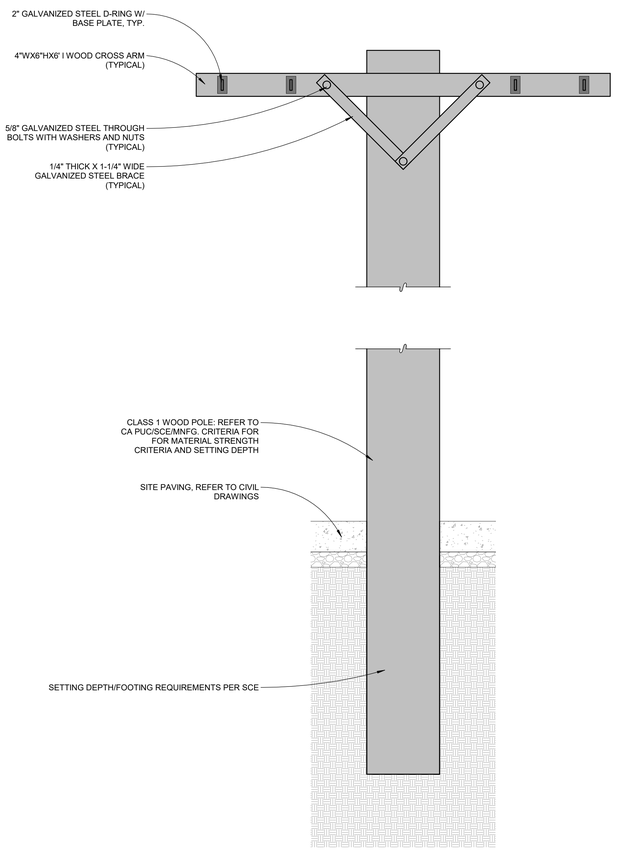
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 27 OF 123

SHEET TITLE
CLASS B SITE ELEMENTS PLAN

SHEET NO
A103

BID SET



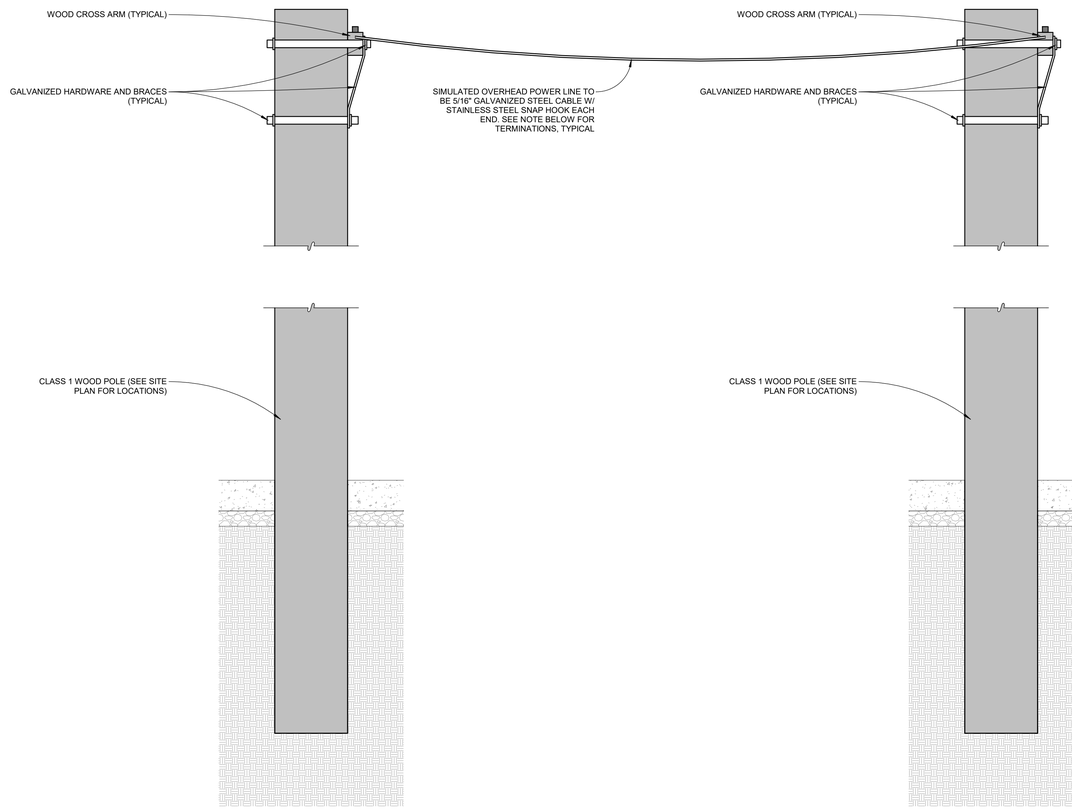
1 SECTION - TYPICAL SITE POWER POLE - TRAINING PROP

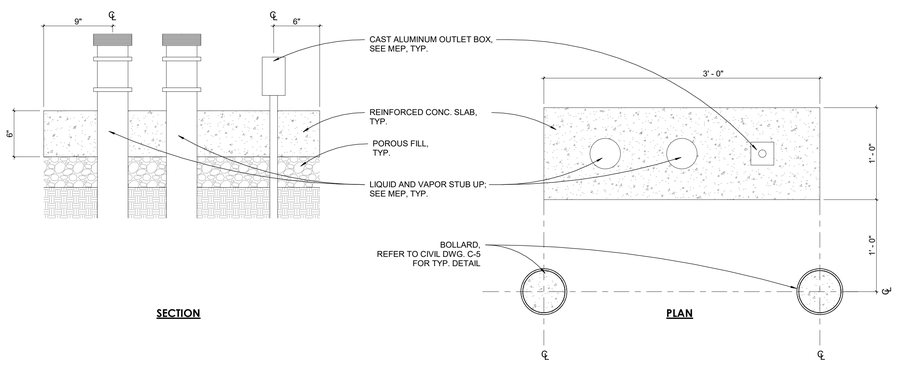
3/4" = 1'-0"

- POLE AND CROSS ARMS FURNISHED AND INSTALLED BY SOUTHERN CALIFORNIA EDISON. (CONTRACTOR TO COORDINATE.)
- D-RINGS AND CABLING BY CONTRACTOR.

EXTENT AND TERMINATION OF SIMULATED OVERHEAD POWER LINES:

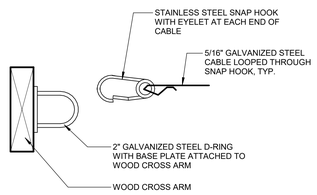
- PROVIDE SIMULATED OVERHEAD POWER LINES (TYPICAL OF 4) BETWEEN THE TWO TRAINING POWER POLES LOCATED ADJACENT TO THE MULTI-PURPOSE TRAINING BUILDING (B2)
- PROVIDE SIMULATED OVERHEAD POWER LINE (TYPICAL OF 1) BETWEEN THE CLASS A BURN BUILDING (B1) AND THE ADJACENT TRAINING POWER POLE.





2 MEP STUB UP DETAIL, TYP.

1 1/2" = 1'-0"



3 D-RING DETAIL

3" = 1'-0"

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT MARY C. MCGRATH C-24435 REN-08-30-23 STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO.	DESCRIPTION	DATE
	BID SET	08-21-2023

FIRE DEPT. BUSINESS SERVICES MANAGER

DIRECTOR OF PUBLIC WORKS

DEPUTY DIRECTOR OF PUBLIC WORKS

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY Author | CHECKED BY Checker
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 28 OF 123

SHEET TITLE SITE ELEMENTS

SHEET NO A104

GENERAL PROJECT NOTES

NOTE #	NOTE
1	THE FOLLOWING GENERAL NOTES APPLY TO THE ENTIRE PROJECT.
2	THE CONTRACTOR SHALL EXAMINE ALL CONTRACT DOCUMENTS AND ALL SPECIFICATIONS AND DRAWINGS FOR THE PROJECT, INCLUDING THOSE THAT MAY PRIMARILY PERTAIN TO WORK THAT THE CONTRACTOR NORMALLY DOES NOT PERFORM WITH ITS OWN FORCES. THE CONTRACTOR SHALL USE ALL OF THE PROJECT DRAWINGS AND SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF THE PROJECT AND ITS WORK, TO DETERMINE THE TYPE OF CONSTRUCTION AND SYSTEMS, FOR COORDINATION, TO DETERMINE WHAT OTHER WORK MAY BE INVOLVED THROUGHOUT, TO ANTICIPATE AND NOTIFY OTHERS WHEN THEIR COORDINATED EFFORTS WILL BE REQUIRED, AND ALL OTHER RELEVANT MATTERS RELATED TO THE PROJECT AND ITS WORK.
3	IF THERE IS ANY INCONSISTENCY IN THE QUALITY OR QUANTITY OF THE WORK REQUIRED UNDER THE CONTRACT DOCUMENTS, THEN THE CONTRACTOR SHALL (1) IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF SUCH INCONSISTENCY AND (2) PROVIDE THE BETTER QUALITY OF OR GREATER QUANTITY OF WORK OR MATERIALS, UNLESS OTHERWISE ORDERED IN WRITING BY THE OWNER. COMPUTED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE DIMENSIONS. THE CONTRACT DOCUMENTS GENERALLY SET FORTH THE BASIS AND ANALYSIS OF DESIGN, AND THE CONTRACTOR SHALL OBTAIN SUCH INFORMATION AS MAY BE NECESSARY TO SATISFACTORILY PERFORM AND COMPLETE THE WORK.
4	THE ARCHITECTURAL DRAWINGS ARE A PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS AND WITHIN THE SPECIFICATIONS. THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK DESCRIBED ON DRAWINGS OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO THE DRAWINGS OF ANOTHER DISCIPLINE. PARTIAL SETS OF DRAWINGS ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND COORDINATE THE WORK OF ALL SUB-CONTRACTORS, TRADES, AND SUPPLIERS WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE COMMENCING CONSTRUCTION AND TO ASSURE THAT ALL PARTIES ARE AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS OCCUR IN THE CONTRACT DOCUMENTS, WHICH MIGHT AFFECT THE WORK OF THAT PARTY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN SUBCONTRACTORS, SUPPLIERS, AND VENDORS BASED ON THE ENTIRE SET OF THESE DOCUMENTS. NO ADDITIONAL COMPENSATION WILL BE DUE TO A CONTRACTOR FOR ANY ISSUES AS A RESULT OF ANY USE OF AN INCOMPLETE SET OF CONSTRUCTION DOCUMENTS.
5	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE.
6	VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT, OR BY OTHERS. UNLESS NOTED OTHERWISE, ALL MATERIALS AND EQUIPMENT TO BE INSTALLED PER THE APPLICABLE PROVISIONS OF THESE DOCUMENTS AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
7	OBTAIN ARCHITECT'S SPECIFIC APPROVAL PRIOR TO DEVIATING FROM THE CONTRACT DOCUMENTS. THE ARCHITECT'S RESPONSIBILITY IS LIMITED TO THE ITEMS SHOWN ON THE ARCHITECTURAL DRAWINGS. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO COMPLY WITH STANDARD BUILDING AND CONSTRUCTION PRACTICES AND MANUFACTURER'S RECOMMENDATIONS FOR ALL ITEMS NOT SPECIFICALLY INDICATED AND DETAILED ON THE DRAWINGS. FOLLOW THE BEST TRADE PRACTICES AND ENGINEERING FOR THE ITEMS NOT SPECIFICALLY DETAILED AND INDICATED.
8	ALL PARTS OF THE WORK, INCLUDING MATERIALS, METHODS, ASSEMBLIES, ETC, MUST COMPLY WITH THE MINIMUM REQUIREMENTS OF THE GOVERNING REGULATIONS OF ALL FEDERAL, STATE, DISTRICT, AND LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT AS WELL AS THOSE GREATER REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS. NO PART OF THE CONTRACT DOCUMENTS MAY BE CONSTRUED TO REQUIRE OR PERMIT WORK CONTRARY TO A GOVERNING REGULATION.
9	THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A CURRENT SET OF CONSTRUCTION DRAWINGS ON SITE DURING CONSTRUCTION. THE CONTRACTOR SHALL INDICATE ON THESE DRAWINGS ALL APPROVED CHANGES TO THE WORK. THIS SET OF DRAWINGS SHALL BE TURNED OVER TO THE OWNER/CLIENT WHEN THE PROJECT IS COMPLETE.
10	THE CONTRACTOR SHALL COORDINATE INSTALLATION OF THE FIRE PROPS WITH THE FIRE PROP VENDOR.

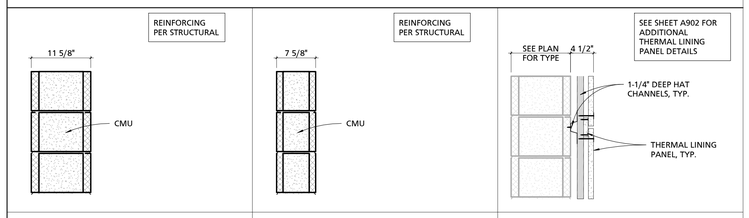
GENERAL PARTITION NOTES

1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	CONTRACTOR SHALL PROVIDE BLOCKING AND NAILERS AS REQUIRED TO SUPPORT ALL NEW WORK, INCLUDING ITEMS TO BE PROVIDED AND/OR INSTALLED BY OWNER.

SCHEDULE - WALL TYPES

MARK	WIDTH	DESCRIPTION	FIRE RATING RATING
M-01	11 5/8"	12" CMU	0
M-02	7 5/8"	8" CMU	0
TL-01	4 1/2"	THERMAL LINING PANEL SYSTEM	0

PARTITION TYPE DETAILS



M-01 M-02 TL-01

WALL CONSTRUCTION TYPES

1" = 1'-0"

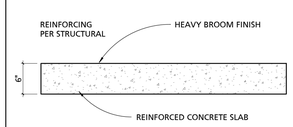
SCHEDULE - ROOFING TYPES

TYPE MARK	DESCRIPTION
R-01	6" REINFORCED CONCRETE ROOF
R-02	8" REINFORCED CONCRETE ROOF

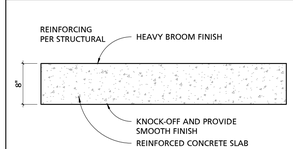
SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION
CS8	8" CONCRETE SLAB
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL

ROOF ASSEMBLIES

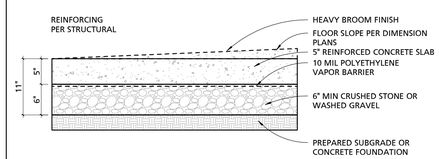


R-01

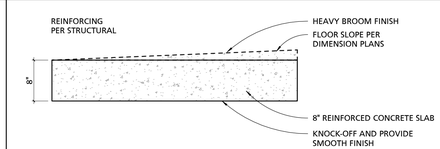


R-02

FLOOR ASSEMBLIES



SOG5



CS8

ROOF ASSEMBLIES

1" = 1'-0"

FLOOR ASSEMBLIES

1" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO

SHEET TITLE
CONSTRUCTION TYPES

SHEET NO
A001

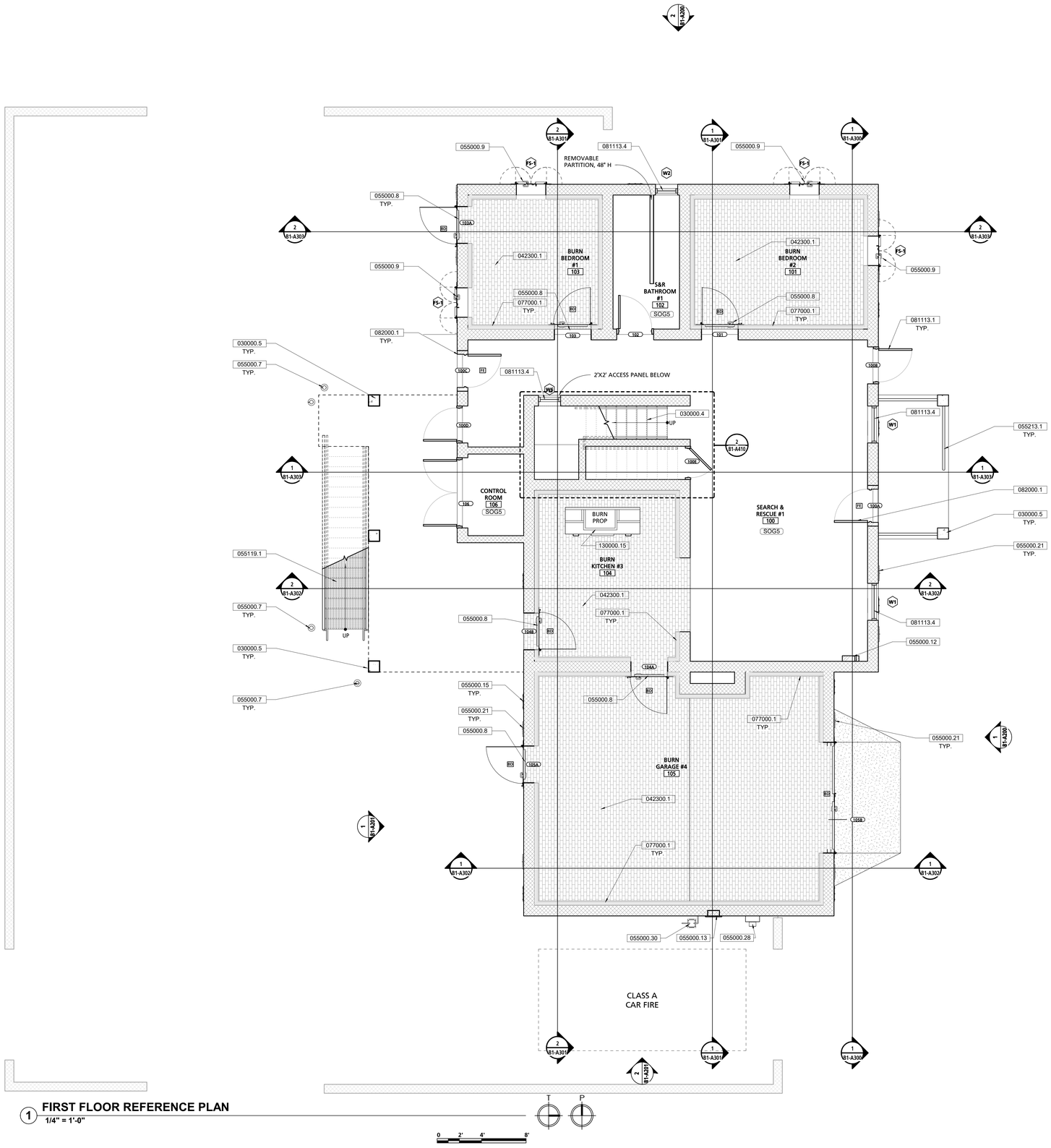
BID SET

GENERAL REFERENCE PLAN NOTES

1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	FOR TYPICAL RAILING DETAILS, SEE DRAWING A906.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- BURN ROOM FIRE SHUTTERS
- HOLLOW METAL WINDOW
- NEW WALL/PARTITION
- RECESSED FIRE BRICK FLOOR
- SLOPE — SLOPE DIRECTION
- FINISH FLOOR ELEVATION
- STEP IN FLOOR ELEVATION



1 **FIRST FLOOR REFERENCE PLAN**
1/4" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.4	CAST-IN-PLACE CONCRETE STAIRS WITH 3" WIDE METAL NOSING W/ ABRASIVE SURFACE & INTEGRAL ANCHORS.
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
042300.1	RECESSED FIRE BRICK FLOOR
055000.7	METAL BOLLARD
055000.8	BURN DOOR
055000.9	BURN SHUTTER
055000.12	MOCK ELECTRICAL CABINETS; SEE SHEET A904
055000.13	MOCK VALVE CABINET; SEE SHEET A904
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.28	MOCK ELECTRICAL METER (RESIDENTAL), PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 8" BELOW ROOF LINE; SEE SHEET A904
055000.30	MOCK GAS METER; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
077000.1	THERMAL LINING SYSTEM WALL PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
130000.15	BURN STOVE PROP BY FIRE PROP VENDOR

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS — MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT — MARY C. MCGRATH — C-24435 — REN-08-30-23 — STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 30 OF 123

SHEET TITLE
REFERENCE PLAN - FIRST FLOOR PLAN

SHEET NO
B1-A100

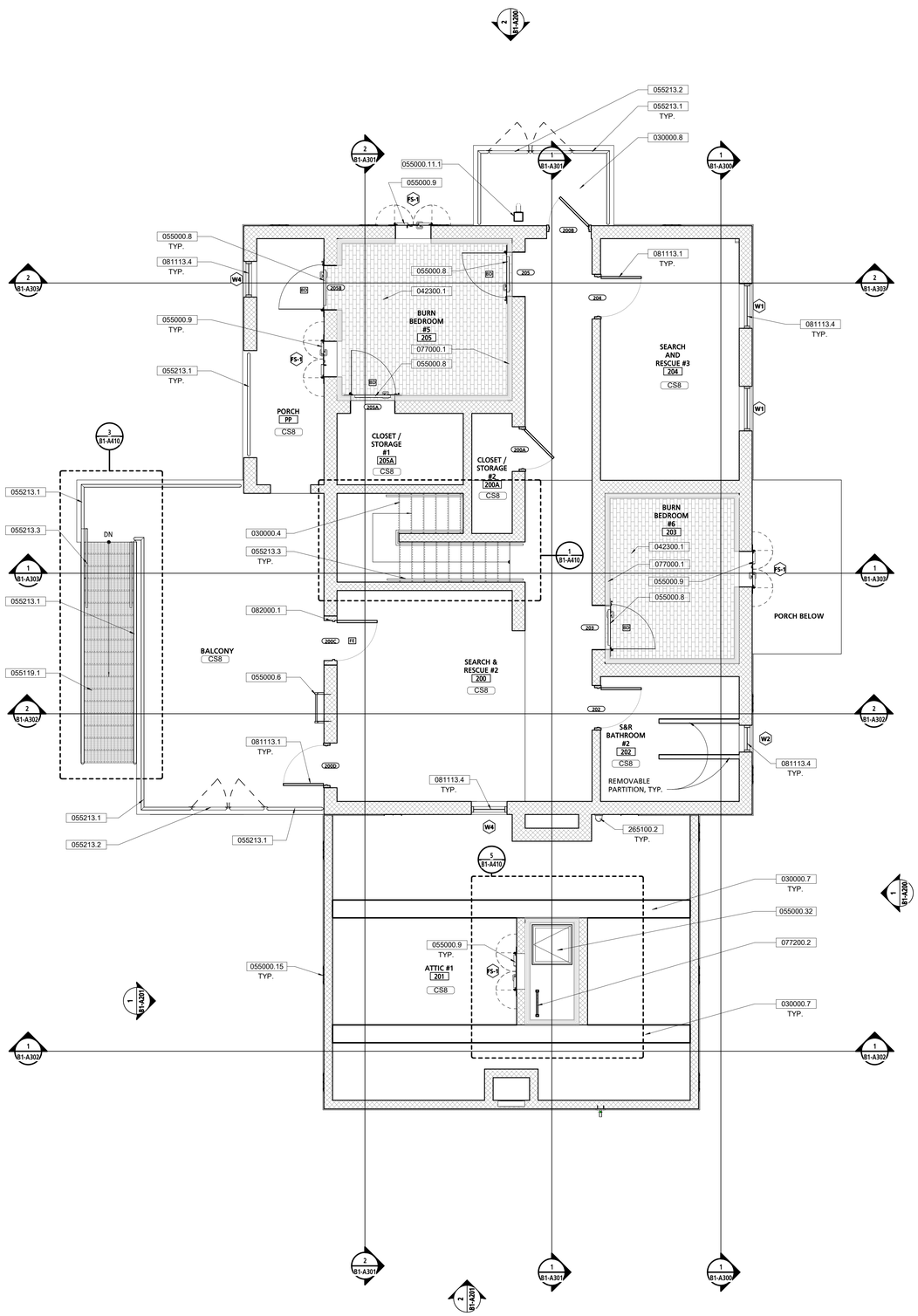
BID SET

GENERAL REFERENCE PLAN NOTES

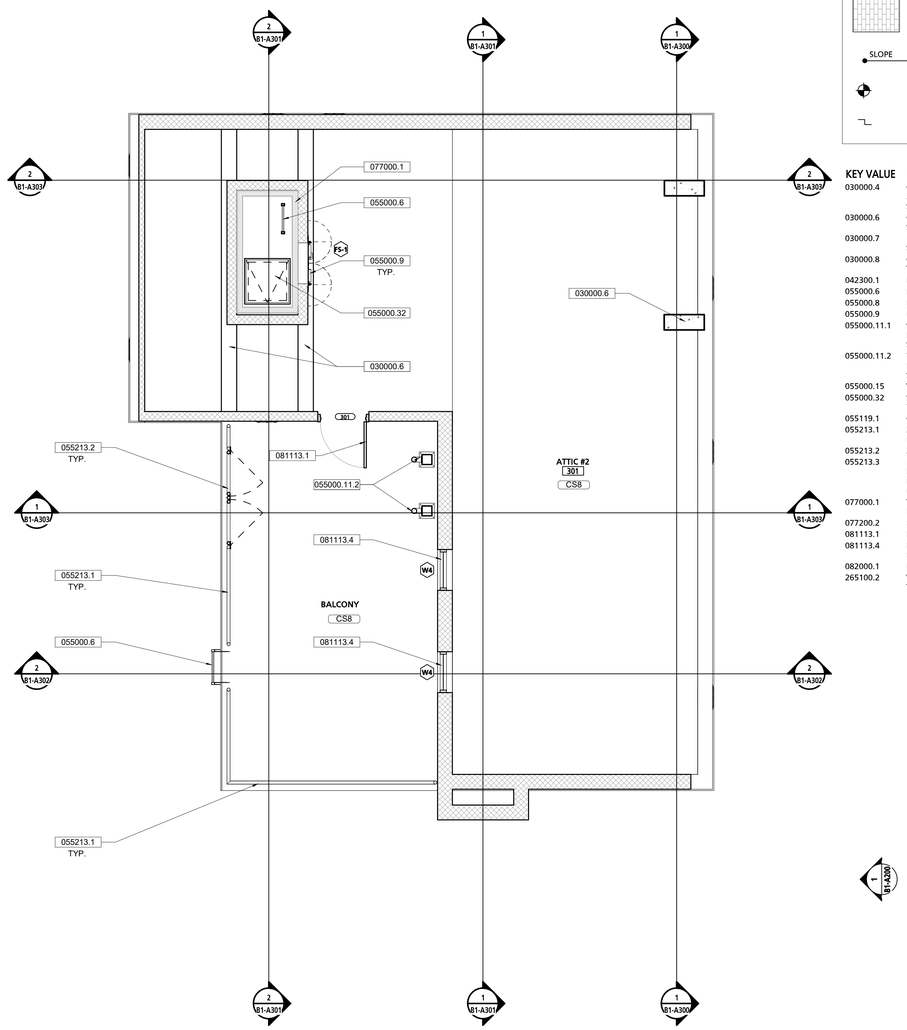
1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	FOR TYPICAL RAILING DETAILS, SEE DRAWING A906.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- BURN ROOM FIRE SHUTTERS
- HOLLOW METAL WINDOW
- NEW WALL/PARTITION
- RECESSED FIRE BRICK FLOOR
- SLOPE — SLOPE DIRECTION
- FINISH FLOOR ELEVATION
- STEP IN FLOOR ELEVATION



1 **SECOND FLOOR REFERENCE PLAN**
1/4" = 1'-0"



2 **THIRD FLOOR REFERENCE PLAN**
1/4" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.4	CAST-IN-PLACE CONCRETE STAIRS WITH 3" WIDE METAL NOSING W/ ABRASIVE SURFACE & INTEGRAL ANCHORS.
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.7	INVERTED CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
042300.1	RECESSED FIRE BRICK FLOOR
055000.6	METAL LADDER, SEE SHEET A907
055000.8	BURN DOOR
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.32	STEEL BURN ROOM FLOOR HATCH, SEE 7/A901
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
055213.3	1-1/2" O.D. GALVANIZED STEEL HANDRAIL @ 36" ABOVE TREAD NOSING WITH BRACKETS @ 4'-0" O.C. MAX, TYP.
077000.1	THERMAL LINING SYSTEM WALL PANELS
077200.2	FIXED ACCESS LADDER
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS — MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT — MARY C. MCGRATH — C-24435 — REN-08-30-23 — STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA — Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 31 OF 123

SHEET TITLE
REFERENCE PLAN - SECOND AND THIRD FLOOR PLANS

SHEET NO B1-A101

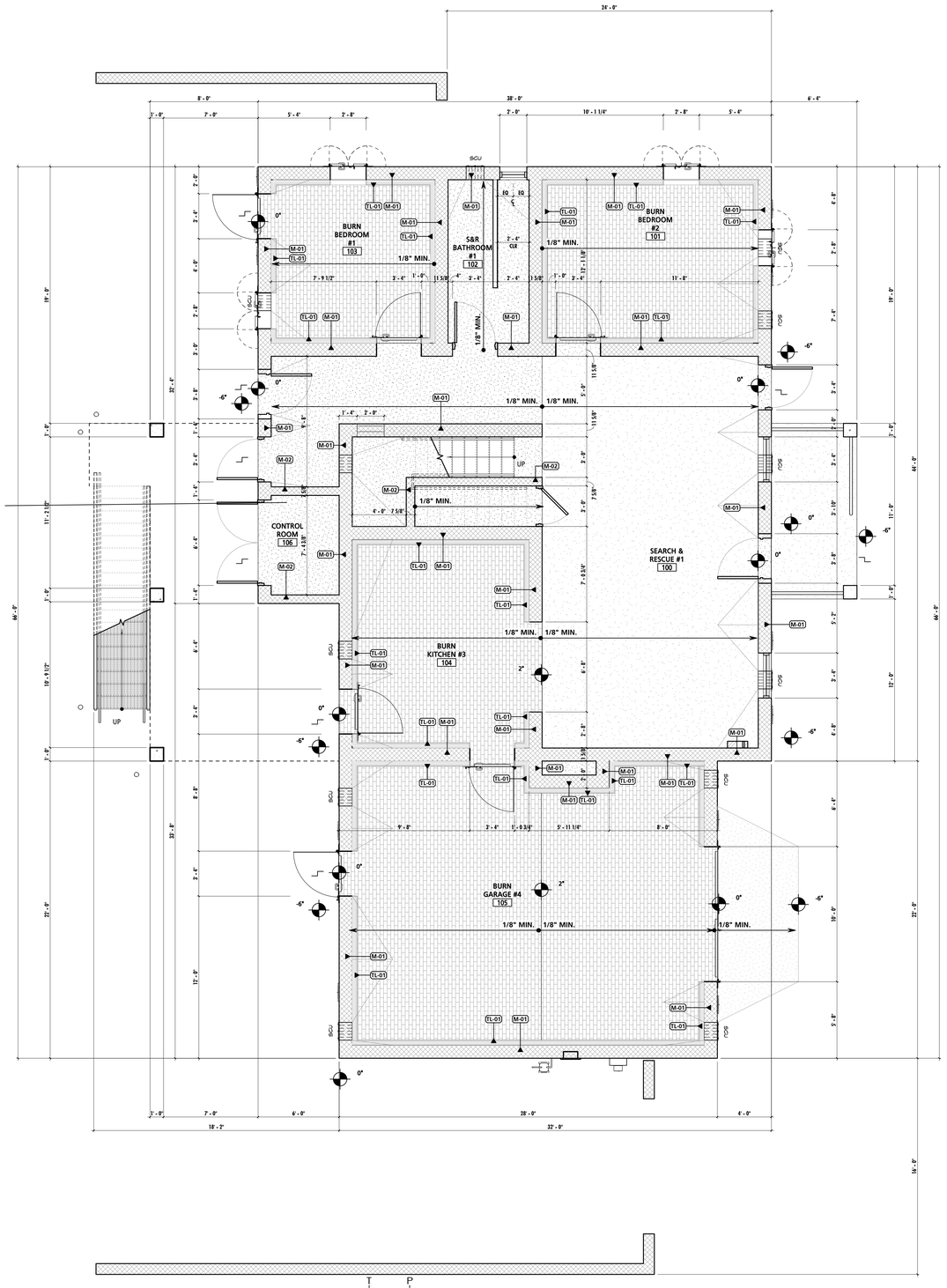
BID SET

GENERAL DIMENSION PLAN NOTES

1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.
2	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- BURN ROOM FIRE SHUTTERS
- HOLLOW METAL WINDOW
- NEW WALL/PARTITION
- RECESSED FIRE BRICK FLOOR
- SLOPE — SLOPE DIRECTION
- FINISH FLOOR ELEVATION
- STEP IN FLOOR ELEVATION



1 **FIRST FLOOR DIMENSION PLAN**
1/4" = 1'-0"

0 2' 4' 8'

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT — MARY C. MCGRATH — C-24435 — REN-08-30-23 — STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 32 OF 123

SHEET TITLE
DIMENSION PLAN - FIRST FLOOR PLAN

SHEET NO B1-A110

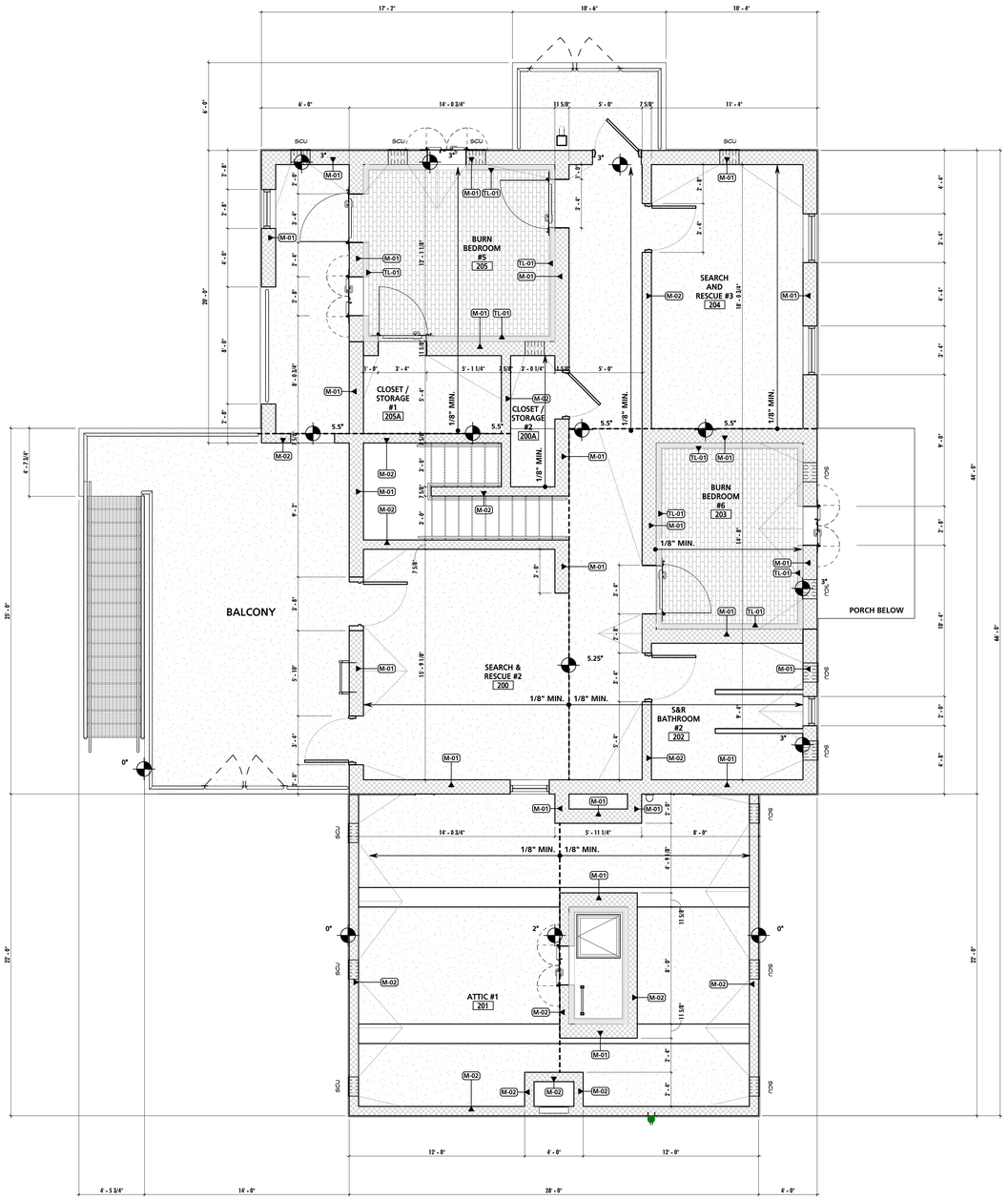
BID SET

GENERAL DIMENSION PLAN NOTES

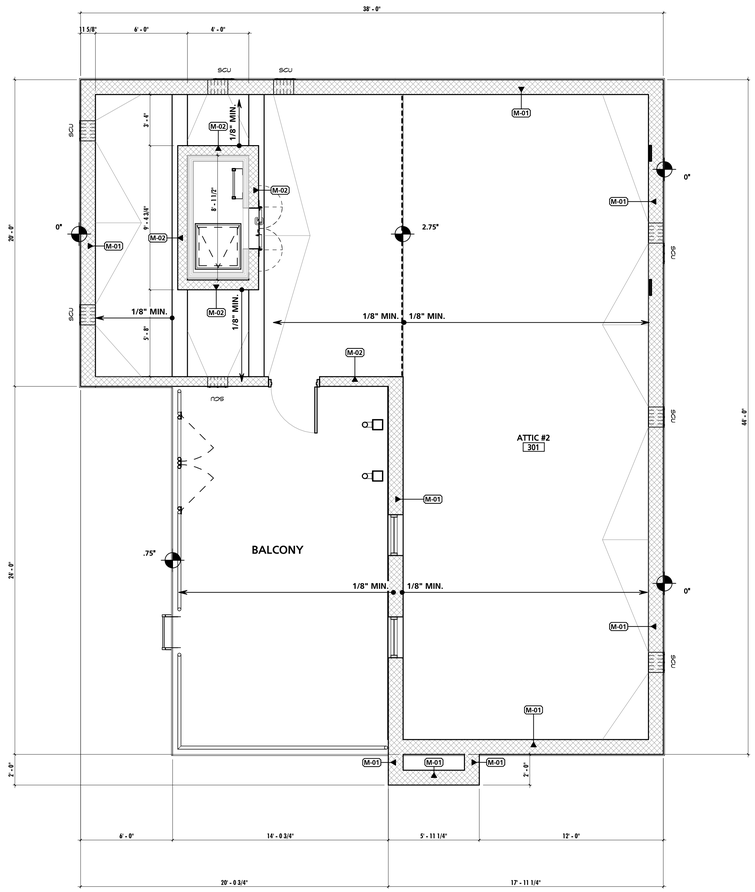
1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.
2	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- BURN ROOM FIRE SHUTTERS
- HOLLOW METAL WINDOW
- NEW WALL/PARTITION
- RECESSED FIRE BRICK FLOOR
- SLOPE — SLOPE DIRECTION
- FINISH FLOOR ELEVATION
- STEP IN FLOOR ELEVATION



1 **SECOND FLOOR DIMENSION PLAN**
1/4" = 1'-0"



2 **THIRD FLOOR DIMENSION PLAN**
1/4" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS — MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT — MARY C. MCGRATH — C-24435 — REN-08-30-23 — STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO — SHEET 33 OF 123

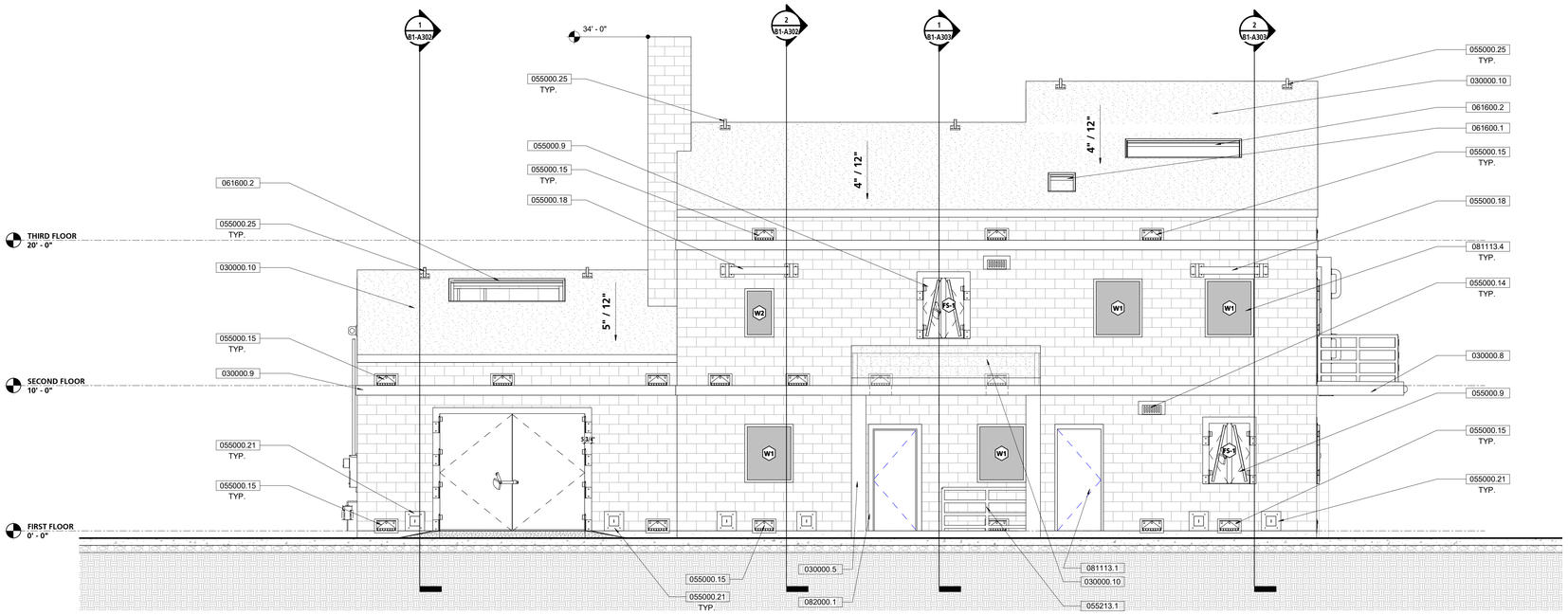
SHEET TITLE
DIMENSION PLAN - SECOND AND THIRD FLOOR PLANS

SHEET NO
B1-A111

BID SET

GENERAL ELEVATION NOTES

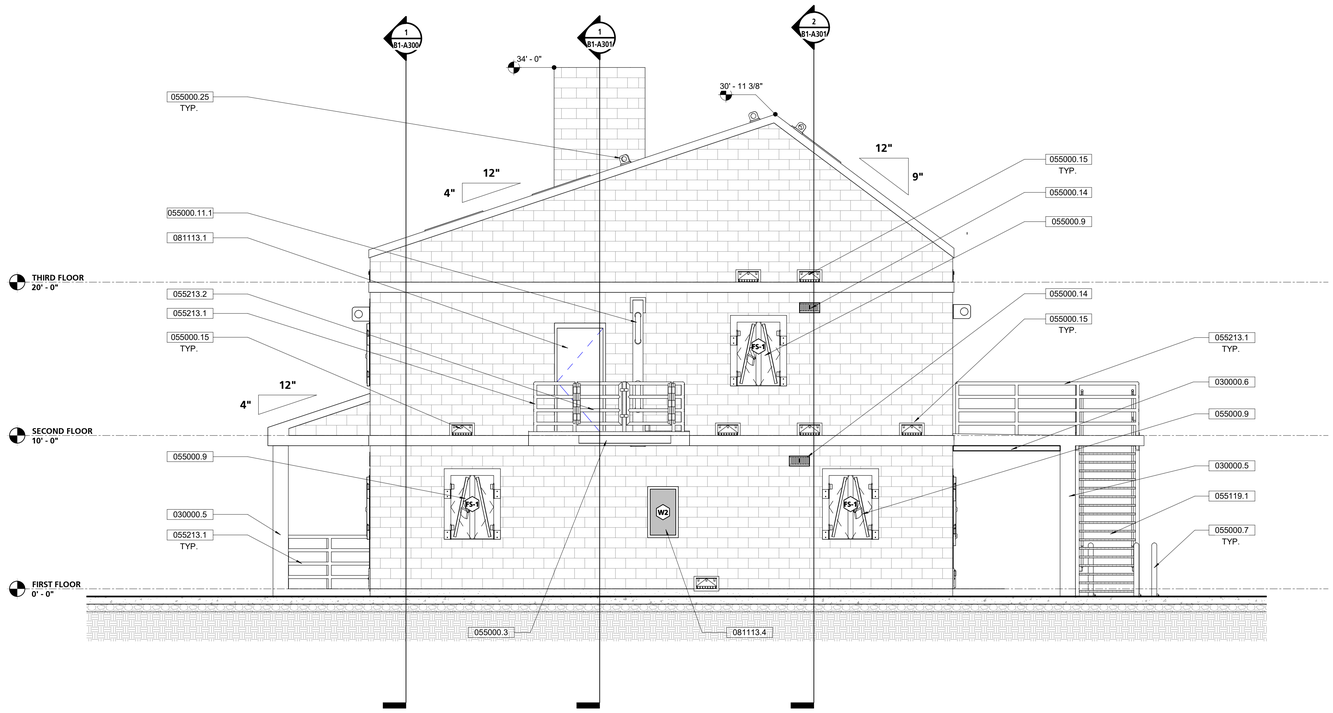
NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.
2	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE OR THE SECTION END UNLESS NOTED OTHERWISE.



1 EXTERIOR ELEVATION - EAST

1/4" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.9	CAST SLAB EDGE
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.7	METAL BOLLARD
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.14	WALL VENT; SEE DETAIL 7/A902
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
061600.2	ROOF CHOP OUT PANEL - 4'X8', SEE SHEET A904
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR



2 EXTERIOR ELEVATION - NORTH

1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 34 OF 123

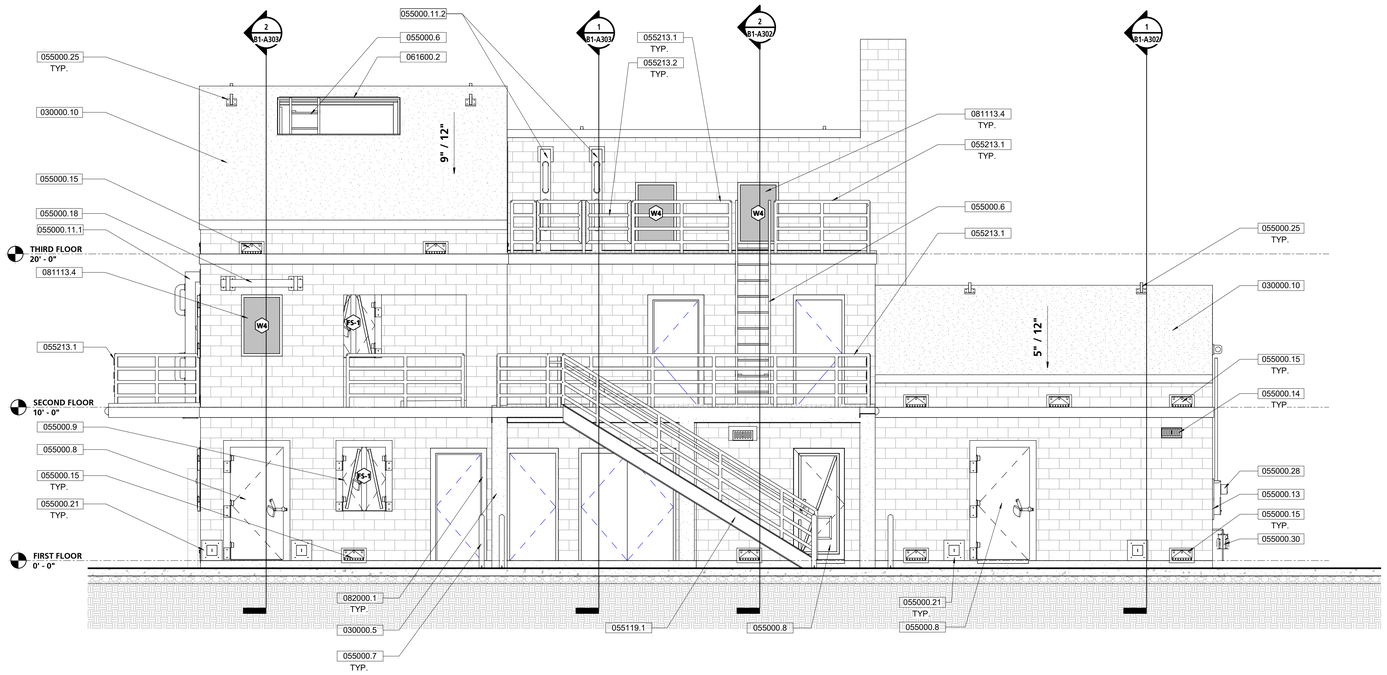
SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO
B1-A200

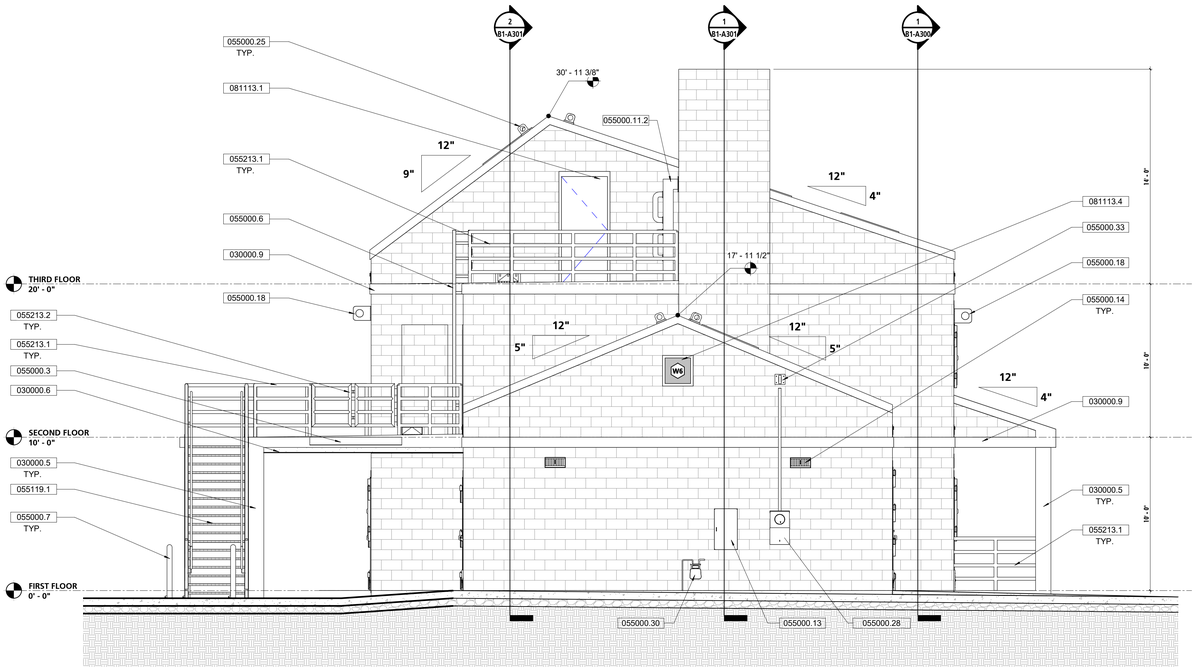
BID SET

GENERAL ELEVATION NOTES

NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.
2	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE OR THE SECTION END UNLESS NOTED OTHERWISE.



1 **EXTERIOR ELEVATION - WEST**
1/4" = 1'-0"



2 **EXTERIOR ELEVATION - SOUTH**
1/4" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.9	CAST SLAB EDGE
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.6	METAL LADDER, SEE SHEET A907
055000.7	METAL BOLLARD
055000.8	BURN DOOR
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.13	MOCK VALVE CABINET; SEE SHEET A904
055000.14	WALL VENT; SEE DETAIL 7/A902
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055000.28	MOCK ELECTRICAL METER (RESIDENTAL), PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 8" BELOW ROOF LINE; SEE SHEET A904
055000.30	MOCK GAS METER; SEE SHEET A904
055000.33	2" GALVANIZED STEEL D RING WITH BASEPLATE
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.2	ROOF CHOP OUT PANEL - 4'X8', SEE SHEET A904
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 35 OF 123

SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO
B1-A201

BID SET

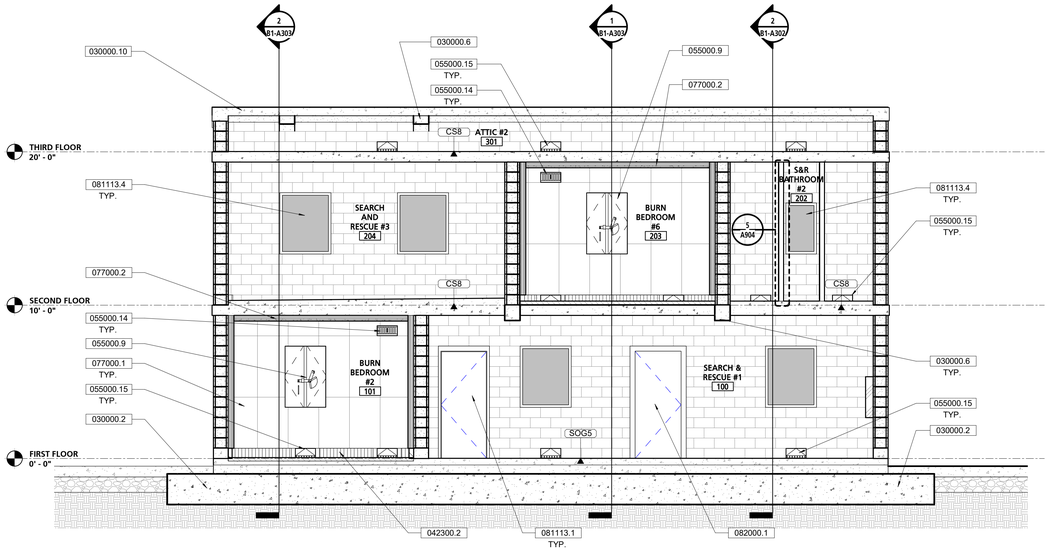
SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION
CS8	8" CONCRETE SLAB
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042300.2	FIRE BRICK BASE AT WALL CANTED AND ROTATED TO SAILOR POSITION TO ACT AS A TOE KICK, TYP.
055000.9	BURN SHUTTER
055000.14	WALL VENT; SEE DETAIL 7/A902
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR



1 **BUILDING SECTION LONGITUDINAL**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
DRAWN BY JB
CHECKED BY GC
CONSULTANT JOB NO 20-126
DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

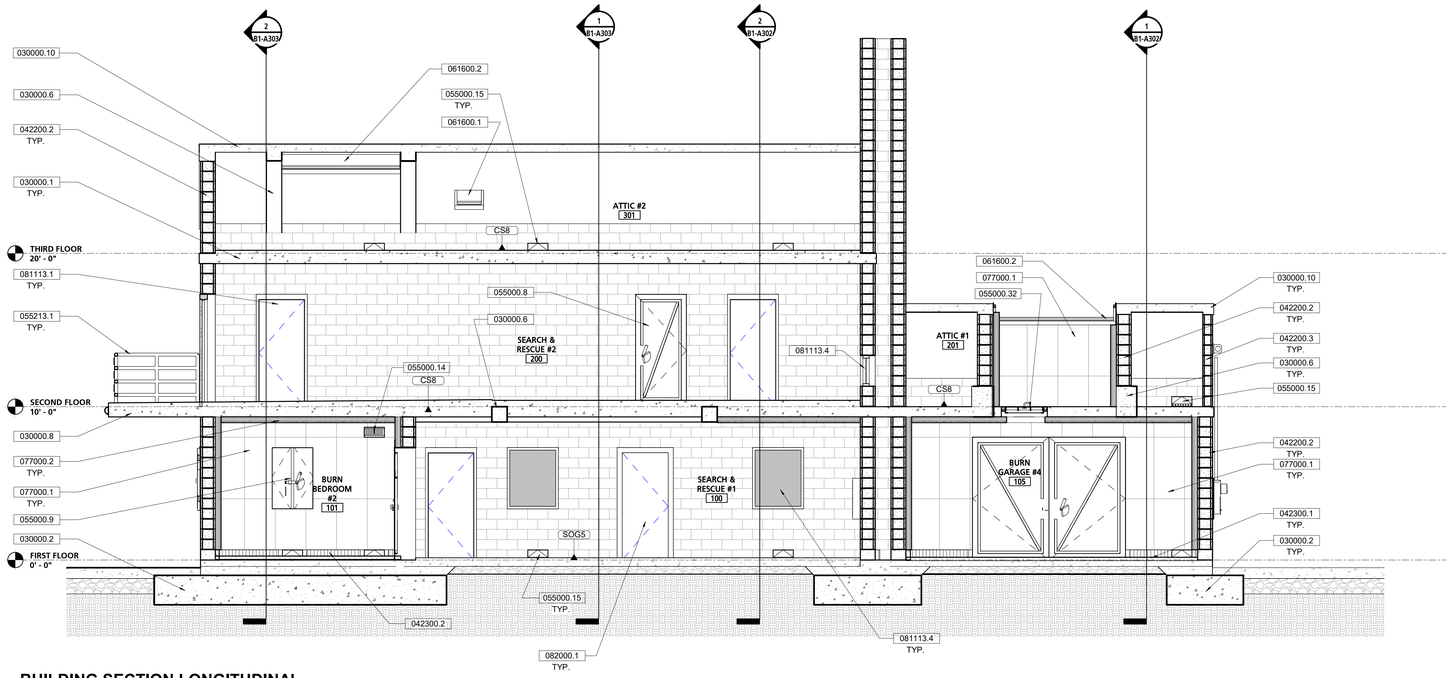
COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 36 OF 123
SHEET TITLE BUILDING SECTIONS
SHEET NO B1-A300

SCHEDULE - FLOOR ASSEMBLY TYPES

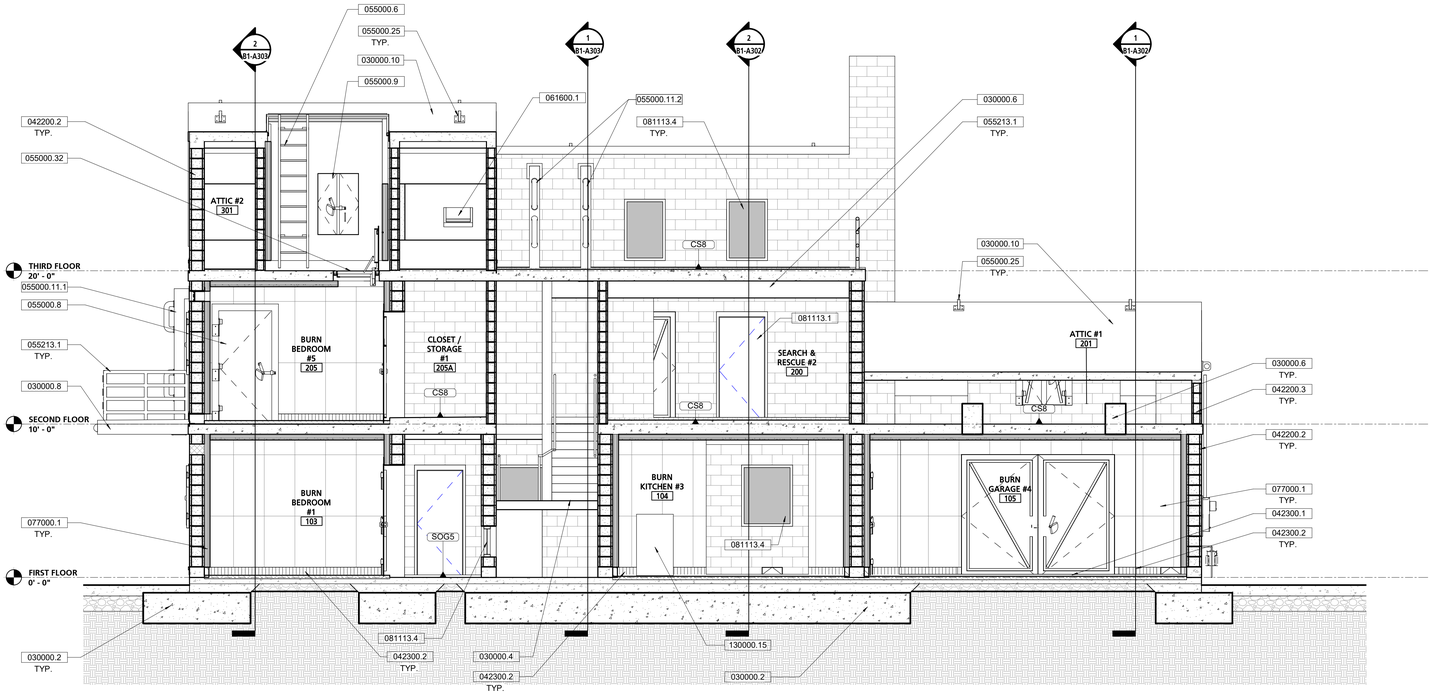
MARK	DESCRIPTION
CS8	8" CONCRETE SLAB
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.



1 **BUILDING SECTION LONGITUDINAL**
1/4" = 1'-0"



2 **BUILDING SECTION LONGITUDINAL**
1/4" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.4	CAST-IN-PLACE CONCRETE STAIRS WITH 3" WIDE METAL NOSING W/ ABRASIVE SURFACE & INTEGRAL ANCHORS.
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
042300.1	RECESSED FIRE BRICK FLOOR
042300.2	FIRE BRICK BASE AT WALL CANTED AND ROTATED TO SAILOR POSITION TO ACT AS A TOE KICK, TYP.
055000.6	METAL LADDER, SEE SHEET A907
055000.8	BURN DOOR
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.14	WALL VENT; SEE DETAIL 7/A902
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055000.32	STEEL BURN ROOM FLOOR HATCH, SEE 7/A901
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
061600.2	ROOF CHOP OUT PANEL - 4'X8', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
130000.15	BURN STOVE PROP BY FIRE PROP VENDOR

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

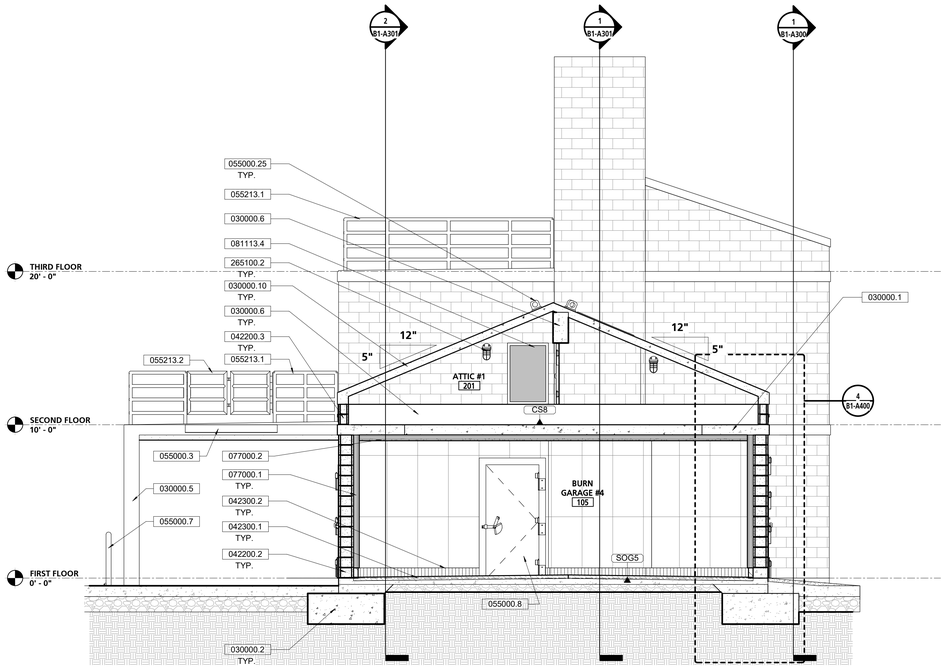
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 37 OF 123

SHEET TITLE
BUILDING SECTIONS

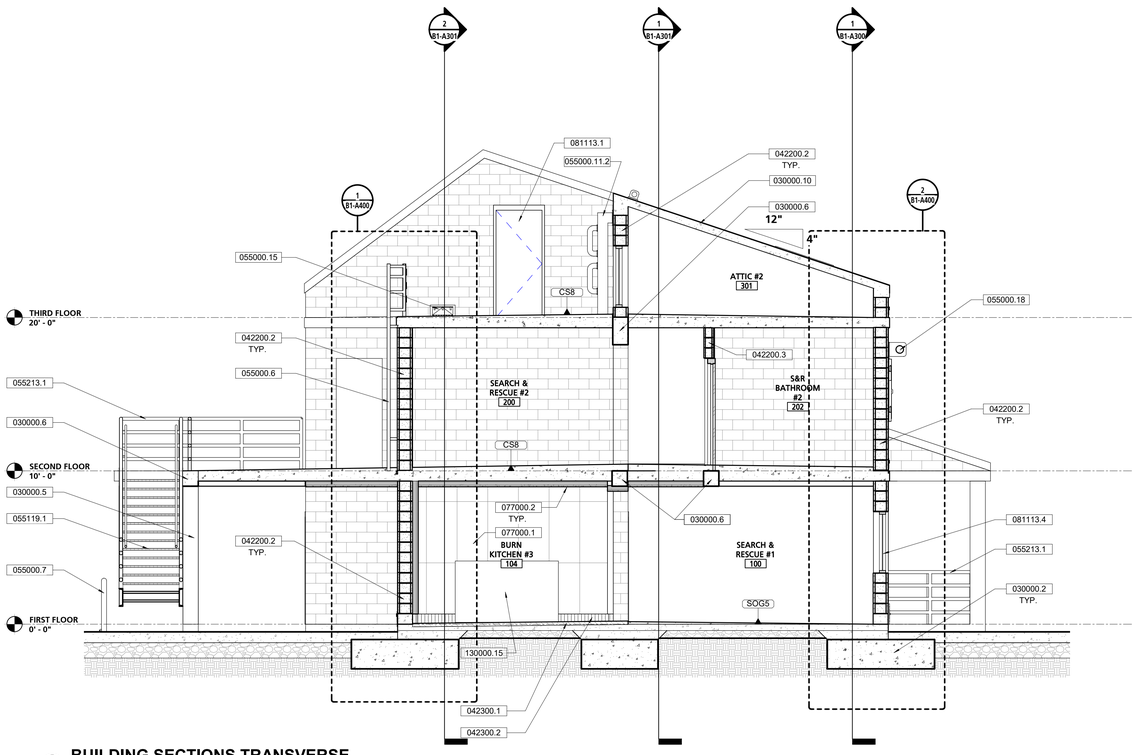
SHEET NO
B1-A301

BID SET



1 BUILDING SECTIONS TRANSVERSE

1/4" = 1'-0"



2 BUILDING SECTIONS TRANSVERSE

1/4" = 1'-0"

SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION
CS8	8" CONCRETE SLAB
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
042300.1	RECESSED FIRE BRICK FLOOR
042300.2	FIRE BRICK BASE AT WALL CANTED AND ROTATED TO SAILOR POSITION TO ACT AS A TOE KICK, TYP.
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.6	METAL LADDER, SEE SHEET A907
055000.7	METAL BOLLARD
055000.8	BURN DOOR
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
130000.15	BURN STOVE PROP BY FIRE PROP VENDOR
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC

CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

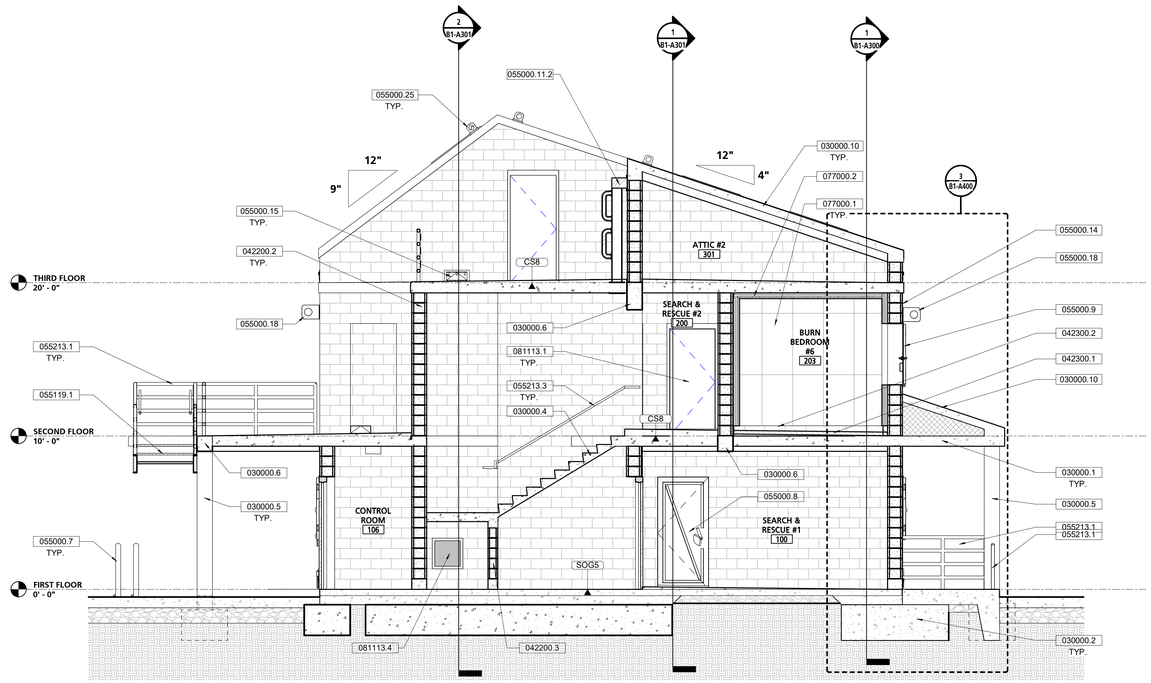
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 38 OF 123

SHEET TITLE
BUILDING SECTIONS

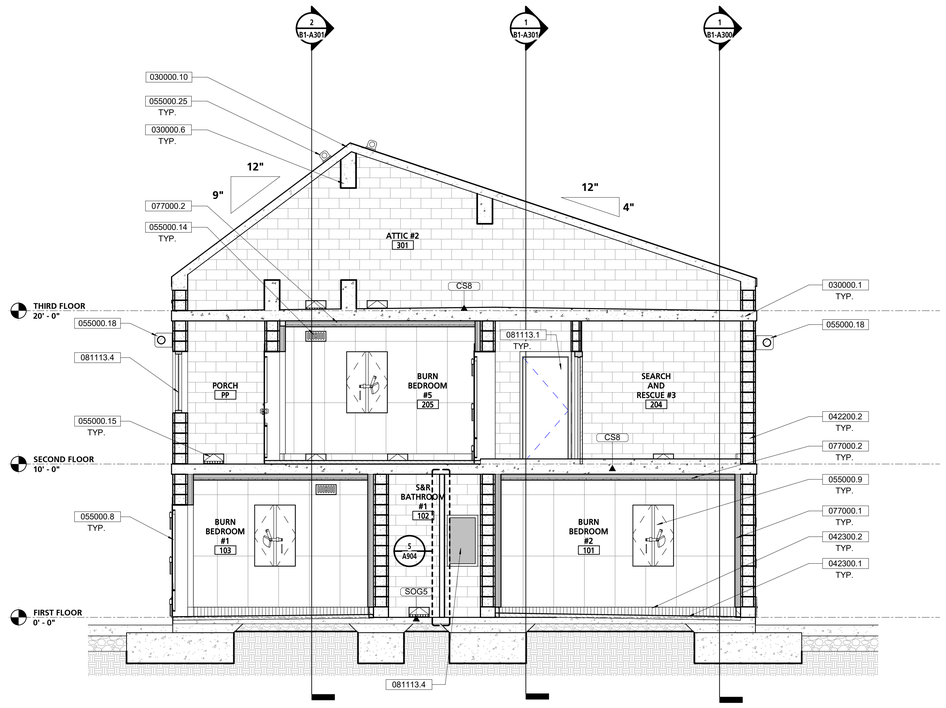
SHEET NO
B1-A302

BID SET



1 BUILDING SECTIONS TRANSVERSE

1/4" = 1'-0"



2 BUILDING SECTIONS TRANSVERSE

1/4" = 1'-0"

SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION
CS8	8" CONCRETE SLAB
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.4	CAST-IN-PLACE CONCRETE STAIRS WITH 3" WIDE METAL NOSING W/ ABRASIVE SURFACE & INTEGRAL ANCHORS.
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
042300.1	RECESSED FIRE BRICK FLOOR
042300.2	FIRE BRICK BASE AT WALL CANTED AND ROTATED TO SAILOR POSITION TO ACT AS A TOE KICK, TYP.
055000.7	METAL BOLLARD
055000.8	BURN DOOR
055000.9	BURN SHUTTER
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.14	WALL VENT; SEE DETAIL 7/A902
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.3	1-1/2" O.D. GALVANIZED STEEL HANDRAIL @ 36" ABOVE TREAD NOSING WITH BRACKETS @ 4'-0" O.C. MAX, TYP.
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

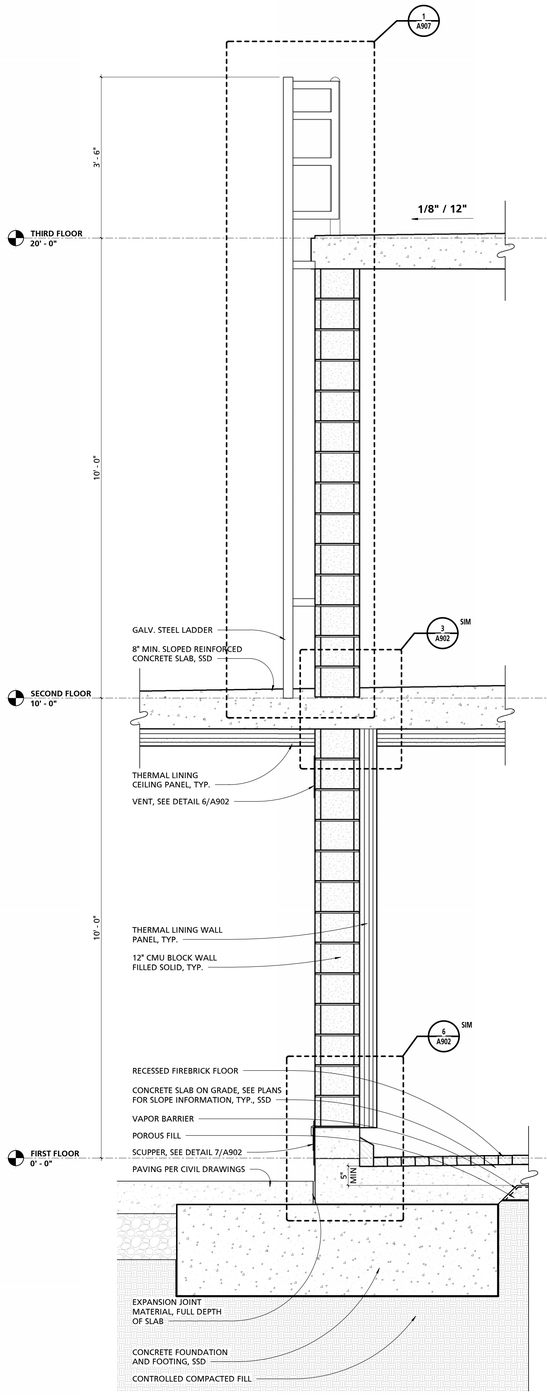
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 39 OF 123

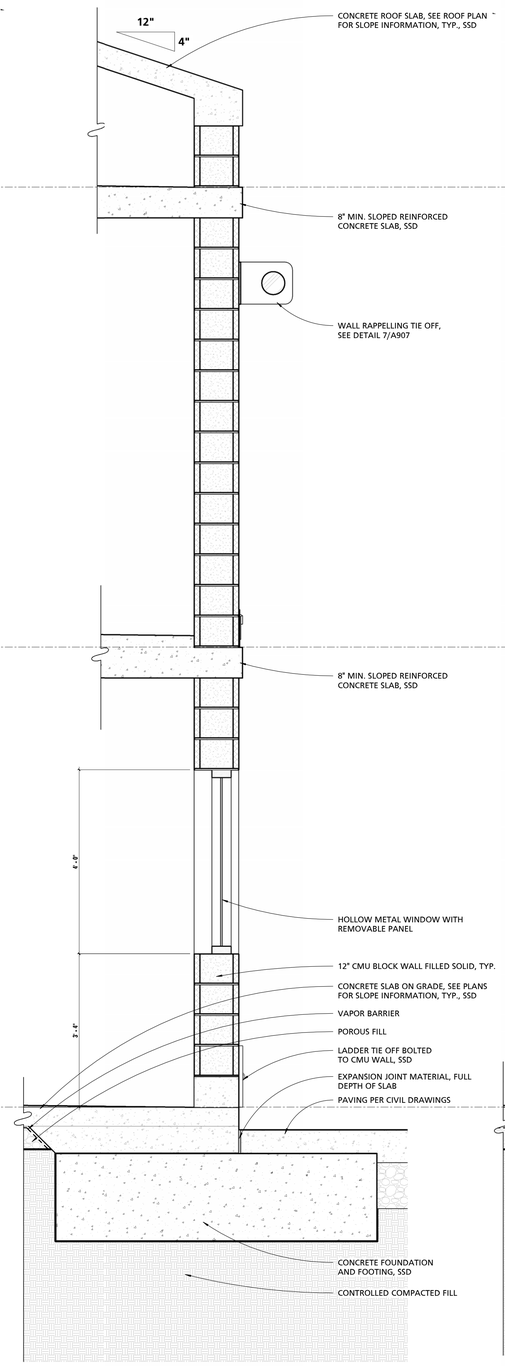
SHEET TITLE
BUILDING SECTIONS

SHEET NO
B1-A303

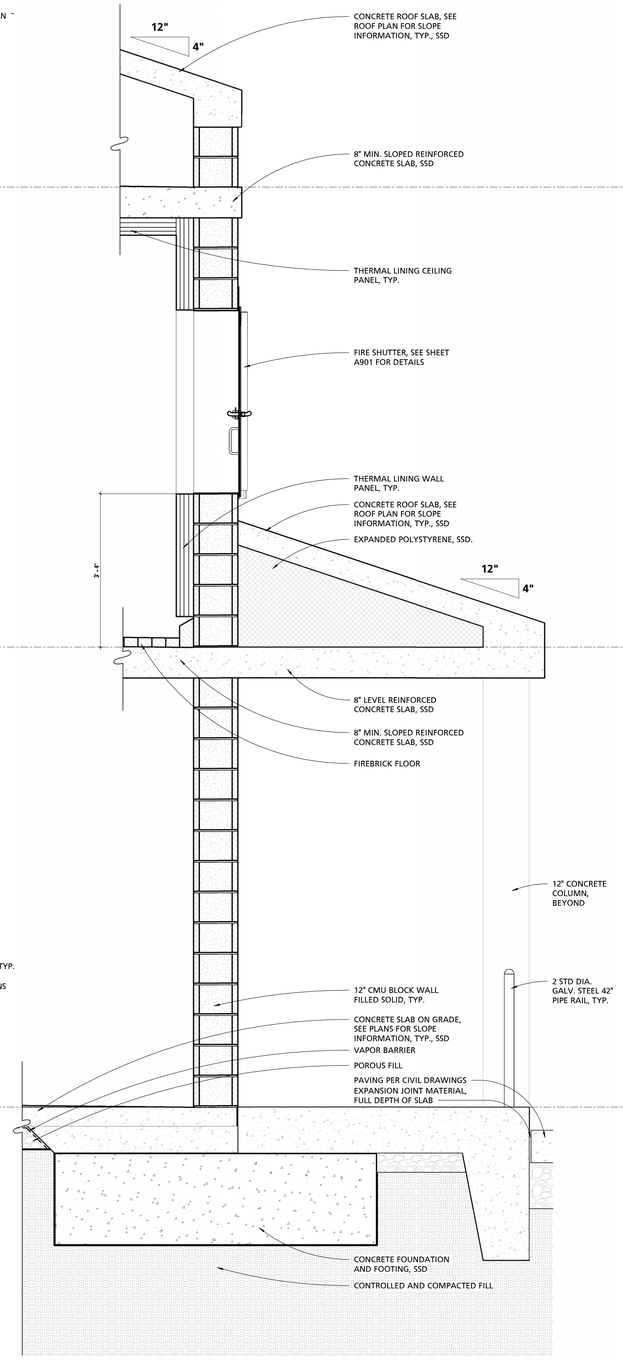
BID SET



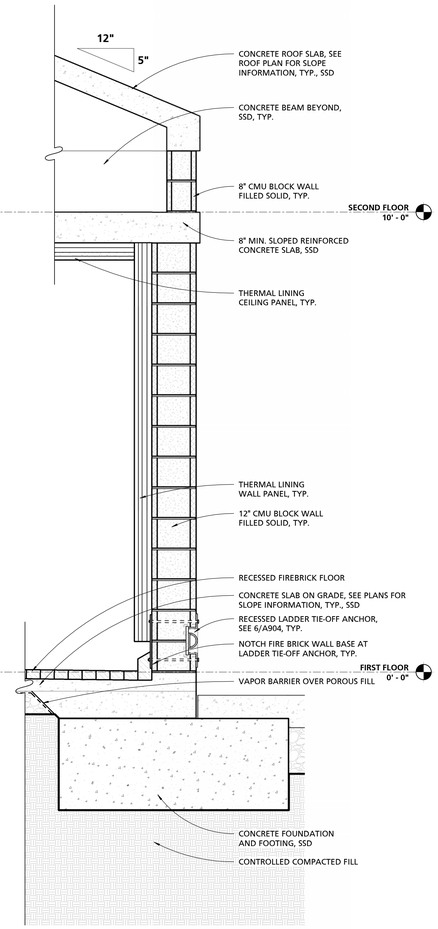
1 **WALL SECTION -2 STORY WEST WALL**
3/4" = 1'-0"



2 **WALL SECTION - TYPICAL 2 STORY**
3/4" = 1'-0"



3 **WALL SECTION 2 STORY EAST WALL**
3/4" = 1'-0"



4 **WALL SECTION - TYPICAL GARAGE**
3/4" = 1'-0"

BID SET

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	JB	CHECKED BY	GC
CONSULTANT JOB NO	20-126	DATE	08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

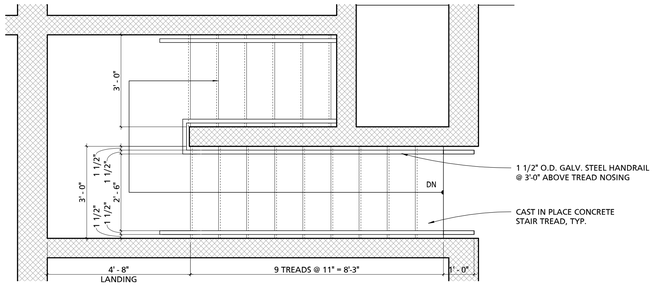
COUNTY DWG NO — SHEET 40 OF 123

SHEET TITLE
WALL SECTIONS

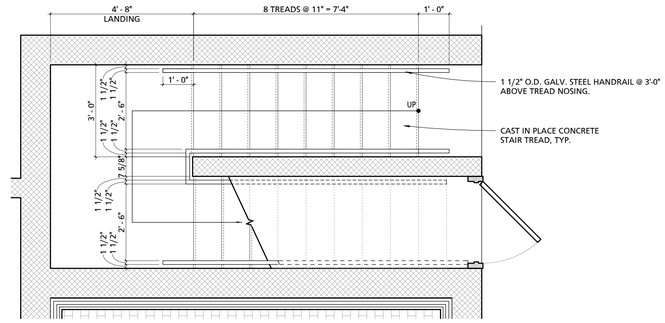
SHEET NO
B1-A400

GENERAL REFERENCE PLAN NOTES

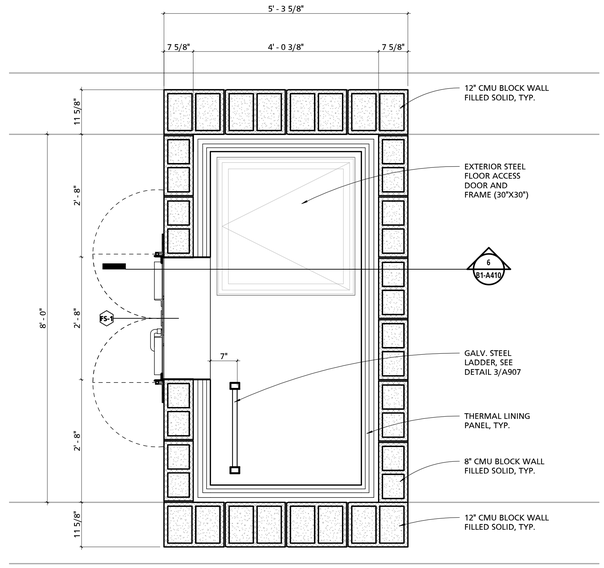
1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	FOR TYPICAL RAILING DETAILS, SEE DRAWING A906.



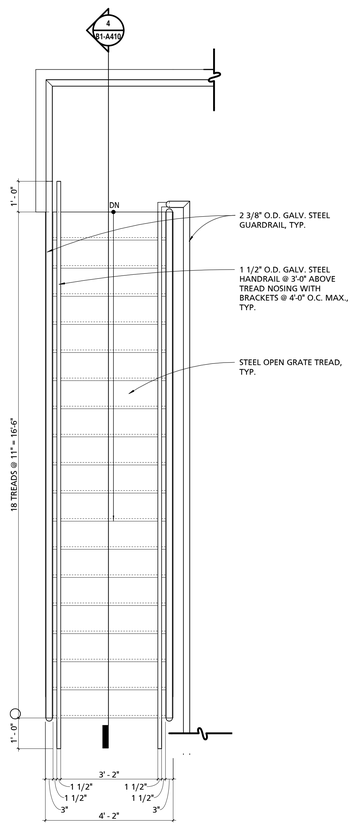
1 SEARCH & RESCUE STAIR - SECOND FLOOR
1/2" = 1'-0"



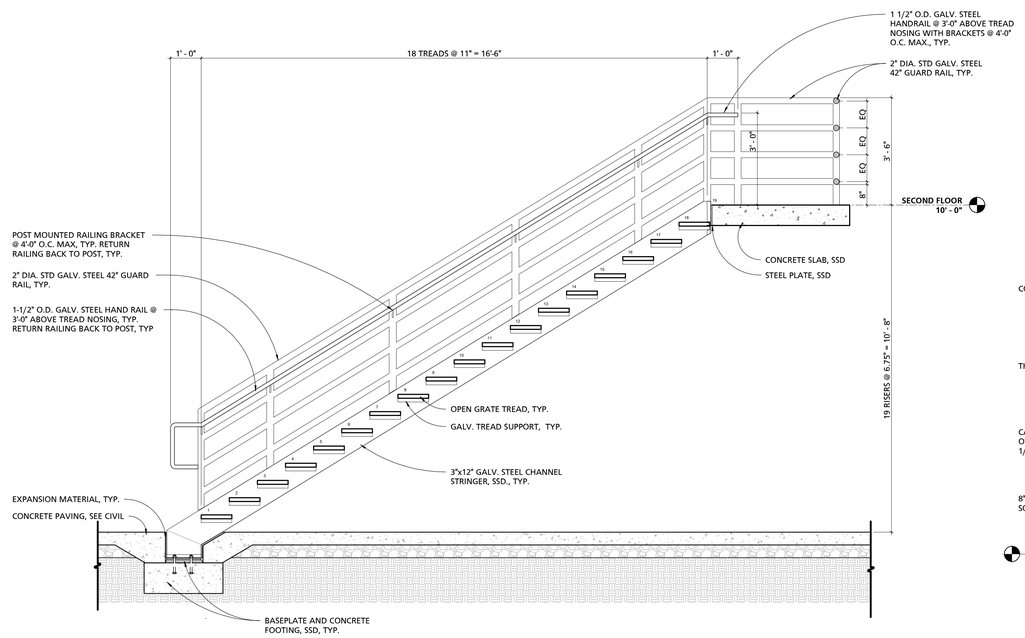
2 SEARCH & RESCUE STAIR - FIRST FLOOR
1/2" = 1'-0"



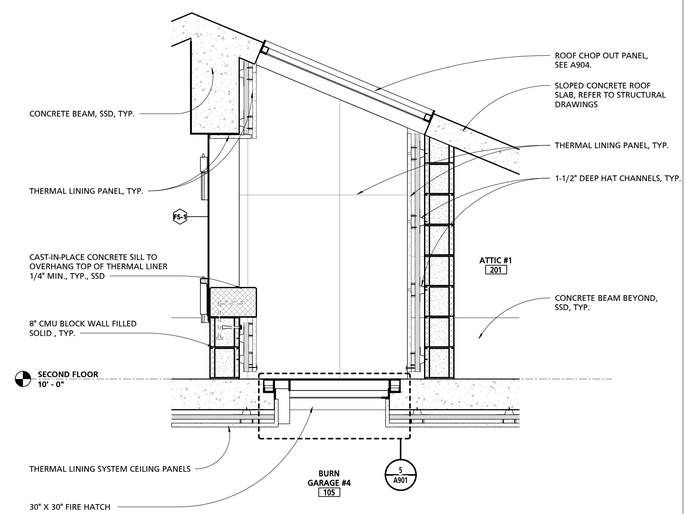
5 ENLARGED PLAN VIEW - VENT
3/4" = 1'-0"



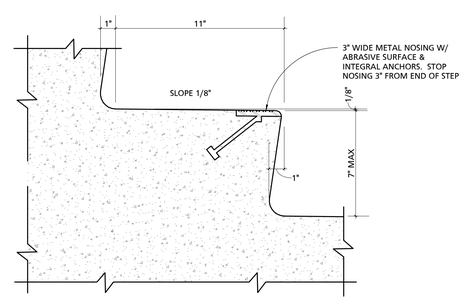
3 EXTERIOR STAIR
1/2" = 1'-0"



4 EXTERIOR STAIR SECTION
1/2" = 1'-0"



6 SECTION - VENT
3/4" = 1'-0"



7 TYPICAL CONCRETE STAIR NOSING
3" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 41 OF 123

SHEET TITLE
ENLARGED STAIR PLANS

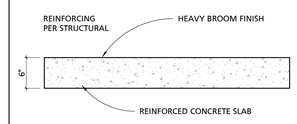
SHEET NO
B1-A410

BID SET

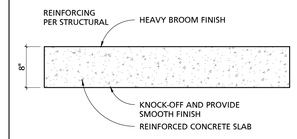
SCHEDULE - ROOFING TYPES

TYPE MARK	DESCRIPTION
R-01	6" REINFORCED CONCRETE ROOF
R-02	8" REINFORCED CONCRETE ROOF

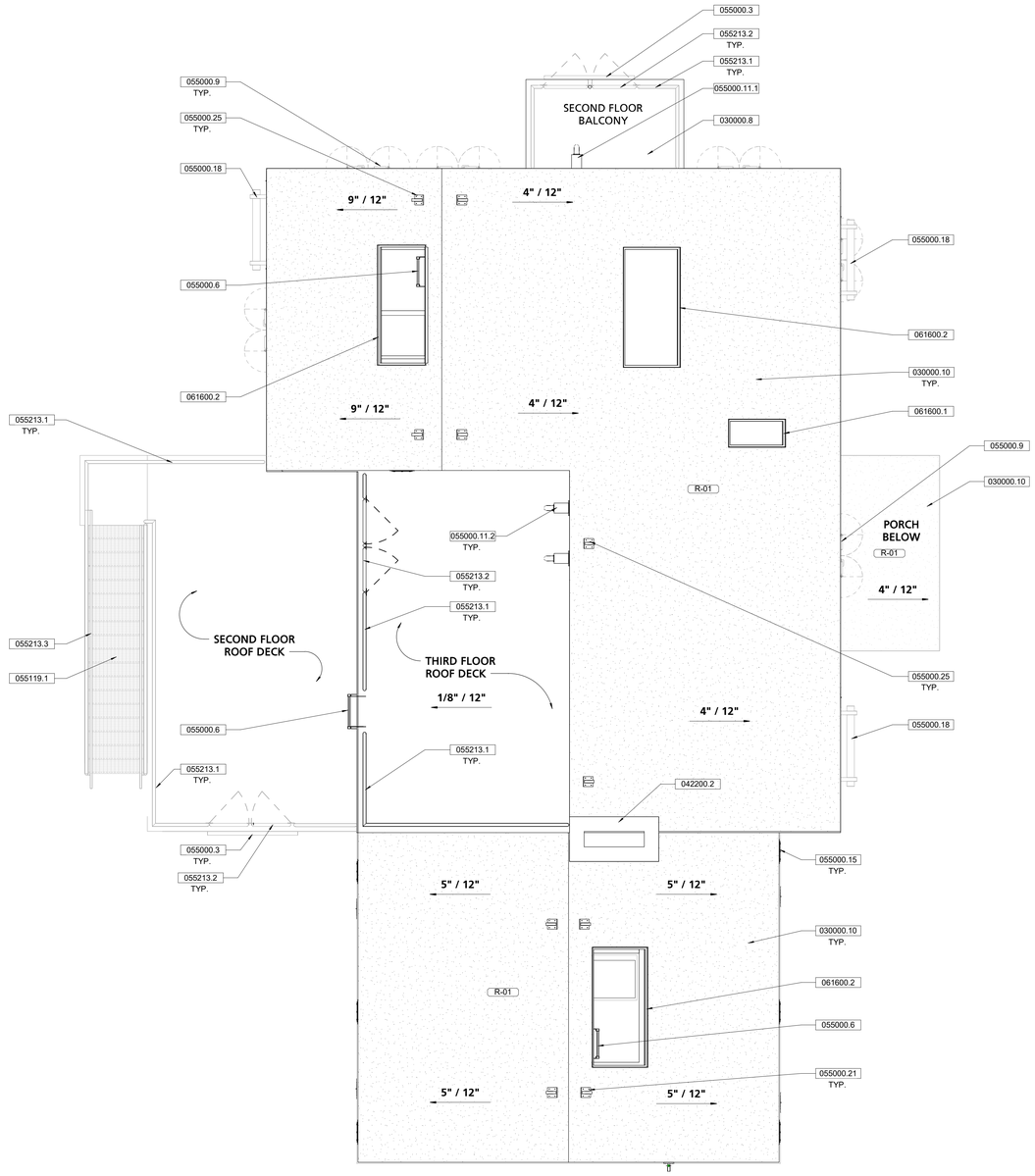
ROOF ASSEMBLIES



R-01



R-02



KEY VALUE	KEYNOTE TEXT
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.6	METAL LADDER, SEE SHEET A907
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
055213.3	1-1/2" O.D. GALVANIZED STEEL HANDRAIL @ 36" ABOVE TREAD NOSING WITH BRACKETS @ 4'-0" O.C. MAX, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
061600.2	ROOF CHOP OUT PANEL - 4'X8', SEE SHEET A904

1 **ROOF PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 42 OF 123
SHEET TITLE ROOF PLAN

SHEET NO B1-A500

BID SET

SCHEDULE - DOOR

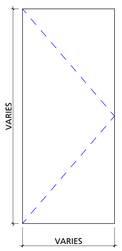
MARK	DOOR PANEL SIZE	DOOR PANEL TYPE	DOOR PANEL THICKNESS	DOOR PANEL MATERIAL	DOOR PANEL FINISH	FRAME FRAME TYPE	FRAME SIZE SUMMARY OVERALL HEIGHT	FRAME SIZE SUMMARY OVERALL WIDTH	FRAME PROFILE SUMMARY DEPTH	FRAME PROFILE SUMMARY THROAT	FRAME PROFILE SUMMARY HEAD	FRAME PROFILE SUMMARY JAMB	FRAME SIDE LITE WIDTH	FRAME MATERIAL	FRAME FINISH	GLAZING THICKNESS	GLAZING TYPE	DETAILS HEAD	DETAILS JAMB	HARDWARE SET	COMMENTS
100A	3'-0" x 7'-0"	PANEL : F	2"	-	-	HM ST	7' - 4"	3' - 8"	11 5/8"	10 5/8"	4"	4"	0' - 0"	-	-	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
100B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-2	
100C	3'-0" x 7'-0"	PANEL : F	2"	-	-	HM ST	7' - 4"	3' - 8"	11 5/8"	10 5/8"	4"	4"	0' - 0"	-	-	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
100D	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-2	
100E	2'-8" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 0"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-3	
101	BURN DOOR																				BURN DOOR
102	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-3	
103	BURN DOOR																				BURN DOOR
103A	BURN DOOR																				BURN DOOR
104A	BURN DOOR																				BURN DOOR
104B	BURN DOOR																				BURN DOOR
105A	BURN DOOR																				BURN DOOR
105B	BURN DOOR																				BURN DOOR
106	(2) 3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	6' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-1	"NOT FOR TRAINING" PAINTED ON EXTERIOR
200A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-3	
200B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-2	
200C	3'-0" x 7'-0"	PANEL : F	2"	-	HPC	HM ST	7' - 4"	3' - 8"	11 5/8"	10 5/8"	4"	4"	0' - 0"	-	-	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
200D	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-2	
202	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-3	
203	BURN DOOR																				BURN DOOR
204	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-3	
205	BURN DOOR																				BURN DOOR
205A	BURN DOOR																				BURN DOOR
205B	BURN DOOR																				BURN DOOR
301	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B1-2	

GENERAL DOOR NOTES

NOTE #	NOTE
1	SEE PARTITION SCHEDULE, FLOOR PLAN, AND STRUCTURAL DRAWINGS FOR CONSTRUCTION OF WALLS AND PARTITIONS.
2	DETAILS MAY VARY AT EACH DOOR. VERIFY EACH CONDITION IN FIELD.
3	SEE A900 SERIES FOR BURN DOOR DETAILS
4	RAISE BURN DOOR UP TO THE NEXT COURSE OF BLOCK WHERE DOOR UNDERCUT IS 8" OR MORE
5	PROVIDE FORCIBLE ENTRY DOORS AS MANUFACTURED BY FORCIBLE ENTRY INC. OR APPROVED EQUAL
6	ALL EXTERIOR DOORS TO HAVE AN EXTERIOR MOUNTED HINGE PULLING /CUTTING PROP MOUNTED ADJACENT TO DOORS. FINAL LOCATION TO BE DETERMINED IN FIELD PRIOR TO INSTALLATION. BASIS OF DESIGN AS MANUFACTURED BY FORCIBLE ENTRY INC. OR APPROVED EQUAL.

SCHEDULE - WINDOWS

TYPE MARK	OPERATION	SIZE WIDTH	SIZE HEIGHT	HEAD	JAMB	SILL	REMARKS
FS-1	FIRE SHUTTER	2' - 8"	4' - 0"	A901	A901	A901	
W1	TRAINING PROP	3' - 4"	4' - 0"	A903	A903	A903	
W2	TRAINING PROP	2' - 0"	3' - 4"	A903	A903	A903	
W4	TRAINING PROP	2' - 8"	4' - 0"	A903	A903	A903	
W6	TRAINING PROP	2' - 0"	2' - 0"	A903	A903	A903	

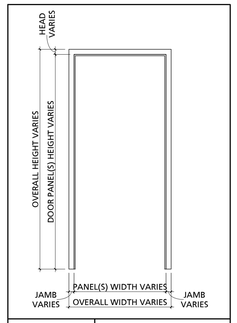


F

1. SEE DOOR SCHEDULE FOR ACTUAL PANEL DIMENSIONS.
2. NOT ALL PANEL TYPES MAY BE USED IN THIS PROJECT, SEE DOOR SCHEDULE.

DOOR PANEL TYPES

1/2" = 1'-0"

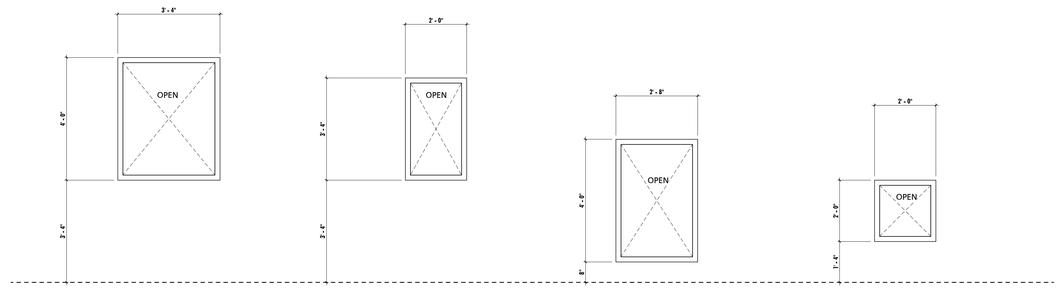


HM ST	HOLLOW METAL STANDARD FRAME

1.) SEE DOOR SCHEDULE FOR FRAME DIMENSION VARIABLES

FRAME TYPES

1/2" = 1'-0"



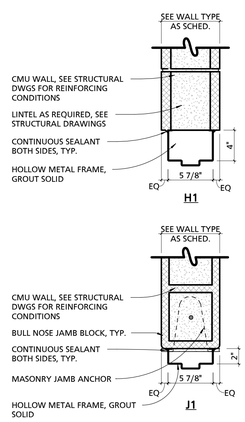
*FOR WINDOW TYPE "FS" SEE DETAILS ON SHEET A901

WINDOW TYPES

1/2" = 1'-0"

HW SET #		QTY	ITEM	DESCRIPTION / FUNCTION / FEATURES	COMMENTS
Set B1-1	**EXTERIOR - DOUBLE (CONTROL ROOM)**				
	Doors: 106				
		8	HINGE	NON-REMOVEABLE PIN (NRP)	4 HINGE PER DOOR PANEL
		1	MORTISE LOCKSET (ACTIVE LEAF)	SCHLAGE L SERIES / CLASSROOM FUNCTION	
		2	FLUSH BOLT (INACTIVE LEAF)		1 @ HEAD, 1 @ FLOOR
		2	SURFACE CLOSERS	HOLD OPEN & OVERHEAD STOP	
		1	THRESHOLD		
		1	PERIMETER DOOR GASKET		
	NOTE: ACTIVE LEAF TO HAVE FULL HEIGHT ASTRAGAL. INACTIVE LEAF TO RECEIVE STRIKE FOR MORTISE LOCKET.				
Set B1-2	**EXTERIOR - SINGLE (PASSAGE)**				
	Doors: 100B, 100D, 200B, 200D, 301				
		4	HINGE	NON-REMOVEABLE PIN (NRP)	
		1	MORTISE LOCKSET	SCHLAGE L SERIES / PASSAGE FUNCTION	
		1	SURFACE CLOSER	OVERHEAD STOP	
		3	SILENCER		
	NOTE: DOOR TO RECEIVE HINGE PULLING / CUTTING PROP (MOUNTED ADJACENT TO DOOR ON FACE OF EXTERIOR WALL)				
Set B1-3	**INTERIOR - SINGLE (PASSAGE)**				
	Doors: 100E, 102, 200A, 202, 204				
		4	HINGE	NON-REMOVEABLE PIN (NRP)	
		1	MORTISE LOCKSET	SCHLAGE L SERIES / PASSAGE FUNCTION	
		1	WALL STOP		
		3	SILENCER		

DOOR HARDWARE



HOLLOW METAL DOOR DETAILS

1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 43 OF 123

SHEET TITLE
DOOR/WINDOW SCHEDULE & DETAILS

SHEET NO
B1-A600

BID SET

GENERAL CEILING NOTES

NOTE #	NOTE
1	THE UNDERSIDE OF STRUCTURE ABOVE TO BE KNOCKED-DOWN AND SMOOTHED FOLLOWING THE REMOVAL OF FORMS.

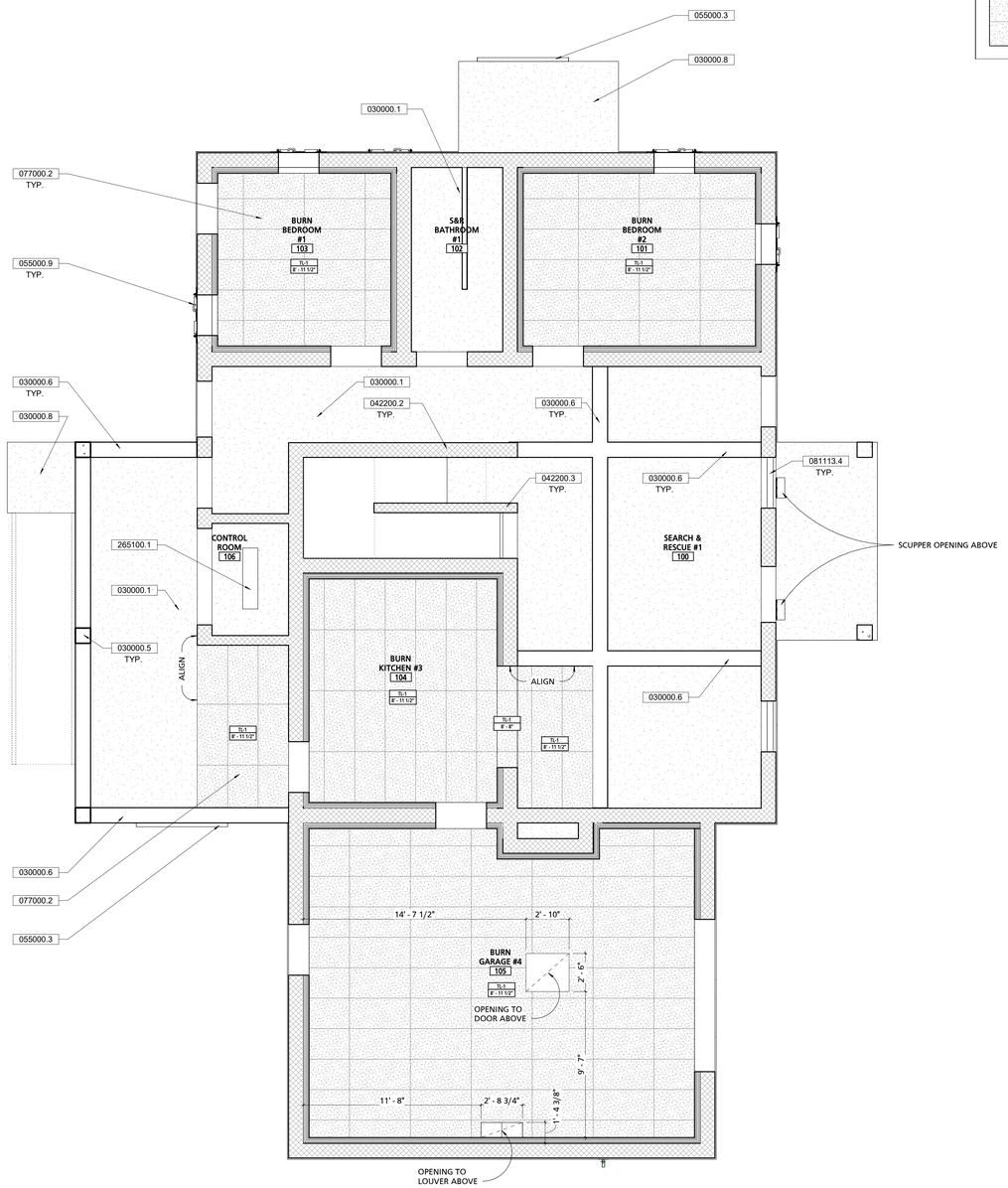
SCHEDULE - CEILING TYPES

MARK	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
TL-1	THERMAL LINER CEILING PANEL			

CEILING LEGEND

	WALL MOUNTED LED LIGHT, SEE ELEC. DWGS.
	4' STRIP LED LIGHT, SEE ELEC. DWGS.
	THERMAL LINER PANEL

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.9	BURN SHUTTER
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS



1 **FIRST FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 44 OF 123

SHEET TITLE
REFLECTED CEILING PLAN - FIRST FLOOR PLAN

SHEET NO
B1-A800

BID SET

GENERAL CEILING NOTES

NOTE #	NOTE
1	THE UNDERSIDE OF STRUCTURE ABOVE TO BE KNOCKED-DOWN AND SMOOTHED FOLLOWING THE REMOVAL OF FORMS.

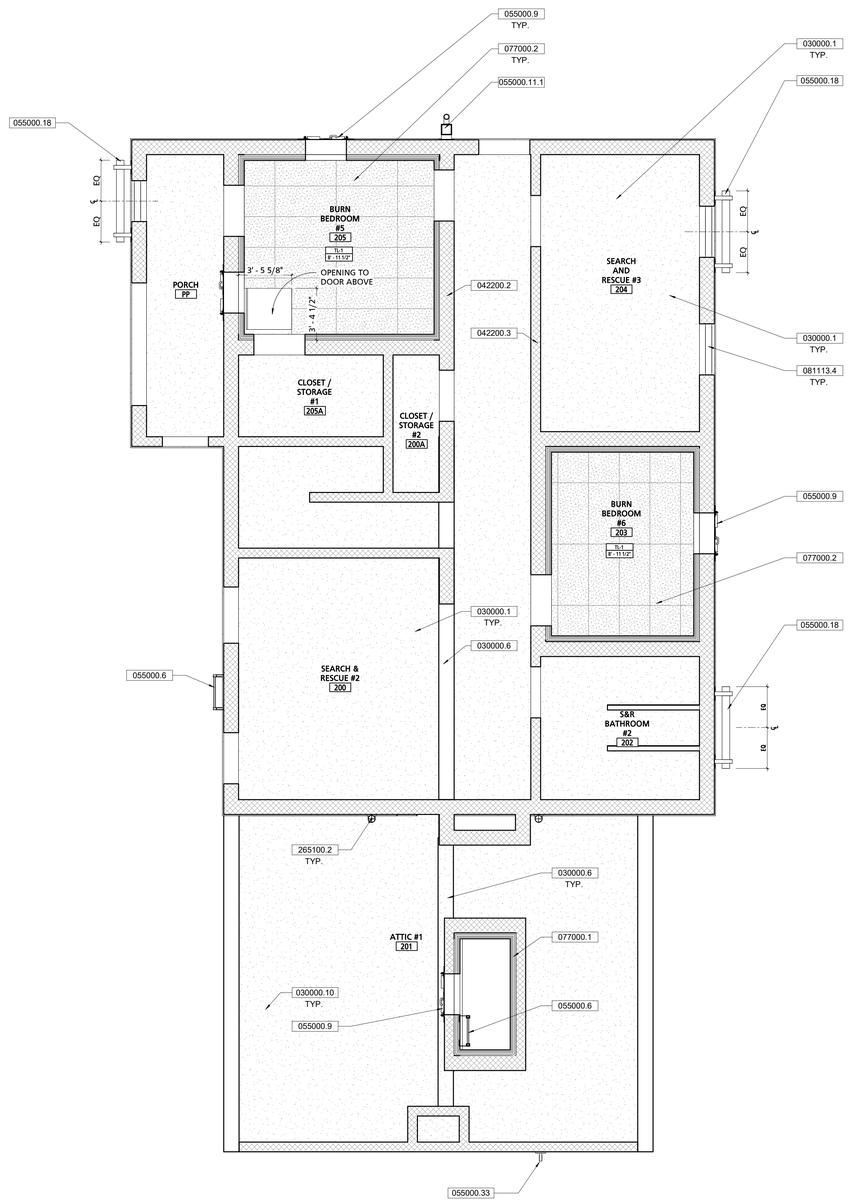
SCHEDULE - CEILING TYPES

MARK	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
TL-1	THERMAL LINER CEILING PANEL			

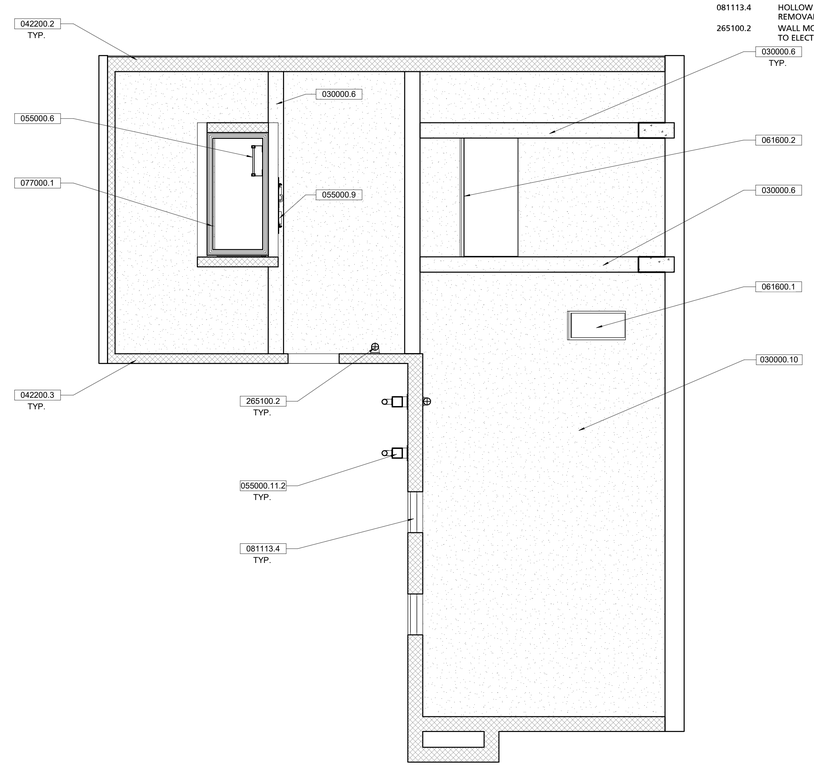
CEILING LEGEND

	WALL MOUNTED LED LIGHT, SEE ELEC. DWGS.
	4' STRIP LED LIGHT, SEE ELEC. DWGS.
	THERMAL LINER PANEL

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
055000.6	METAL LADDER, SEE SHEET A907
055000.9	BURN SHUTTER
055000.11.1	9'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.11.2	7'-0" H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.33	2" GALVANIZED STEEL D RING WITH BASEPLATE
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
061600.2	ROOF CHOP OUT PANEL - 4'X8', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



1 **SECOND FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"



2 **THIRD FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"

BID SET

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

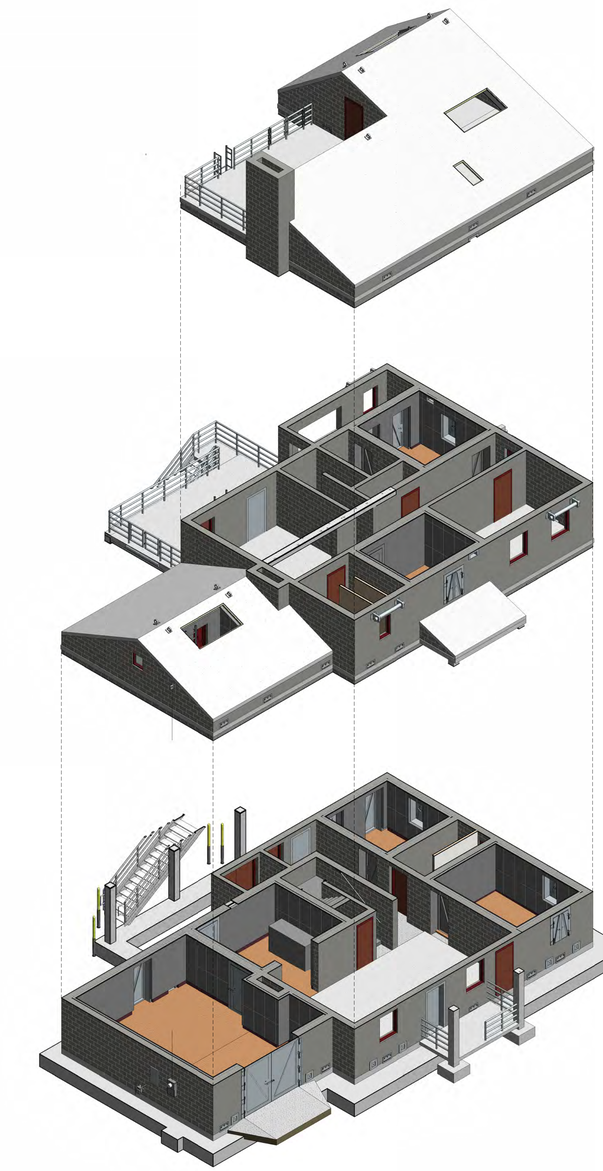
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

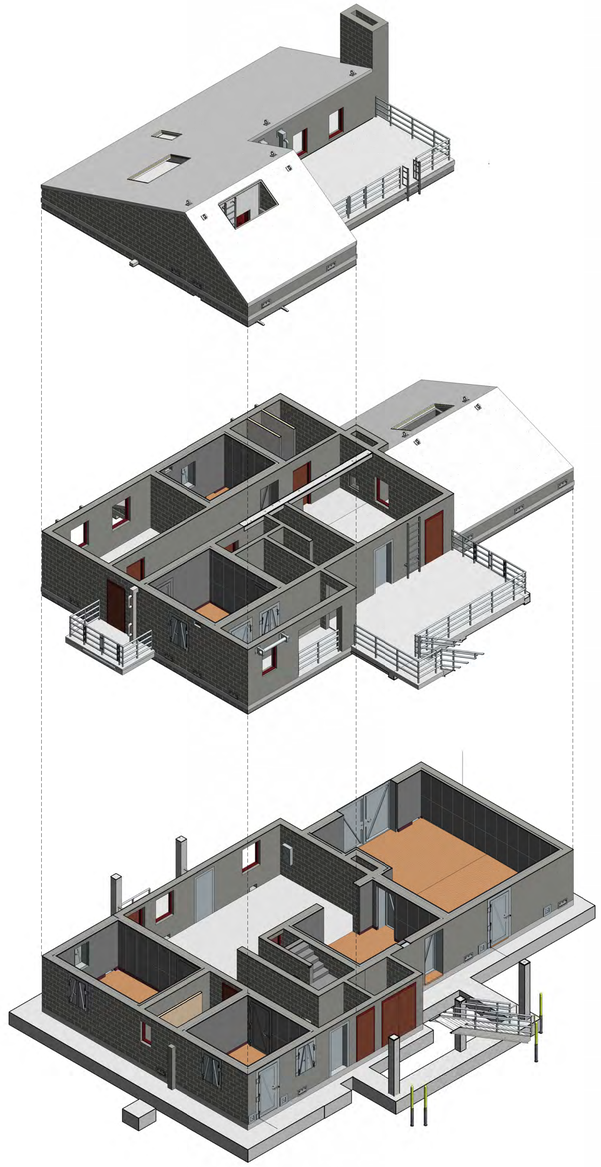
COUNTY DWG NO — SHEET 45 OF 123

SHEET TITLE
REFLECTED CEILING PLAN - SECOND AND THIRD FLOOR PLANS

SHEET NO
B1-A801



EXPLODED 3D VIEW - SOUTHEAST



EXPLODED 3D VIEW - NORTHWEST

3D VIEW - SOUTHEAST

3D VIEW - NORTHWEST

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 46 OF 123

SHEET TITLE
EXPLODED 3D VIEW

SHEET NO
B1-A900

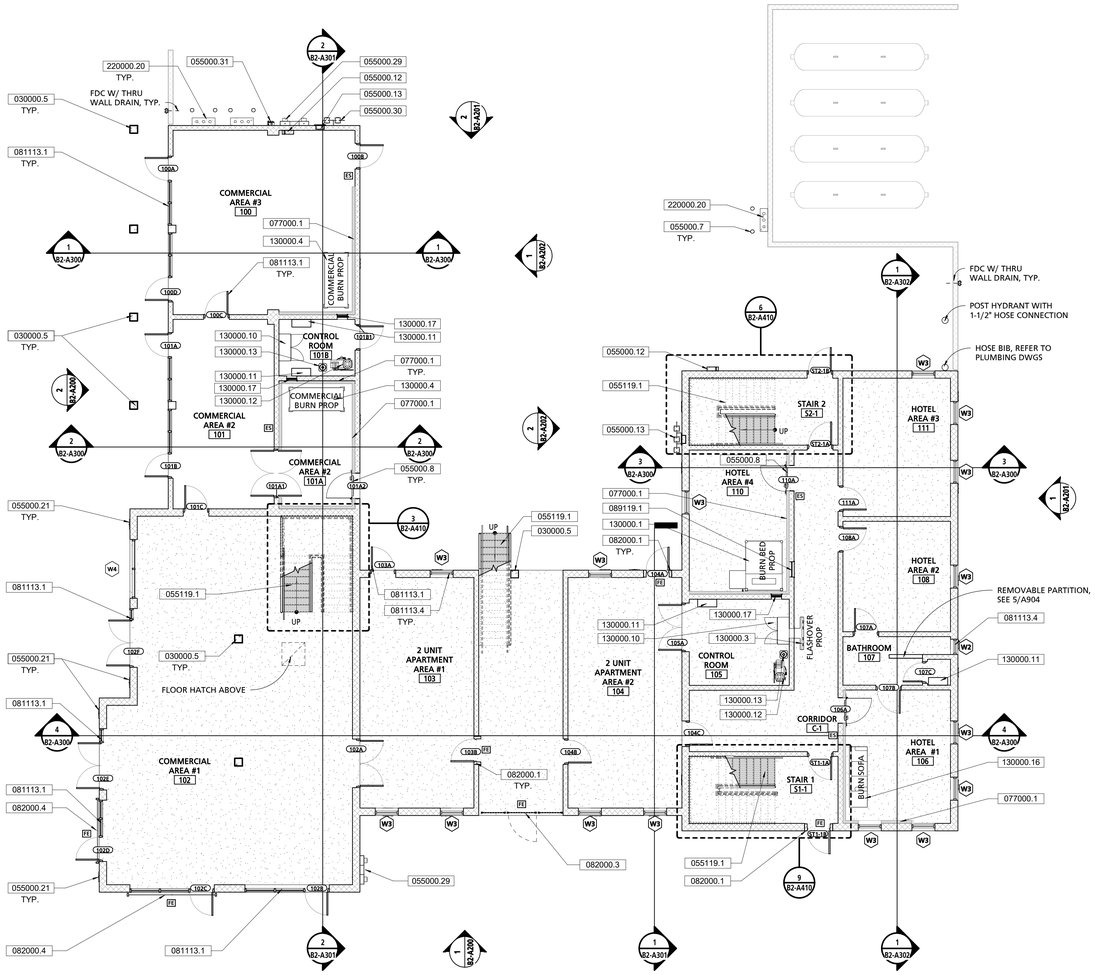
BID SET

GENERAL REFERENCE PLAN NOTES

1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	SEE A906 FOR TYPICAL RAILING DETAILS.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- EMERGENCY STOP
- NEW WALL/PARTITION
- THERMAL LINER PANEL SYSTEM
- THERMAL LINER CEILING PANEL



1 FIRST FLOOR REFERENCE PLAN
1/8" = 1'-0"

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
055000.7	METAL BOLLARD
055000.8	BURN DOOR
055000.12	MOCK ELECTRICAL CABINETS; SEE SHEET A904
055000.13	MOCK VALVE CABINET; SEE SHEET A904
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.29	MOCK ELECTRICAL METER (COMMERCIAL), PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055000.30	MOCK GAS METER; SEE SHEET A904
055000.31	MOCK DISCONNECT SWITCH, PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
077000.1	THERMAL LINING SYSTEM WALL PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
082000.3	FORCIBLE ENTRY SCISSOR DOOR SIMULATOR
082000.4	DOOR CUTTING STATION PROP
089119.1	FIXED LOUVER - 24X40
130000.1	LPG BED PROP BY TRAINING PROP VENDER
130000.3	LPG FLASHOVER PROP BY TRAINING PROP VENDER WITH 16"X16" WALL OPENING BY CONTRACTOR, COORDINATE OPENING LOCATION FOR HK WALL PLATE WITH THE FIRE PROP VENDOR
130000.4	LPG COMMERCIAL PROP BY TRAINING PROP VENDER
130000.10	CONTROL RACK BY TRAINING PROP VENDER
130000.11	SMOKE GENERATOR BY TRAINING PROP VENDER
130000.12	AIR COMPRESSOR BY TRAINING PROP VENDER
130000.13	AIR DRYER BY TRAINING PROP VENDER
130000.16	LPG SOFA PROP BY FIRE PROP VENDOR
130000.17	16"X16" WALL OPENING BY CONTRACTOR, COORDINATE OPENING LOCATION FOR HK WALL PLATE WITH THE FIRE PROP VENDOR
220000.20	PROPANE STUB UP WITH PROTECTIVE BOLLARDS, REFER TO A104

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 47 OF 123

SHEET TITLE
REFERENCE PLAN - FIRST FLOOR PLAN

SHEET NO
B2-A100

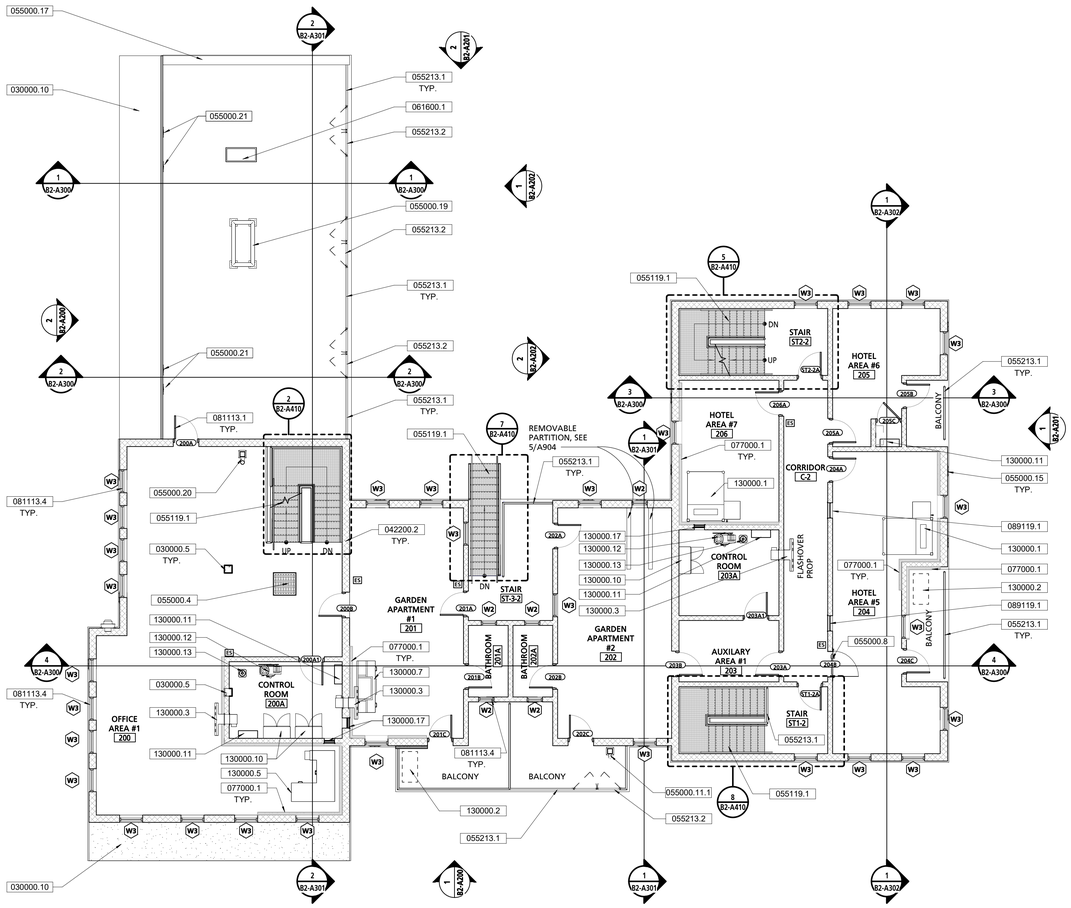
BID SET

GENERAL REFERENCE PLAN NOTES

1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	SEE A906 FOR TYPICAL RAILING DETAILS.

PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- EMERGENCY STOP
- NEW WALL/PARTITION
- THERMAL LINER PANEL SYSTEM
- THERMAL LINER CEILING PANEL



1 SECOND FLOOR REFERENCE PLAN
1/8" = 1'-0"

0 4' 8' 16'

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.8	BURN DOOR
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.20	GALVANIZED STEEL COLUMN TIE-OFF; REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
089119.1	FIXED LOUVER - 24X40
130000.1	LPG BED PROP BY TRAINING PROP VENDER
130000.2	LPG GRILL PROP BY TRAINING PROP VENDER
130000.3	LPG FLASHOVER PROP BY TRAINING PROP VENDER WITH 16"X16" WALL OPENING BY CONTRACTOR, COORDINATE OPENING LOCATION FOR HK WALL PLATE WITH THE FIRE PROP VENDOR
130000.5	LPG DESK PROP BY TRAINING PROP VENDER
130000.7	LPG KITCHEN PROP BY TRAINING PROP VENDER
130000.10	CONTROL RACK BY TRAINING PROP VENDER
130000.11	SMOKE GENERATOR BY TRAINING PROP VENDER
130000.12	AIR COMPRESSOR BY TRAINING PROP VENDER
130000.13	AIR DRYER BY TRAINING PROP VENDER
130000.17	16"X16" WALL OPENING BY CONTRACTOR, COORDINATE OPENING LOCATION FOR HK WALL PLATE WITH THE FIRE PROP VENDOR

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT MARY C. MCGRATH C-24435 REN-08-30-23 STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO — SHEET 48 OF 123

SHEET TITLE
REFERENCE PLAN - SECOND FLOOR PLAN

SHEET NO
B2-A101

BID SET

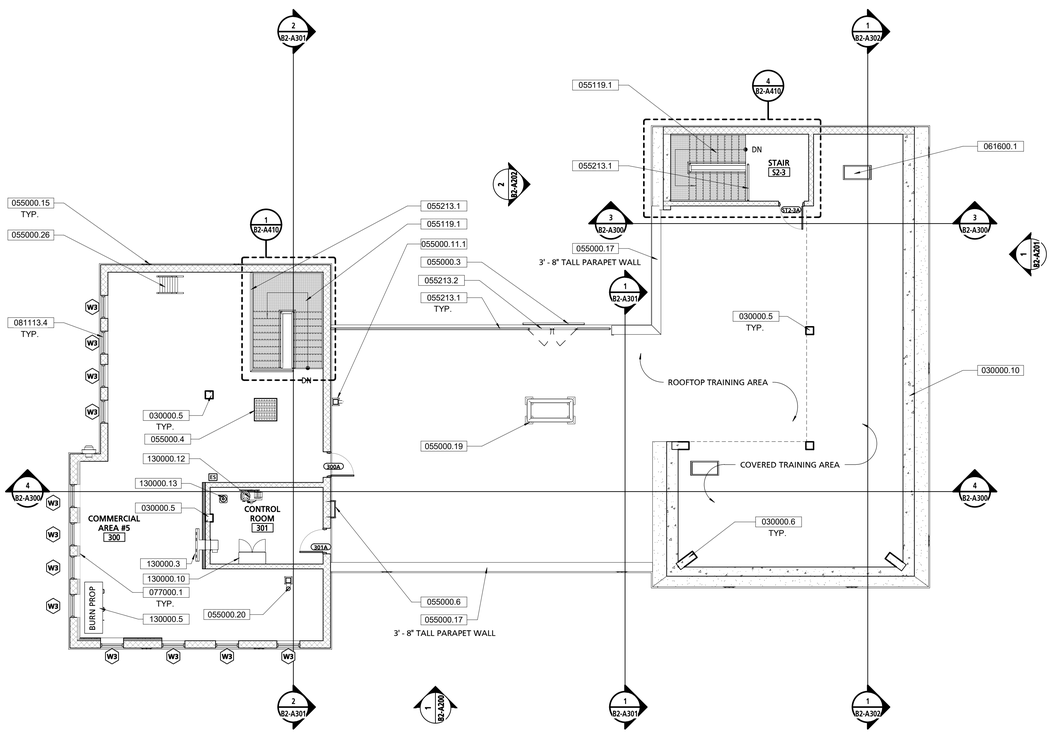
GENERAL REFERENCE PLAN NOTES

1	PROVIDE A BULLNOSE CMU AT ALL OUTSIDE CORNERS OF INTERIOR MASONRY WALLS & SILLS.
2	SEE A906 FOR TYPICAL RAILING DETAILS.

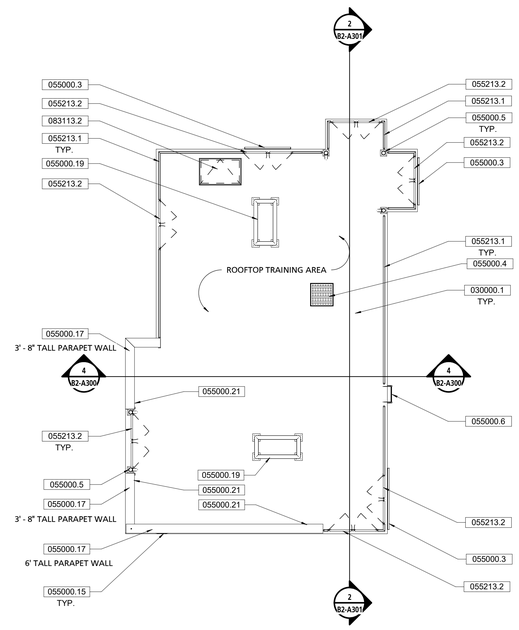
PLAN LEGEND

- HOLLOW METAL DOOR
- FORCIBLE ENTRY DOOR
- BURN ROOM DOOR
- EMERGENCY STOP
- NEW WALL/PARTITION
- THERMAL LINER PANEL SYSTEM
- THERMAL LINER CEILING PANEL

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.6	METAL LADDER, SEE SHEET A907
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.20	GALVANIZED STEEL COLUMN TIE-OFF; REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF, SEE DETAIL 6/A904, TYP.
055000.26	SHIPS LADDER, SEE SHEET A907
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
083113.2	EXTERIOR STEEL FLOOR ACCESS DOOR AND FRAME (36"X60")
130000.3	LPG FLASHOVER PROP BY TRAINING PROP VENDER WITH 16"X16" WALL OPENING BY CONTRACTOR, COORDINATE OPENING LOCATION FOR HK WALL PLATE WITH THE FIRE PROP VENDOR
130000.5	LPG DESK PROP BY TRAINING PROP VENDER
130000.10	CONTROL RACK BY TRAINING PROP VENDER
130000.12	AIR COMPRESSOR BY TRAINING PROP VENDER
130000.13	AIR DRYER BY TRAINING PROP VENDER



1 THIRD FLOOR REFERENCE PLAN
1/8" = 1'-0"



2 FOURTH FLOOR REFERENCE PLAN
1/8" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 49 OF 123

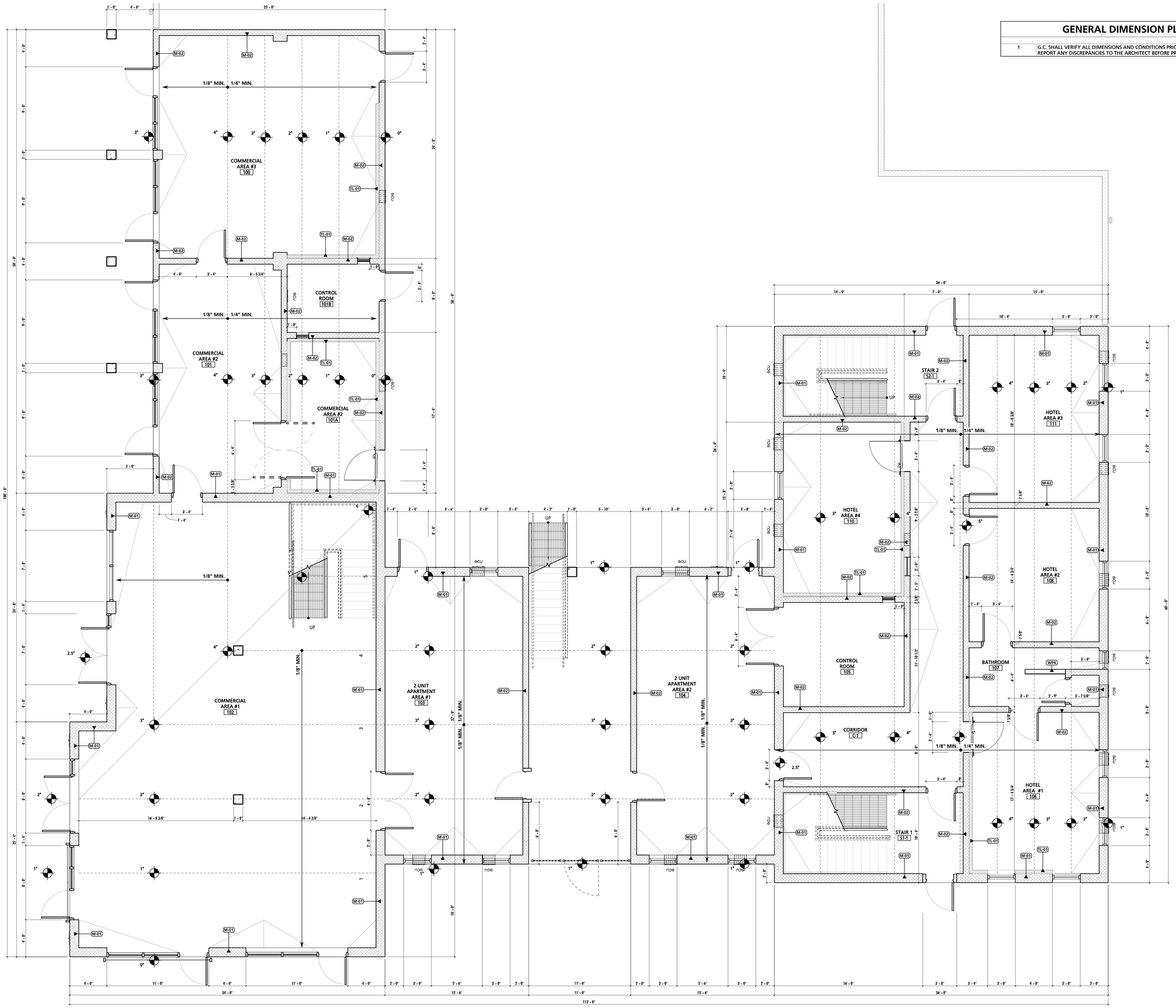
SHEET TITLE
REFERENCE PLAN - THIRD AND FOURTH FLOOR PLANS

SHEET NO
B2-A102

BID SET

GENERAL DIMENSION PLAN NOTES

1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.



1 **FIRST FLOOR DIMENSION PLAN**
1/4" = 1'-0"

0 2' 4' 8'

BID SET

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

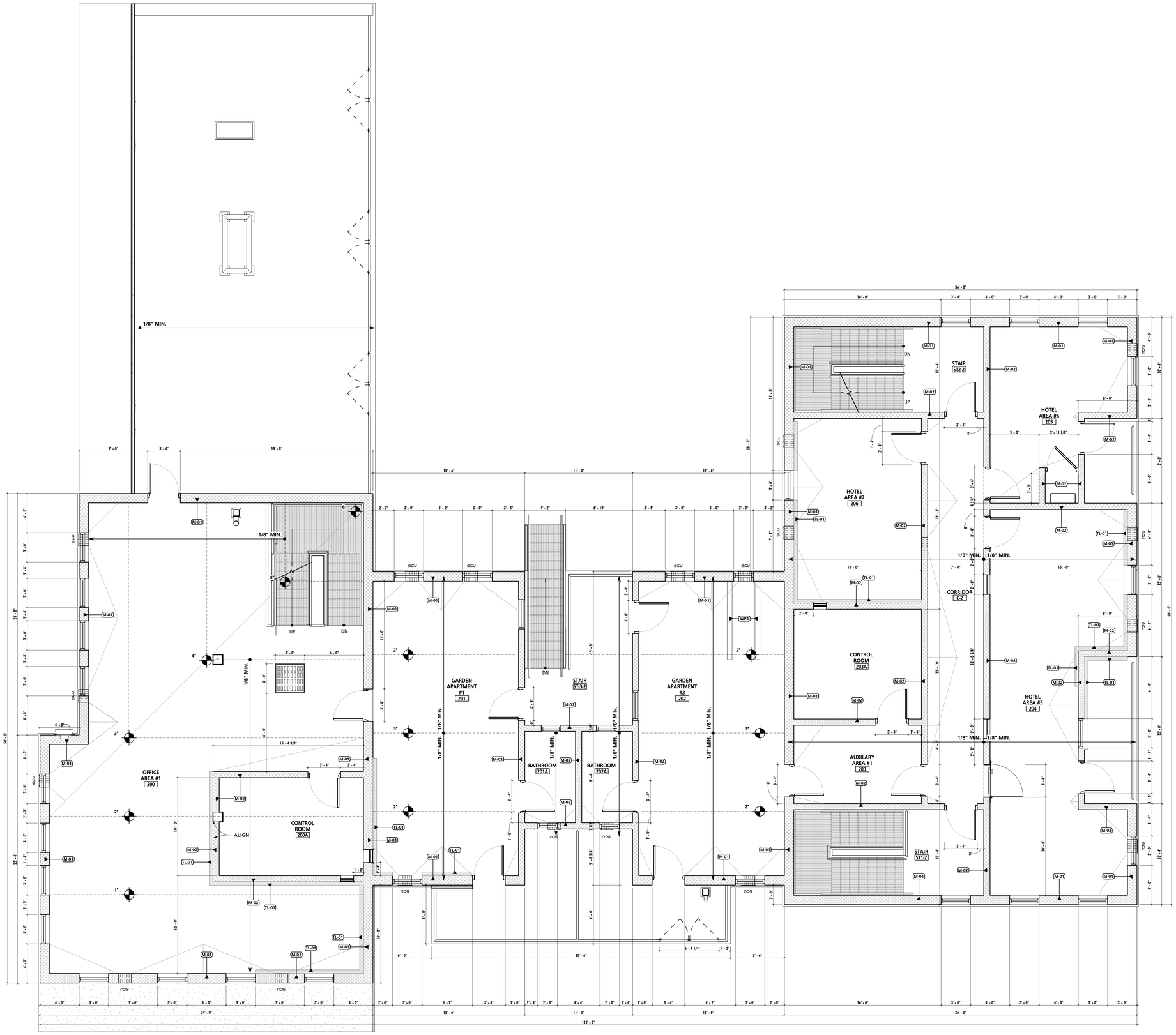
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 50 OF 123

SHEET TITLE
DIMENSION PLAN - FIRST FLOOR PLAN

SHEET NO
B2-A110



1 **SECOND FLOOR DIMENSION PLAN**
1/4" = 1'-0"

0 2' 4' 8'

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO SHEET 51 OF 123

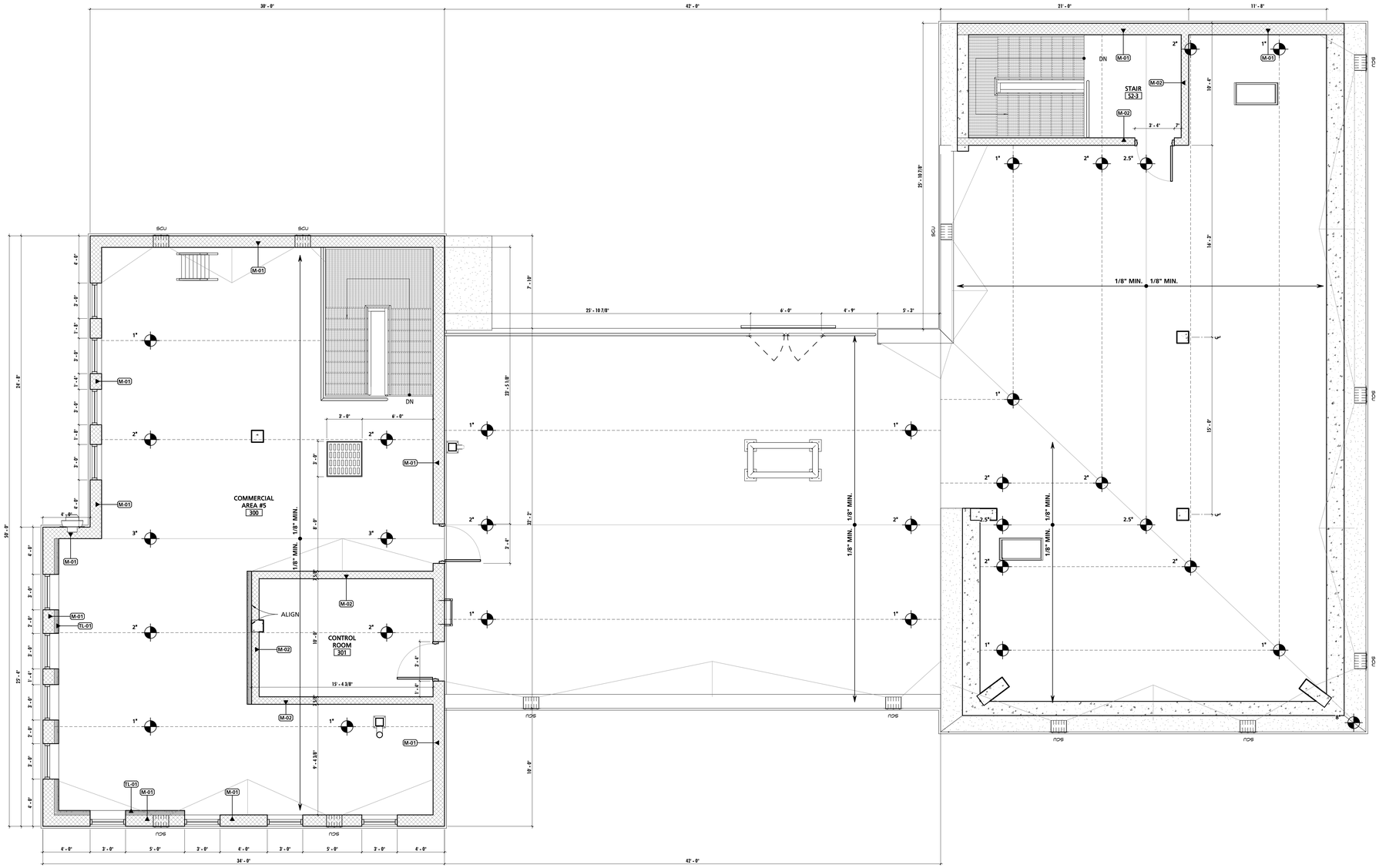
SHEET TITLE
DIMENSION PLAN - SECOND FLOOR PLAN

SHEET NO
B2-A111

BID SET

GENERAL DIMENSION PLAN NOTES

1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.



1 **DIMENSION PLAN - THIRD FLOOR PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathar chitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 52 OF 123

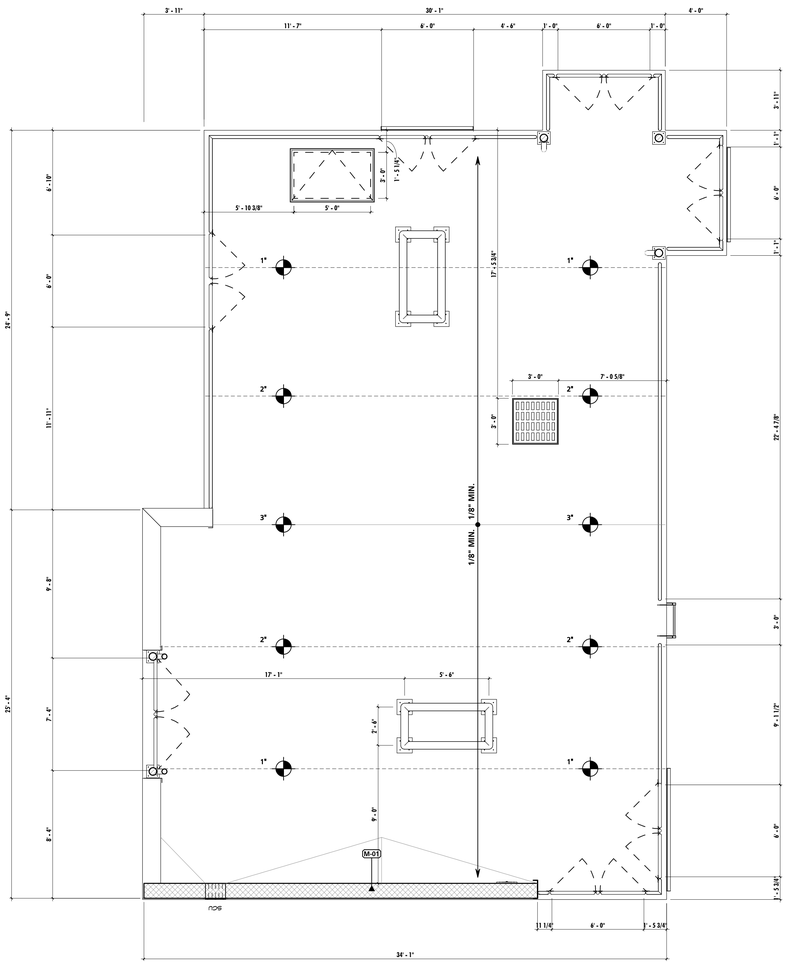
SHEET TITLE
DIMENSION PLAN - THIRD FLOOR PLAN

SHEET NO
B2-A112

BID SET

GENERAL DIMENSION PLAN NOTES

1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.



1 **DIMENSION PLAN - FORTH FLOOR PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 53 OF 123

SHEET TITLE
DIMENSION PLAN - FOURTH FLOOR PLAN

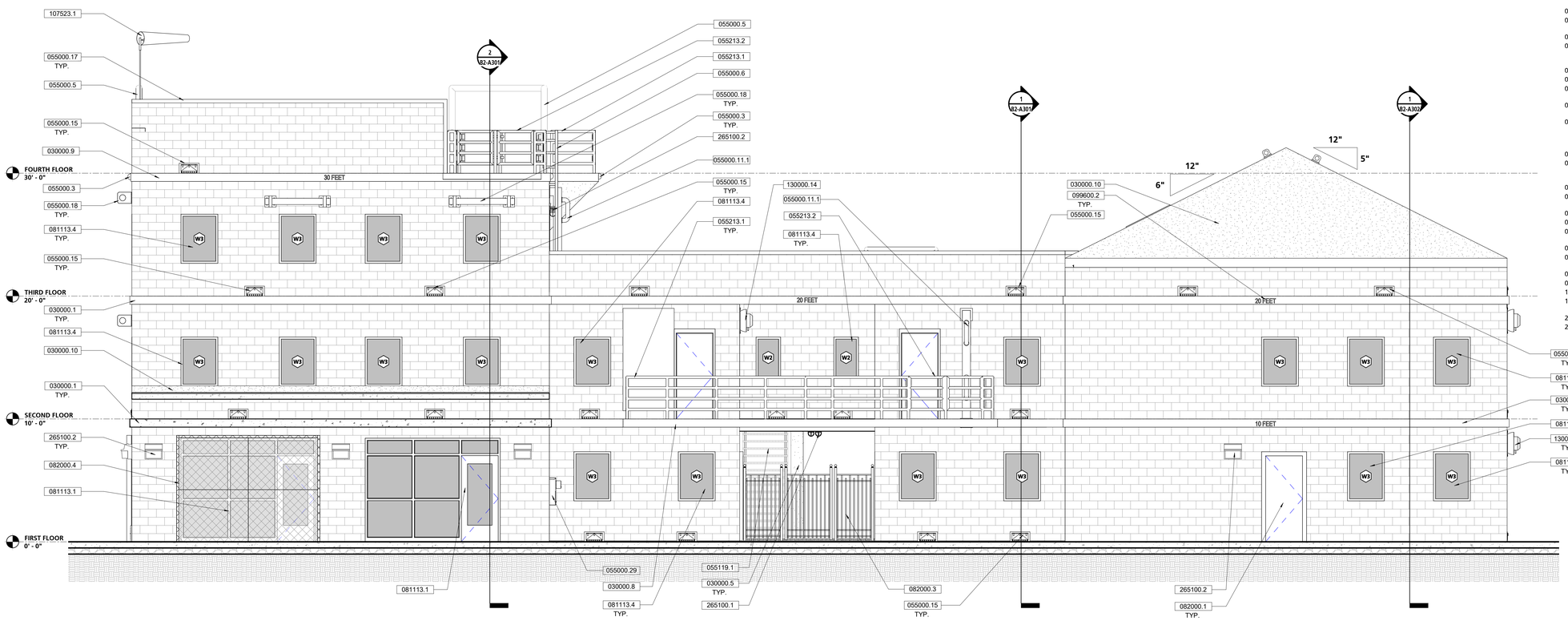
SHEET NO
B2-A113

BID SET

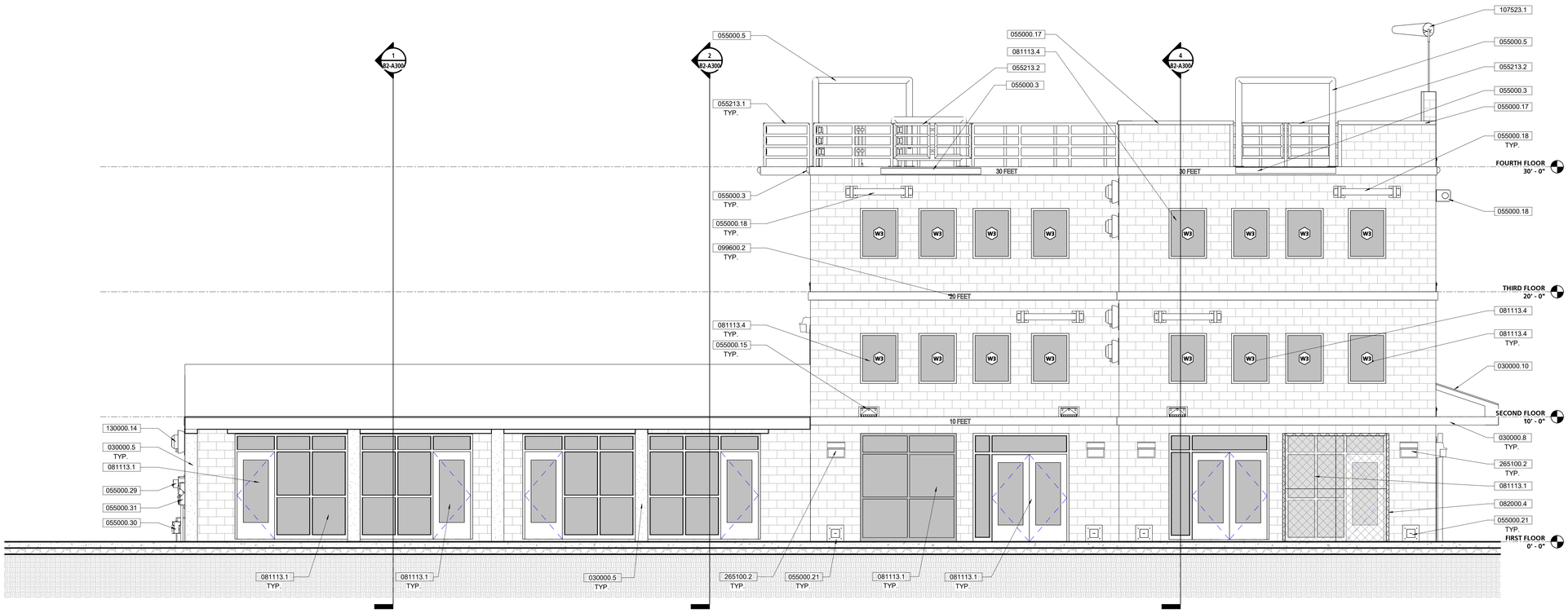
GENERAL ELEVATION NOTES

NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.
2	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE OR THE SECTION END UNLESS NOTED OTHERWISE.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.9	CAST SLAB EDGE
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.6	METAL LADDER, SEE SHEET A907
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.29	MOCK ELECTRICAL METER (COMMERCIAL), PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055000.30	MOCK GAS METER; SEE SHEET A904
055000.31	MOCK DISCONNECT SWITCH, PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
082000.3	FORCIBLE ENTRY SCISSOR DOOR SIMULATOR
082000.4	DOOR CUTTING STATION PROP
099600.2	6" FLOOR LEVEL STENCEL
107523.1	WALL MOUNTED WINDSOCK
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



1 **SOUTH ELEVATION**
1/4" = 1'-0"



2 **WEST ELEVATION**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO

SHEET 54 OF 123

SHEET TITLE
BUILDING ELEVATIONS

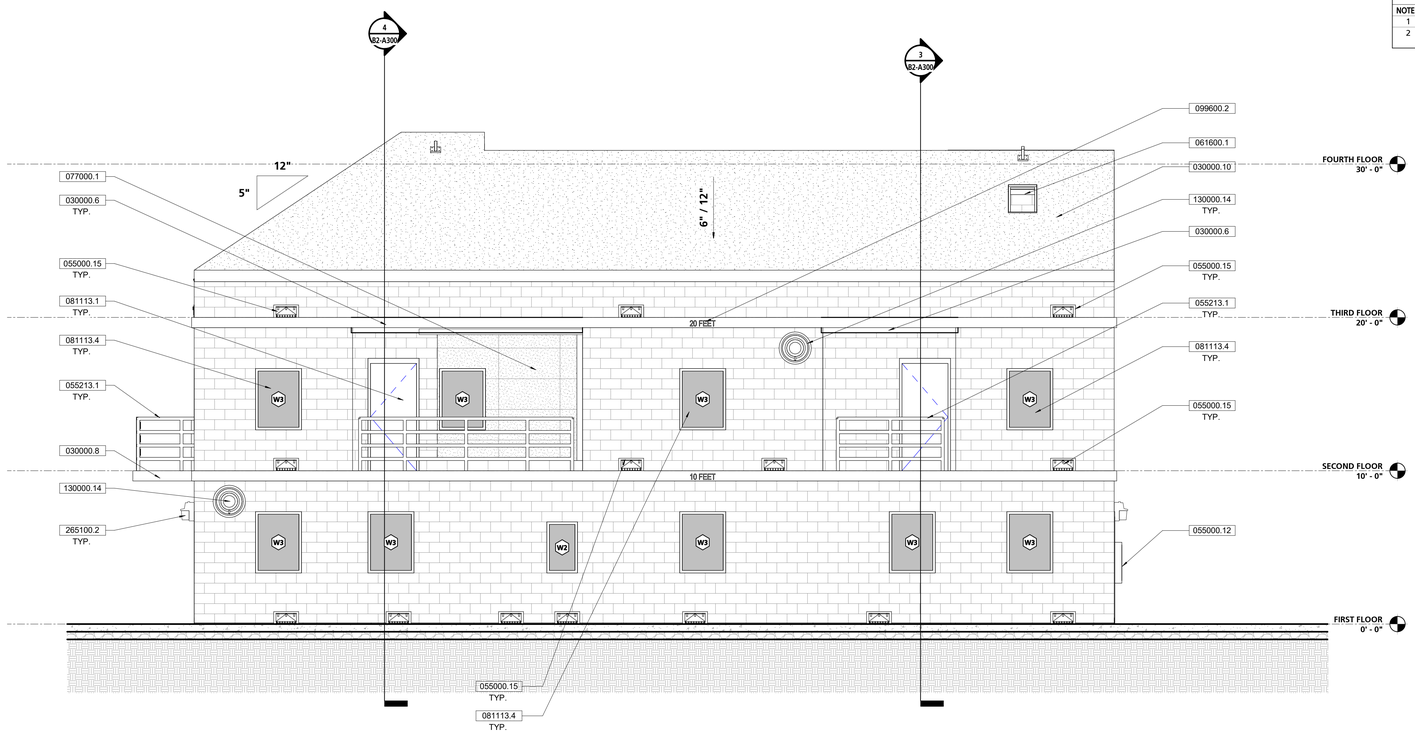
SHEET NO
B2-A200

BID SET

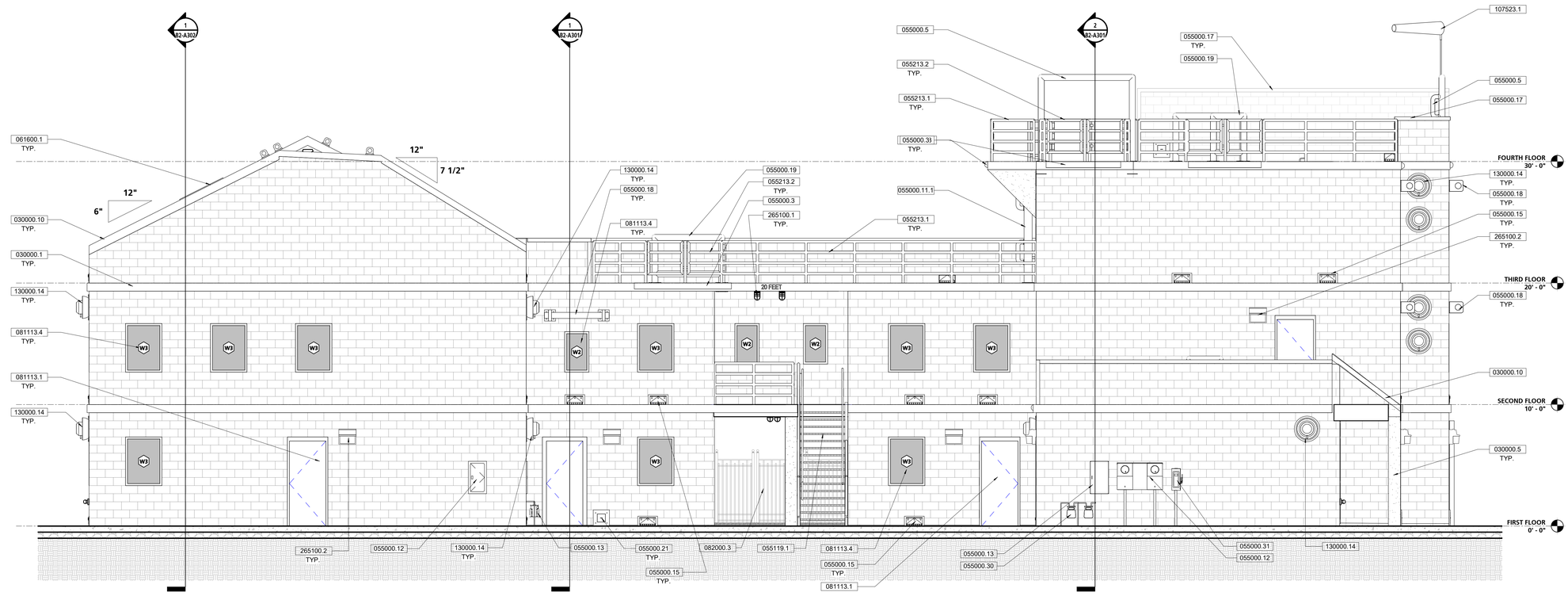
GENERAL ELEVATION NOTES

NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.
2	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE OR THE SECTION END UNLESS NOTED OTHERWISE.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.12	MOCK ELECTRICAL CABINETS; SEE SHEET A904
055000.13	MOCK VALVE CABINET; SEE SHEET A904
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.30	MOCK GAS METER; SEE SHEET A904
055000.31	MOCK DISCONNECT SWITCH, PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4'; SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.3	FORCIBLE ENTRY SCISSOR DOOR SIMULATOR
099600.2	6" FLOOR LEVEL STENCEL
107523.1	WALL MOUNTED WINDSOCK
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



1 **EAST ELEVATION**
1/4" = 1'-0"



2 **NORTH ELEVATION**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
DRAWN BY JB
CHECKED BY GC
CONSULTANT JOB NO 20-126
DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

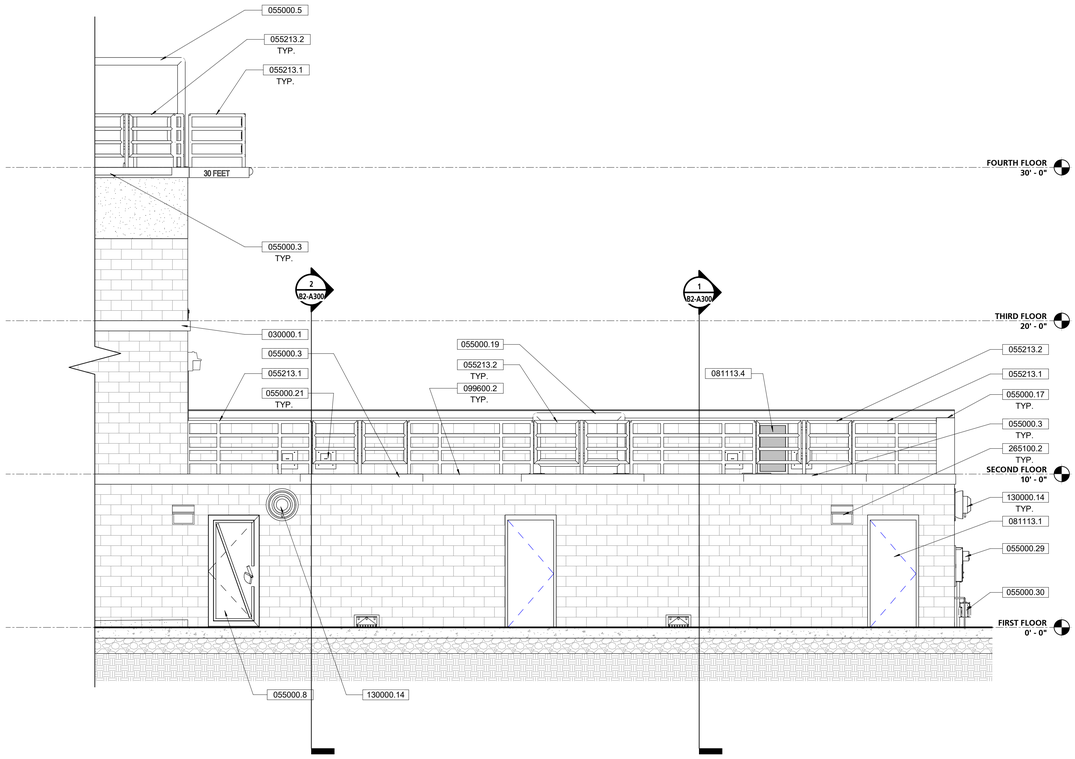
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 55 OF 123

SHEET TITLE
BUILDING ELEVATIONS

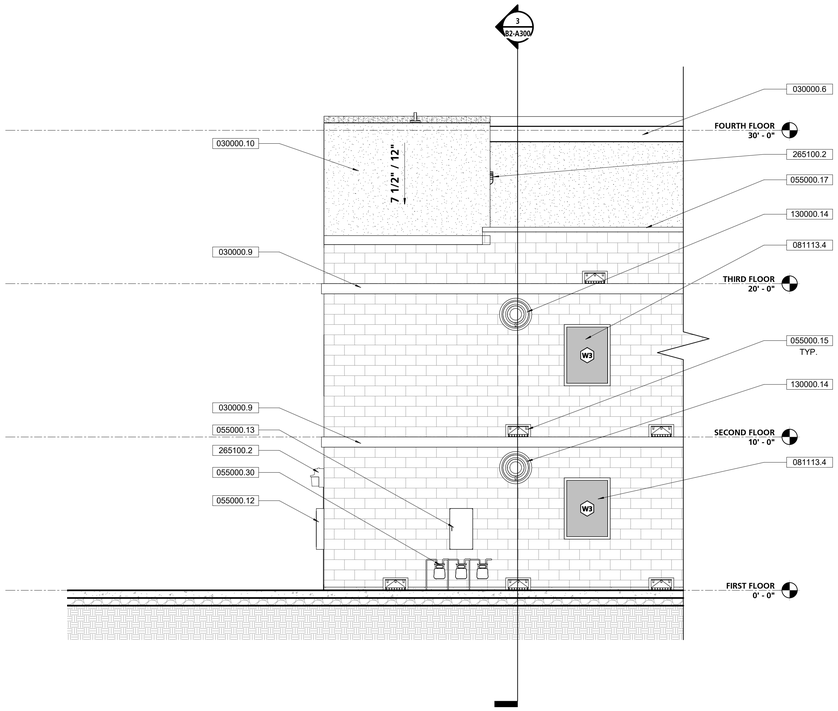
SHEET NO
B2-A201

BID SET



1 EAST ELEVATION - COURTYARD

1/4" = 1'-0"



2 WEST ELEVATION - COURTYARD

1/4" = 1'-0"

GENERAL ELEVATION NOTES

NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.
2	LINE OF GRADES AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE OR THE SECTION END UNLESS NOTED OTHERWISE.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.9	CAST SLAB EDGE
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.8	BURN DOOR
055000.12	MOCK ELECTRICAL CABINETS; SEE SHEET A904
055000.13	MOCK VALVE CABINET; SEE SHEET A904
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.29	MOCK ELECTRICAL METER (COMMERCIAL), PROVIDE 2" EMPTY WALL MOUNTED CONDUIT TO 6" BELOW GRADE; SEE SHEET A904
055000.30	MOCK GAS METER; SEE SHEET A904
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
099600.2	6" FLOOR LEVEL STENCEL
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

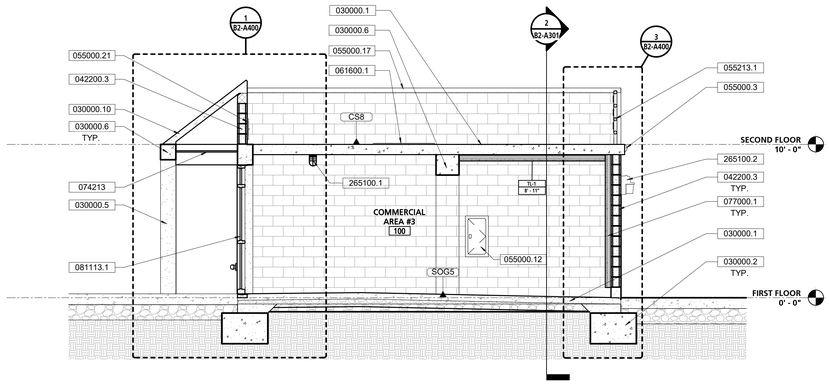
COUNTY DWG NO

SHEET 56 OF 123

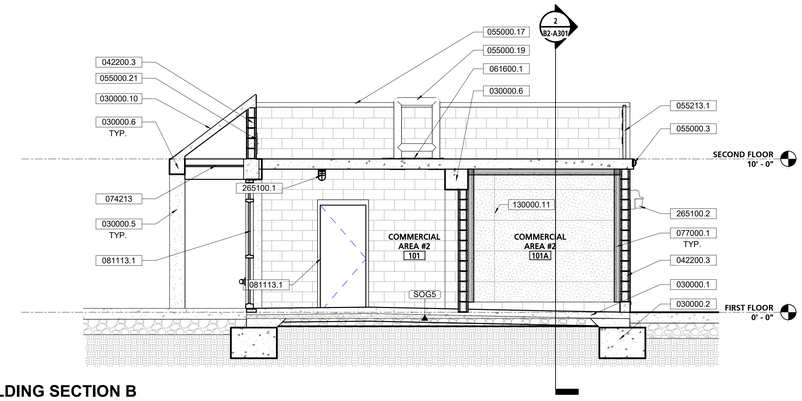
SHEET TITLE
BUILDING ELEVATIONS

SHEET NO
B2-A202

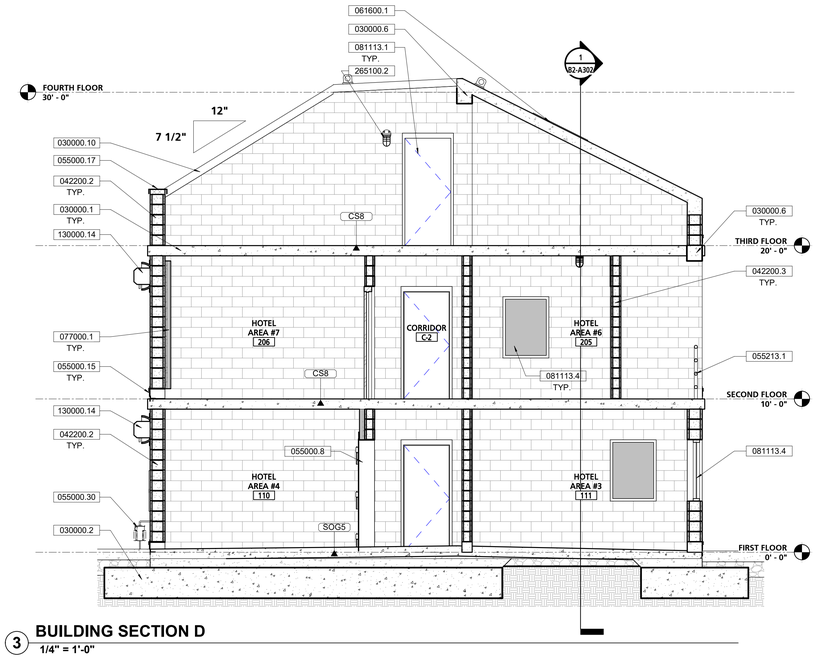
BID SET



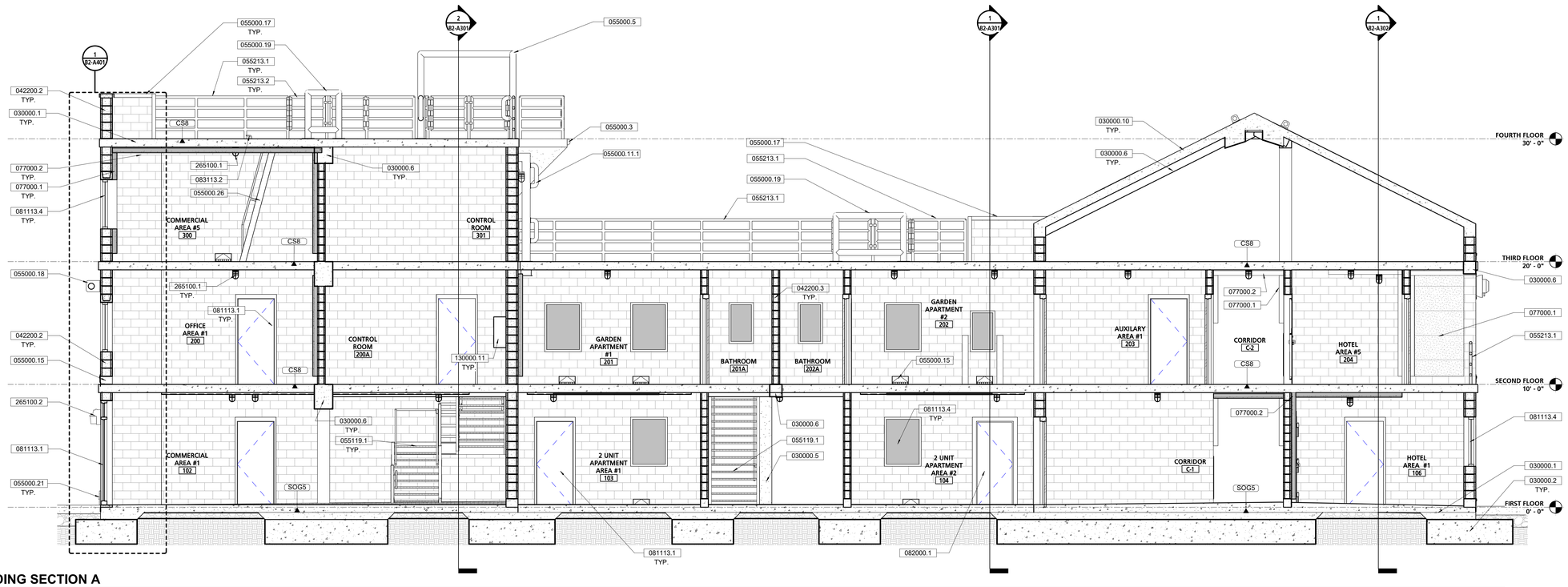
1 **BUILDING SECTION C**
1/4" = 1'-0"



2 **BUILDING SECTION B**
1/4" = 1'-0"



3 **BUILDING SECTION D**
1/4" = 1'-0"



4 **BUILDING SECTION A**
1/4" = 1'-0"

SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION	FIRE RATING		STC RATING
		RATING	ASSEMBLY REF	
CS8	8" CONCRETE SLAB			
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL			

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.8	BURN DOOR
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.12	MOCK ELECTRICAL CABINETS; SEE SHEET A904
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.26	SHIPS LADDER, SEE SHEET A907
055000.30	MOCK GAS METER; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
074213	METAL SOFFIT PANELS
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
083113.2	EXTERIOR STEEL FLOOR ACCESS DOOR AND FRAME (36"X60")
130000.11	SMOKE GENERATOR BY TRAINING PROP VENDER
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	JB	CHECKED BY	GC
CONSULTANT JOB NO	20-126	DATE	08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 57 OF 123

SHEET TITLE
BUILDING SECTIONS

SHEET NO
B2-A300

BID SET

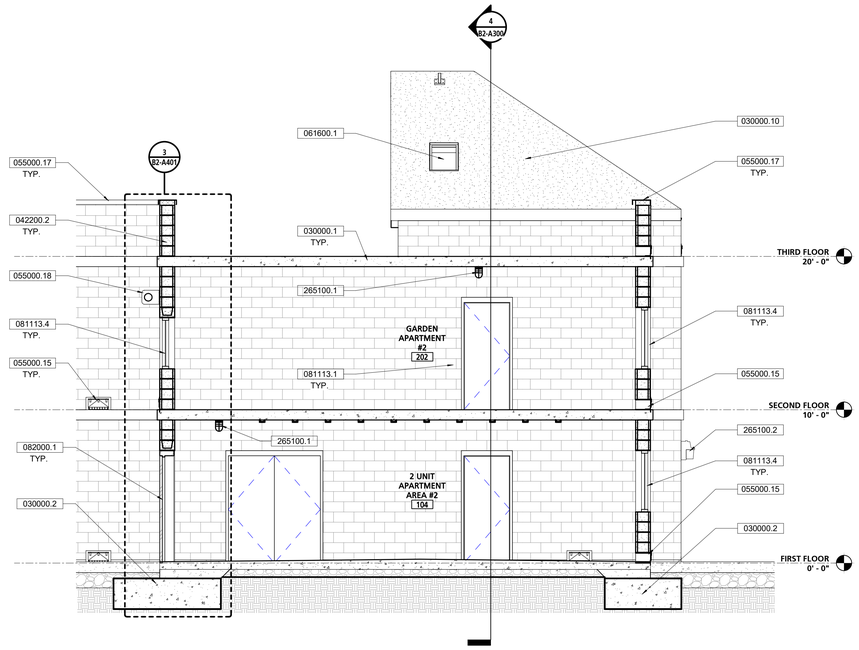
SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION	FIRE RATING		STC RATING
		RATING	ASSEMBLY REF	
CS8	8" CONCRETE SLAB			
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL			

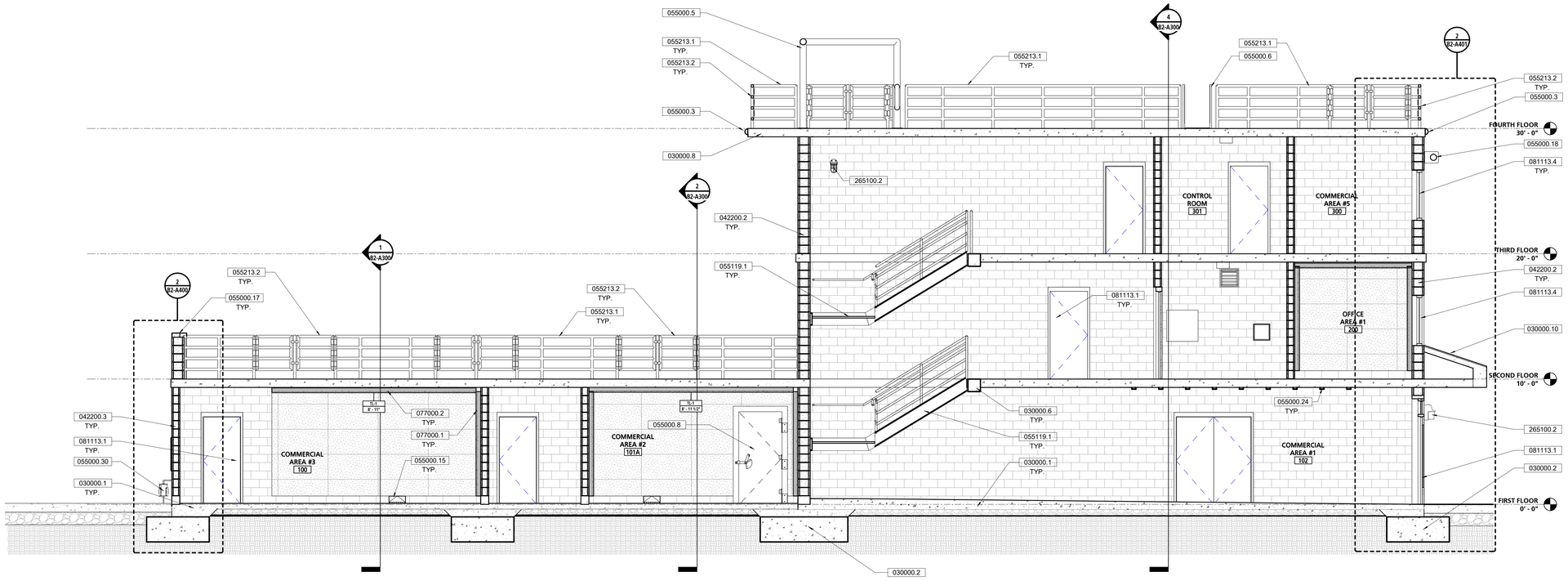
GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.6	METAL LADDER, SEE SHEET A907
055000.8	BURN DOOR
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.24	MAZE PANEL SYSTEM; SEE SHEET A905
055000.30	MOCK GAS METER; SEE SHEET A904
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.1	HOLLOW METAL DOOR & FRAME
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
082000.1	FORCIBLE ENTRY DOOR SIMULATOR
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



1 **BUILDING SECTION 2**
1/4" = 1'-0"



2 **BUILDING SECTION 3**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 58 OF 123

SHEET TITLE
BUILDING SECTIONS

SHEET NO
B2-A301

BID SET

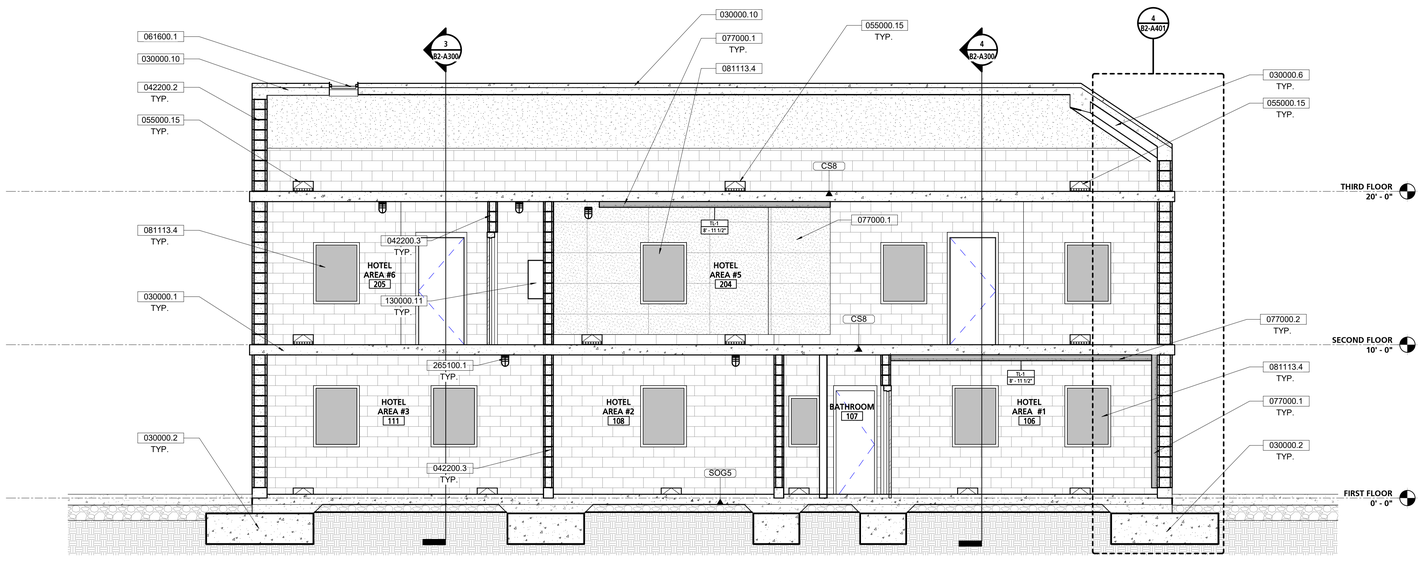
SCHEDULE - FLOOR ASSEMBLY TYPES

MARK	DESCRIPTION	FIRE RATING		STC RATING
		RATING	ASSEMBLY REF	
CS8	8" CONCRETE SLAB			
SOG5	5" CONCRETE SLAB OVER VAPOR BARRIER AND POROUS FILL			

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.2	CONCRETE FOUNDATION, REFER TO STRUCTURAL DWGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
042200.2	12" CMU BLOCK WALL FILLED SOLID, TYP.
042200.3	8" CMU BLOCK WALL FILLED SOLID, TYP.
055000.15	WALL SCUPPER; SEE DETAIL 8/A902
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
077000.1	THERMAL LINING SYSTEM WALL PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
081113.4	HOLLOW METAL WINDOW WITH REMOVABLE PANEL; SEE SHEET A903
130000.11	SMOKE GENERATOR BY TRAINING PROP VENDER
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS



1 **BUILDING SECTION 1**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

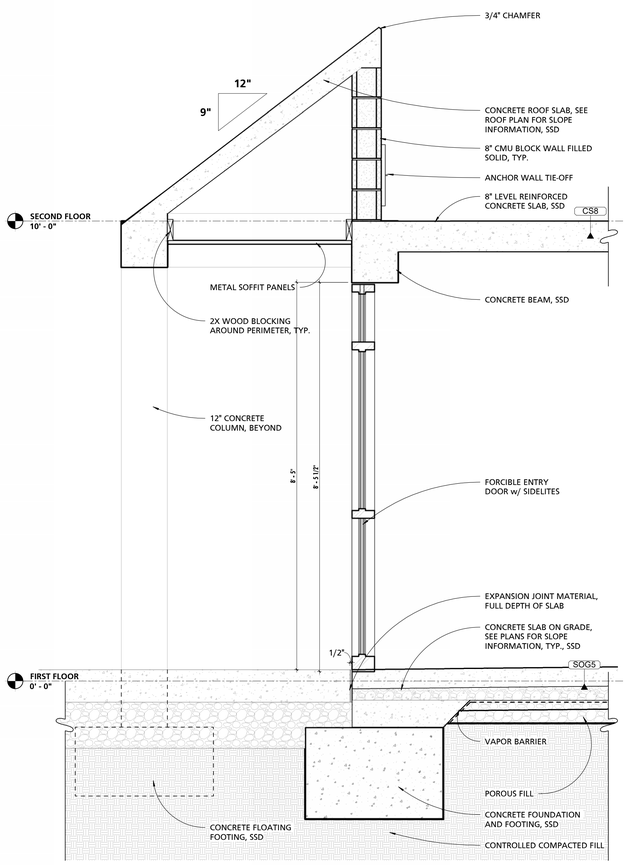
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
DRAWN BY JB
CHECKED BY GC
CONSULTANT JOB NO 20-126
DATE 08/21/2023
PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

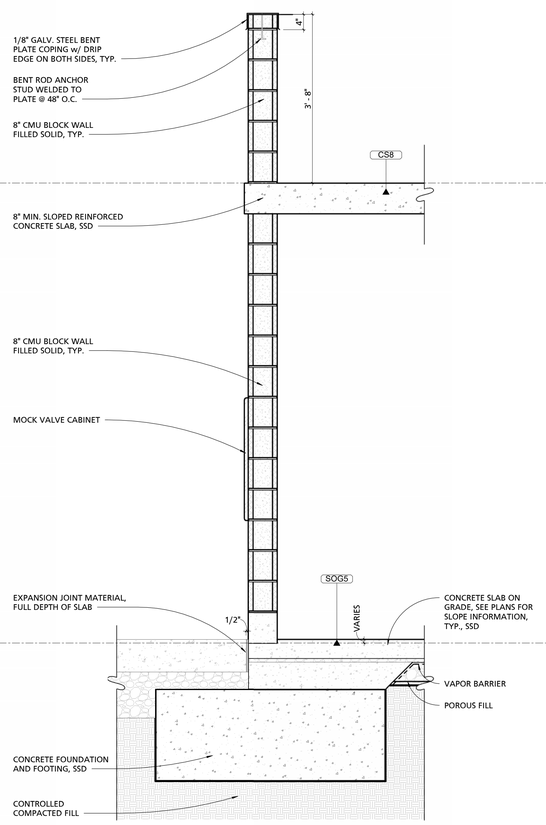
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 59 OF 123
SHEET TITLE BUILDING SECTIONS
SHEET NO B2-A302

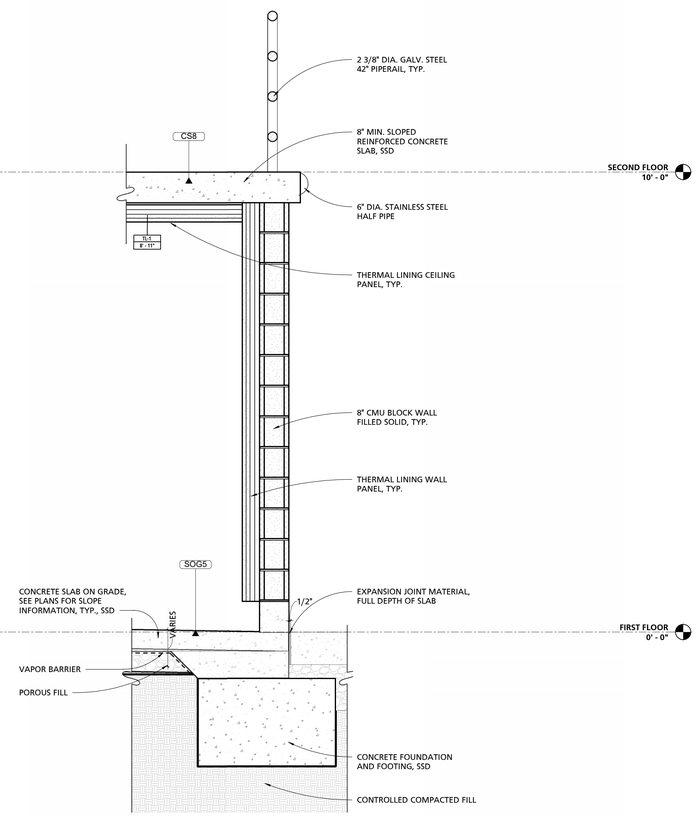
BID SET



1 **WALL SECTION - 1 STORY - SLOPED ROOF**
3/4" = 1'-0"



2 **WALL SECTION - 1 STORY PARAPET**
3/4" = 1'-0"



3 **WALL SECTION - 1 STORY RAILING**
3/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

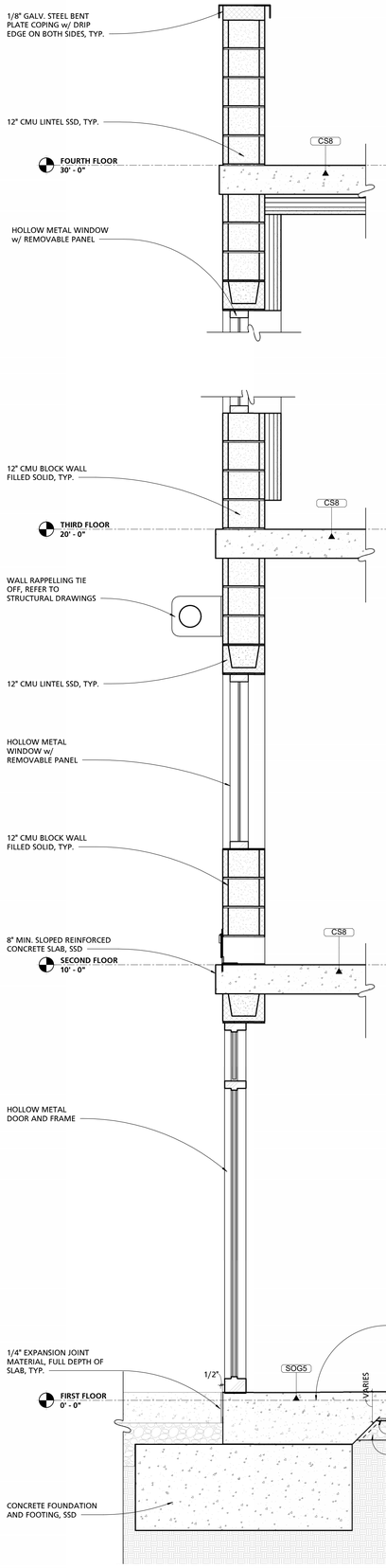
COUNTY DWG NO

SHEET 60 OF 123

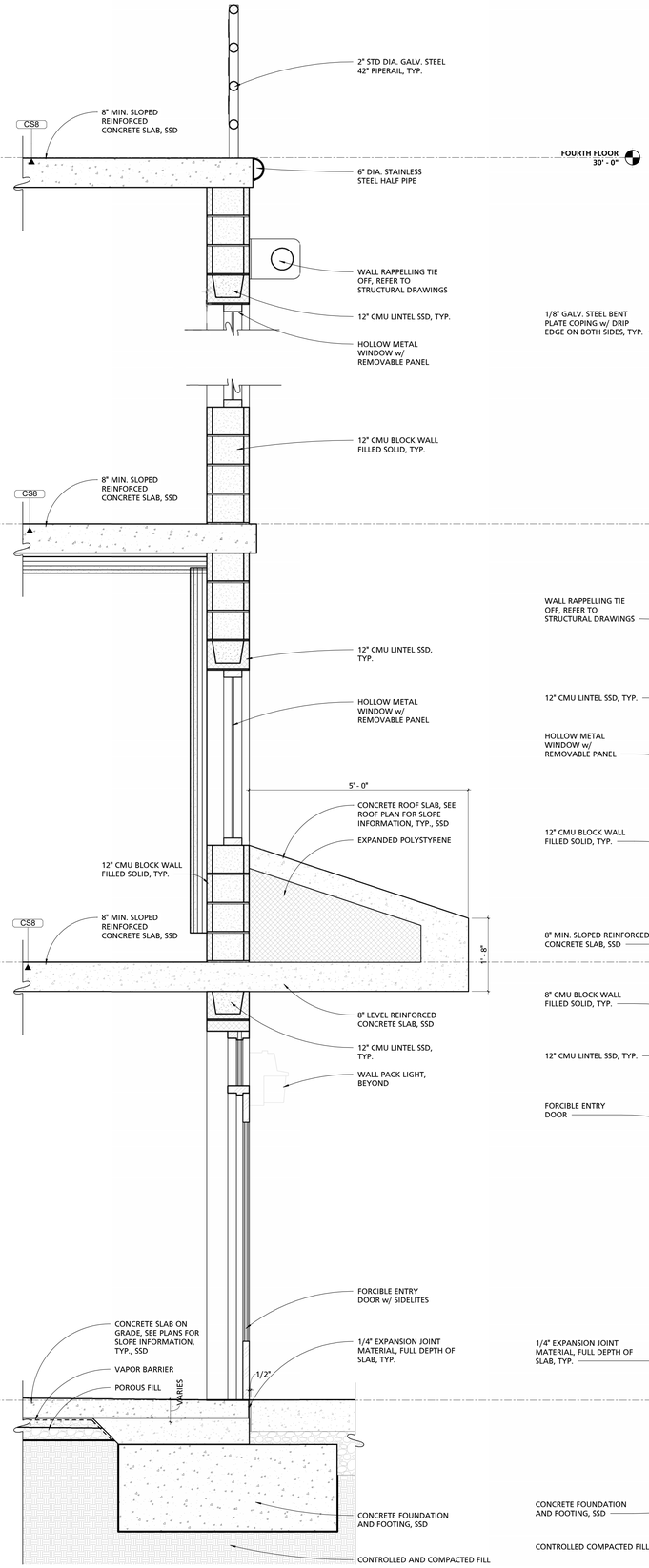
SHEET TITLE
WALL SECTIONS

SHEET NO
B2-A400

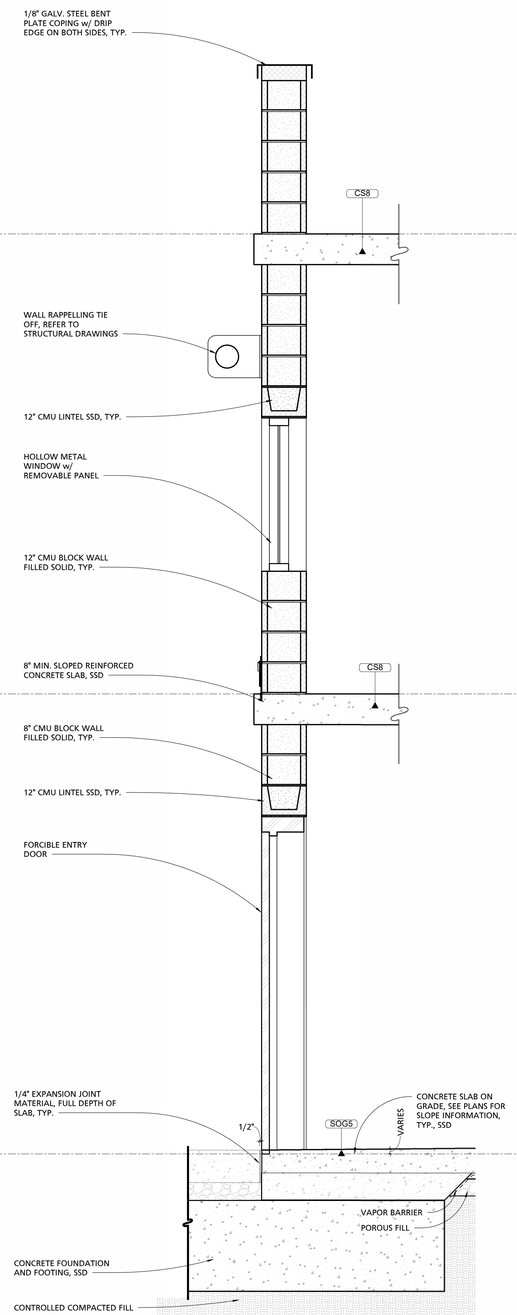
BID SET



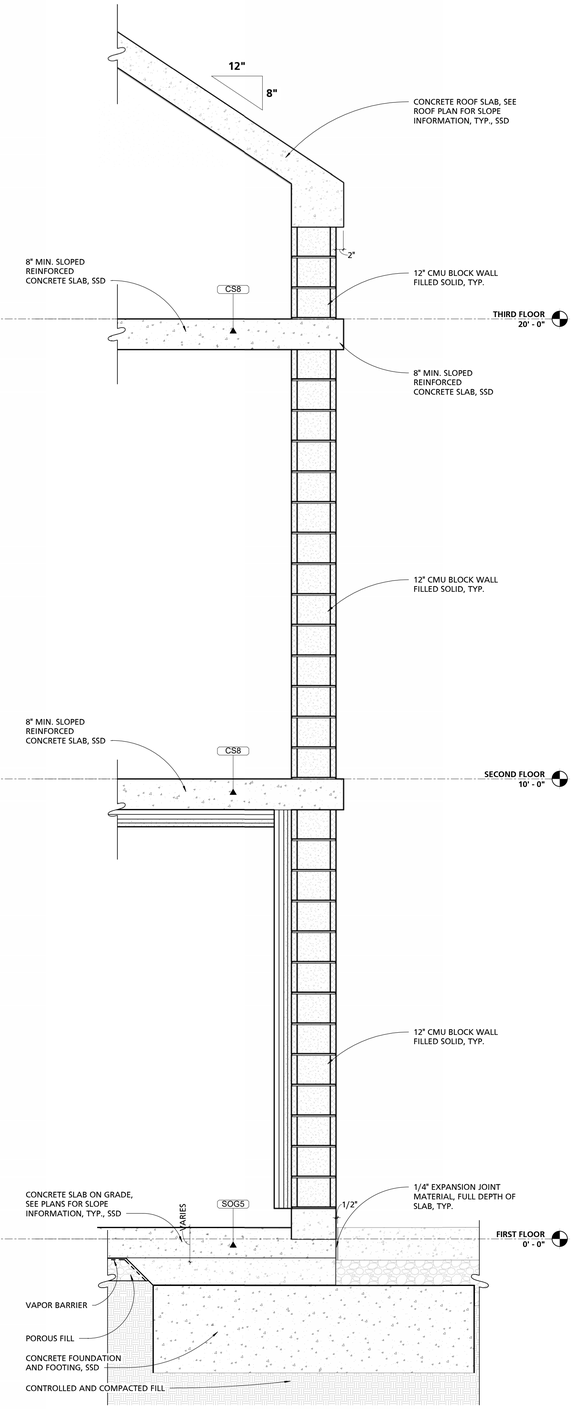
1 **WALL SECTION - 3 STORY PARAPET**
3/4" = 1'-0"



2 **WALL SECTION - 3 STORY ROOF EDGE**
3/4" = 1'-0"



3 **WALL SECTION - 2 STORY PARAPET**
3/4" = 1'-0"



4 **WALL SECTION - 2 STORY SLOPED ROOF**
3/4" = 1'-0"

BID SET

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

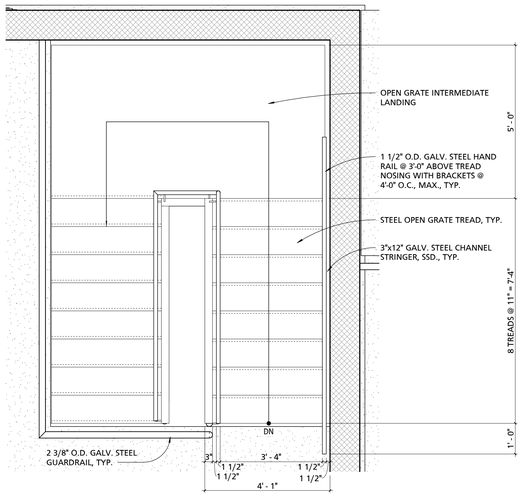
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

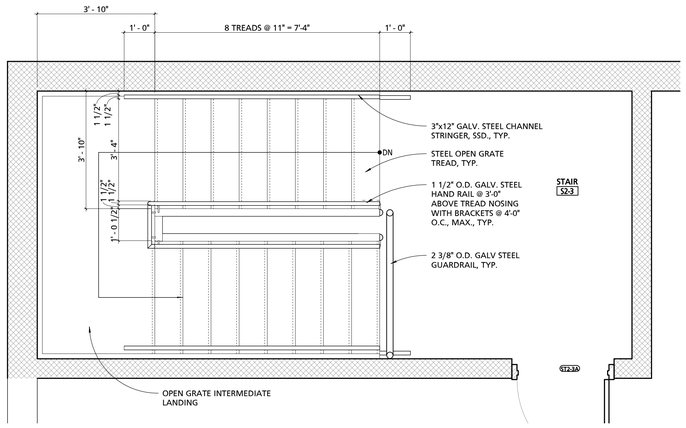
COUNTY DWG NO | SHEET 61 OF 123

SHEET TITLE
WALL SECTIONS

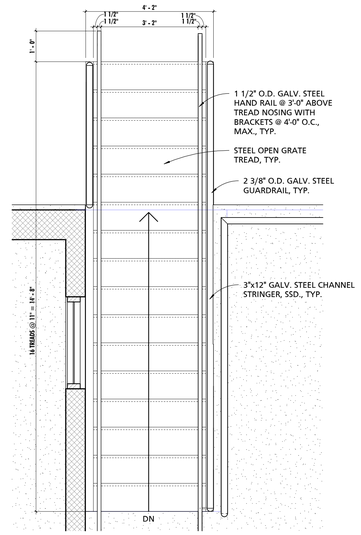
SHEET NO
B2-A401



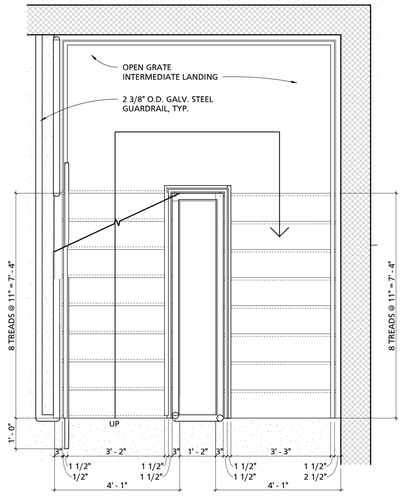
1 **COMMERCIAL STAIR - THIRD FLOOR**
1/2" = 1'-0"



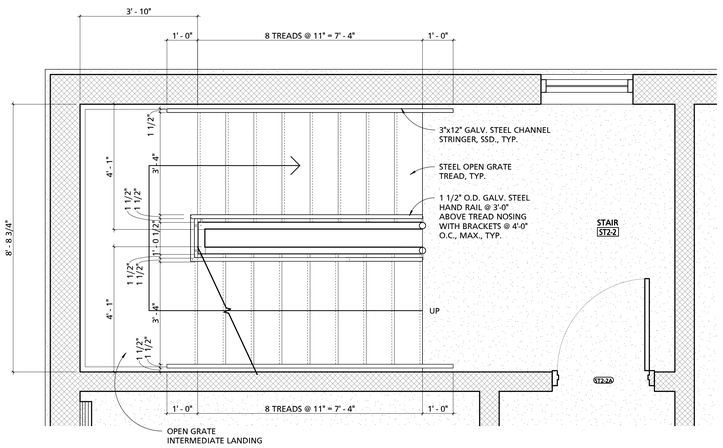
4 **STAIR 2 - THIRD FLOOR**
1/2" = 1'-0"



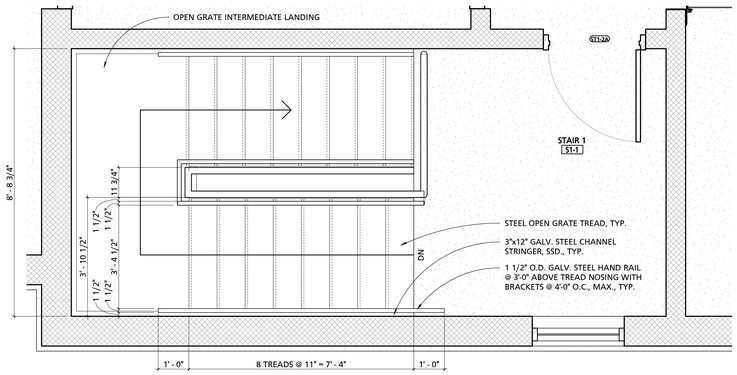
7 **AREAWAY STAIR**
1/2" = 1'-0"



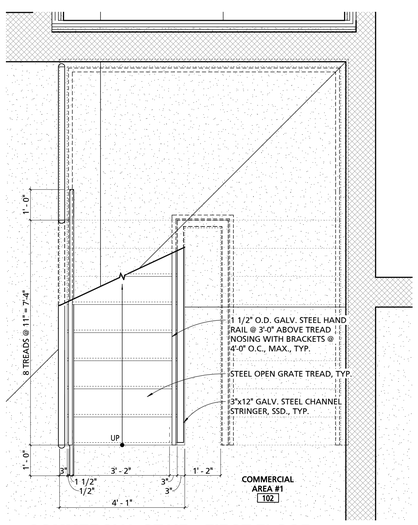
2 **COMMERCIAL STAIR - SECOND FLOOR**
1/2" = 1'-0"



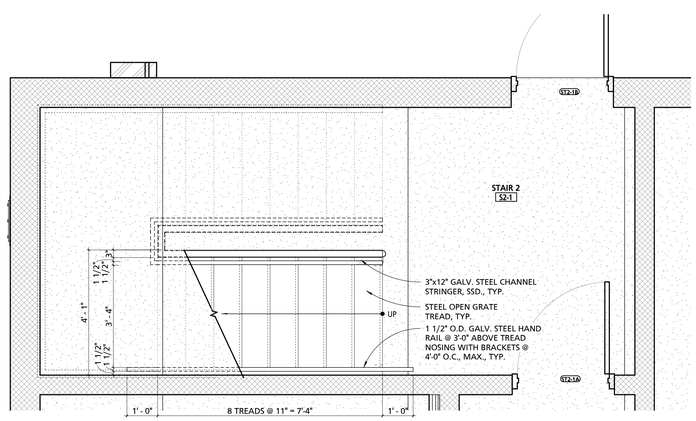
5 **STAIR 2 - SECOND FLOOR**
1/2" = 1'-0"



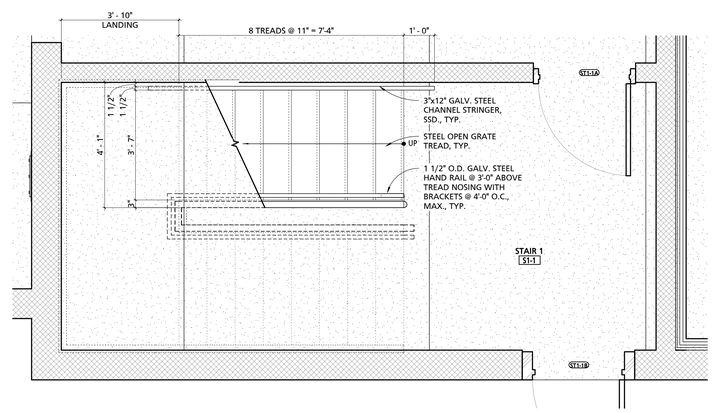
8 **STAIR 1 - SECOND FLOOR**
1/2" = 1'-0"



3 **COMMERCIAL STAIR - FIRST FLOOR**
1/2" = 1'-0"



6 **STAIR 2 - FIRST FLOOR**
1/2" = 1'-0"



9 **STAIR 1 - FIRST FLOOR**
1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

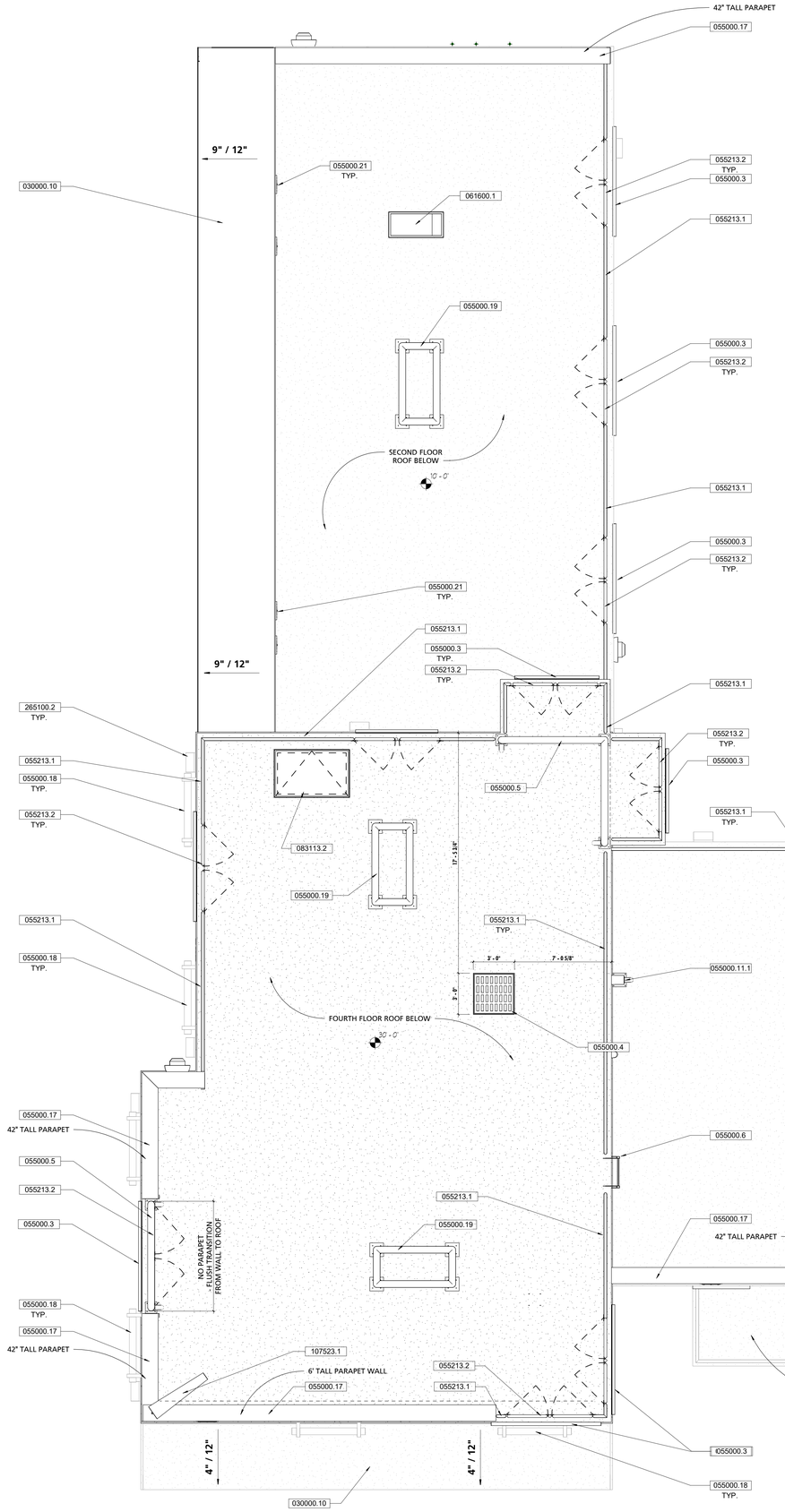
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO SHEET 62 OF 123

SHEET TITLE
ENLARGED STAIR PLANS

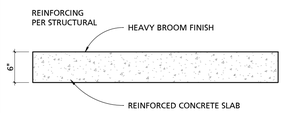
SHEET NO
B2-A410

BID SET

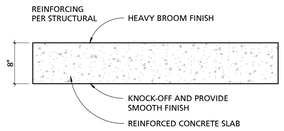


1 **ROOF PLAN**
1/4" = 1'-0"

ROOF ASSEMBLIES



R-01



R-02

ROOF ASSEMBLIES
1" = 1'-0"

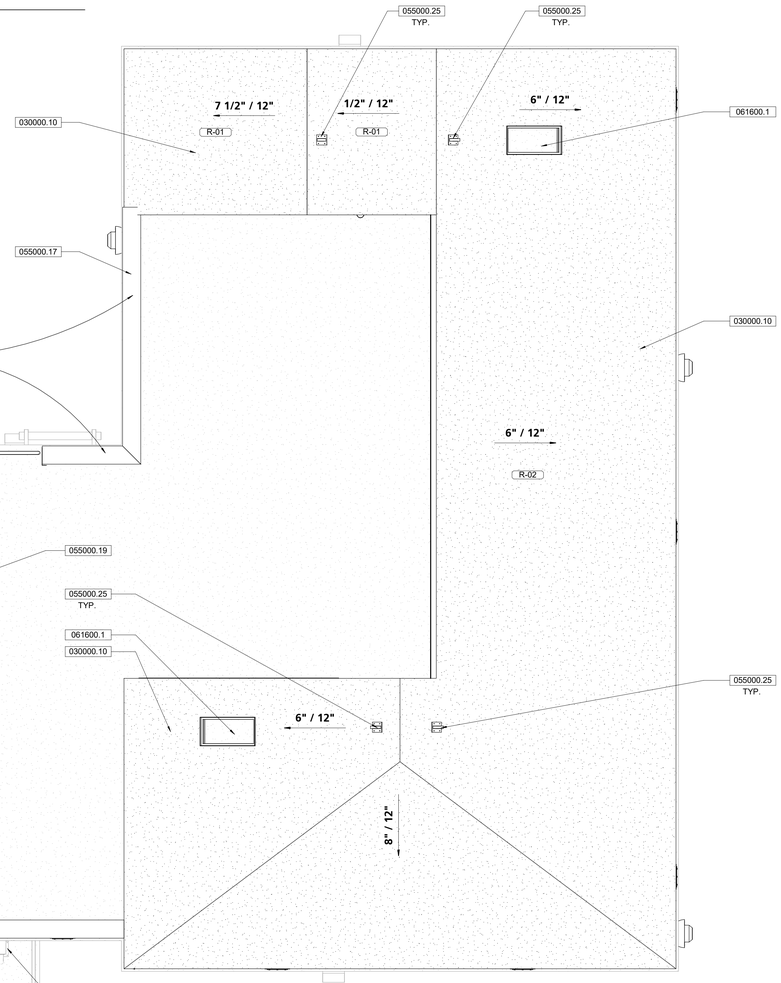
GENERAL ROOFING NOTES

NOTE #	NOTE
1	BLOCKING/MISCELLANEOUS FRAMING INDICATED WITHIN THE DOCUMENTS IS SHOWN FOR THE PURPOSES OF DESIGN INTENT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY, WHETHER SHOWN OR NOT SHOWN, TO PROVIDE BLOCKING/MISCELLANEOUS FRAMING AS REQUIRED TO PROPERLY SUPPORT ALL SUBSTRATES, FLASHINGS, COPINGS, BRAKE METAL, SOFFITS, INSULATIONS, CLIPS, STOPS, MISCELLANEOUS ITEMS, ROOFING MEMBRANES OR SYSTEMS AND SIMILAR ITEMS REQUIRED TO COMPLETE THE WORK. WHERE ADDITIONAL BLOCKING/MISCELLANEOUS FRAMING, INCLUDING BUT NOT LIMITED TO THE REPLACEMENT OF INDICATED SHEATHING/DECKING, IS RECOMMENDED BY ONE OF THE ASSEMBLY COMPONENTS MANUFACTURER, THE CONTRACTOR SHALL PROVIDE AND INSTALL SUCH BLOCKING/MISCELLANEOUS FRAMING TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.
2	CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING FINAL ROOFING SUBSTRATE REQUIREMENTS TO ENSURE SUCCESSFUL INSTALLATION OF ROOFING MATERIALS IN A MANNER THAT MAINTAINS THE FULL PRODUCT WARRANTY AND COMPLIES WITH ALL APPLICABLE BUILDING CODES OF THE AHJ.

SCHEDULE - ROOFING TYPES

TYPE MARK	DESCRIPTION	FIRE RATING		STC RATING	COMMENTS
		RATING	ASSEMBLY REFERENCE		
R-01	6" REINFORCED CONCRETE ROOF				
R-02	8" REINFORCED CONCRETE ROOF				

KEY VALUE	KEYNOTE TEXT
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.3	6" DIA. STAINLESS STEEL HALF PIPE.
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.5	GALVANIZED STEEL HIGH BAR RAPPELLING TIE OFF, REFER TO STRUCTURAL DWGS
055000.6	METAL LADDER, SEE SHEET A907
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.17	GALVANIZED STEEL BENT PLATE COPING
055000.18	GALVANIZED STEEL WALL TIE-OFF PROP, REFER TO STRUCTURAL DWGS
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.21	RECESSED GALVANIZED STEEL LADDER TIE-OFF; SEE DETAIL 6/A904, TYP.
055000.25	EMBEDDED ROOF TIE-OFF, REFER TO STRUCTURAL DWGS
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
055213.2	2" STD GALVANIZED STEEL GATE, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
083113.2	EXTERIOR STEEL FLOOR ACCESS DOOR AND FRAME (36"X60")
107523.1	WALL MOUNTED WINDSOCK
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO | SHEET 63 OF 123

SHEET TITLE
MULTI-PURPOSE BLDG - ROOF PLAN

SHEET NO
B2-A500

BID SET

SCHEDULE - DOOR

MARK	DOOR PANEL SIZE	DOOR PANEL TYPE	DOOR PANEL THICKNESS	DOOR PANEL MATERIAL	DOOR PANEL FINISH	FRAME FRAME TYPE	FRAME SIZE SUMMARY OVERALL HEIGHT	FRAME SIZE SUMMARY OVERALL WIDTH	FRAME PROFILE SUMMARY DEPTH	FRAME PROFILE SUMMARY THROAT	FRAME PROFILE SUMMARY HEAD	FRAME PROFILE SUMMARY JAMB	SIDE LITE WIDTH	FRAME MATERIAL	FRAME FINISH	GLAZING THICKNESS	GLAZING TYPE	DETAILS HEAD	DETAILS JAMB	HARDWARE SET	COMMENTS
100A	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	9' - 0"	5 7/8"	4 7/8"	2"	2"	5' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
100B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
100C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
100D	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	9' - 0"	5 7/8"	4 7/8"	2"	2"	5' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
101A	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	9' - 0"	5 7/8"	4 7/8"	2"	2"	5' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
101A1	(2) 3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	6' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	DOUBLE ACTING
101A2	BURN DOOR																				BURN DOOR
101B	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	9' - 0"	5 7/8"	4 7/8"	2"	2"	5' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
101B1	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
101C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
102A	(2) 3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	6' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-4	
102B	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	11' - 0"	5 7/8"	4 7/8"	2"	2"	7' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
102C	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 5"	11' - 0"	5 7/8"	4 7/8"	2"	2"	7' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
102D	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL2+TR	8' - 8"	8' - 0"	5 7/8"	4 7/8"	2"	2"	4' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-3	
102E	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL+TR	8' - 6"	8' - 0"	5 7/8"	4 7/8"	2"	2"	1' - 6"	HM STL	HPC	1"	GL1	H3	J3	B2-4	
102F	3'-0" x 7'-0"	PANEL : FG	1 3/4"	HM STL	HPC	HM SL+TR	8' - 8"	7' - 8"	5 7/8"	4 7/8"	2"	2"	1' - 2"	HM STL	HPC	1"	GL1	H3	J3	B2-4	
103A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
103B	3'-0" x 7'-0"	PANEL : F	2"	- -	- -	HM ST	7' - 4"	3' - 8"	11"	10"	4"	4"	0' - 0"	- -	- -	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
104A	3'-0" x 7'-0"	PANEL : F	2"	- -	- -	HM ST	7' - 4"	3' - 8"	11"	10"	4"	4"	0' - 0"	- -	- -	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
104B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
104C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
105A	(2) 3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	6' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-1	*NOT FOR TRAINING* PAINTED ON EXTERIOR
106A	BURN DOOR																				BURN DOOR
107A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
107B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
107C	2'-6" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	2' - 10"	5 7/8"	4 7/8"	4"	2"	0' - 0"	- -	- -	0"	- -	- -	- -	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
108A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
110A	BURN DOOR																				BURN DOOR
111A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
200A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
200A1	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
200B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
201A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
201B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
201C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
202A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
202B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
202C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
203A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
203A1	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
203B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
204A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
204B	BURN DOOR																				BURN DOOR
204C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
205A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
205B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
205C	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
206A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-5	
300A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
301A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-2	*NOT FOR TRAINING* PAINTED ON EXTERIOR
ST1-1A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
ST1-1B	3'-0" x 7'-0"	PANEL : F	2"	- -	- -	HM ST	7' - 4"	3' - 8"	11"	10"	4"	4"	0' - 0"	HM STL	HPC	0"	- -	H1	J1		FORCIBLE ENTRY DOOR
ST1-2A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
ST2-1A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
ST2-1B	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
ST2-2A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	
ST2-3A	3'-0" x 7'-0"	PANEL : F	1 3/4"	HM STL	HPC	HM ST	7' - 4"	3' - 4"	5 7/8"	4 7/8"	4"	2"	0' - 0"	HM STL	HPC	0"	- -	H1	J1	B2-3	

GENERAL DOOR NOTES

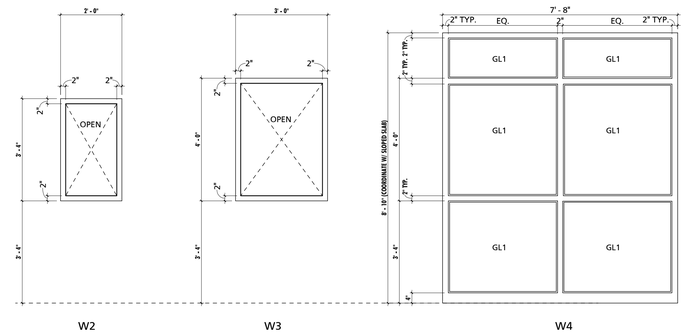
NOTE #	NOTE
1	SEE PARTITION SCHEDULE, FLOOR PLAN, AND STRUCTURAL DRAWINGS FOR CONSTRUCTION OF WALLS AND PARTITIONS.
2	DETAILS MAY VARY AT EACH DOOR. VERIFY EACH CONDITION IN FIELD.
3	SEE A900 SERIERS FOR BURN DOOR DETAILS
4	RAISE BURN DOOR UP TO THE NEXT COURSE OF BLOCK WHERE DOOR UNDERCUT IS 8" OR MORE
5	PROVIDE FORCIBLE ENTRY DOORS AS MANUFACTURED BY FORCIBLE ENTRY INC. OR APPROVED EQUAL
6	ALL EXTERIOR TRAINING DOORS TO HAVE AN EXTERIOR MOUNTED HINGE PULLING /CUTTING PROP MOUNTED ADJACENT TO DOORS. FINAL LOCATION TO BE DETERMINED IN FIELD PRIOR TO INSTALLATION. BASIS OF DESIGN AS MANUFACTURE BY FORCIBLE ENTRY INC. OR APPROVED EQUAL.

SCHEDULE - WINDOWS

TYPE MARK	OPERATION	SIZE WIDTH	SIZE HEIGHT	SILL HEIGHT	HEAD	JAMB	REMARKS
W2	FIXED	2' - 0"	3' - 4"				SEE A903 FOR DETAILS
W3	FIXED	3' - 0"	4' - 0"				SEE A903 FOR DETAILS
W4		7' - 8"	8' - 10"	0' - 0"	H3	J3	

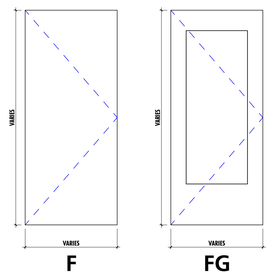
SCHEDULE - GLAZING

MARK	DESCRIPTION	COMMENTS
GL1	PLASTIC GLAZING	



WINDOW TYPES

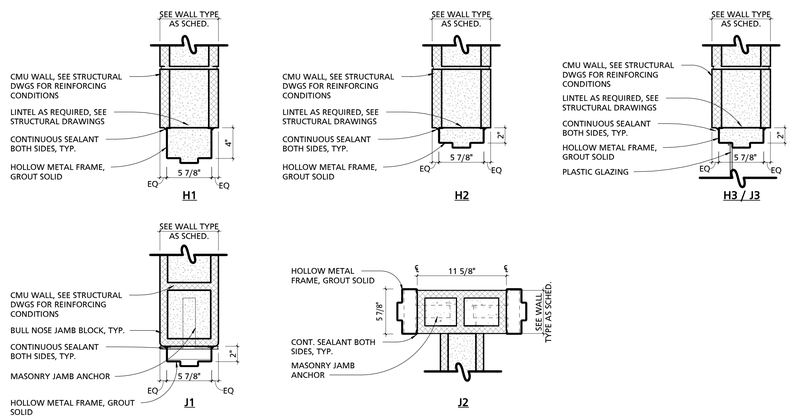
1/2" = 1'-0"



1. SEE DOOR SCHEDULE FOR ACTUAL PANEL DIMENSIONS.
2. NOT ALL PANEL TYPES MAY BE USED IN THIS PROJECT, SEE DOOR SCHEDULE.
3. DIMENSIONS FOR GLAZING INDICATED SHALL CONSTITUTE THE FULL GLAZING WIDTH.

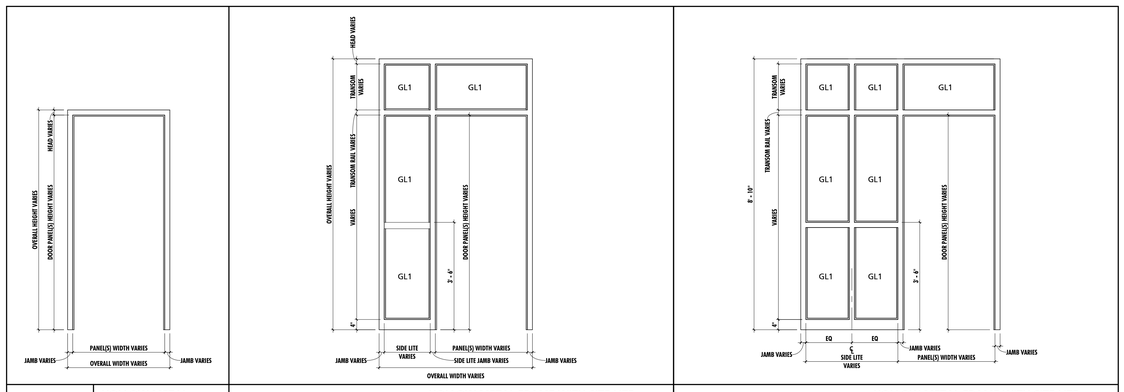
DOOR PANEL TYPES

1/2" = 1'-0"



HOLLOW METAL DOOR DETAILS

1 1/2" = 1'-0"



1.) SEE DOOR SCHEDULE FOR FRAME DIMENSION VARIABLES

FRAME TYPES

1/2" = 1'-0"

HW SET #		QTY	ITEM	DESCRIPTION	COMMENTS
Set B2-1	**INTERIOR - DOUBLE (CONTROL ROOM)**				
	Doors: 105A				
		8	HINGE	NON-REMOVEABLE PIN (NRP)	4 HINGE PER DOOR PANEL
		1	MORTISE LOCKSET (ACTIVE LEAF)	SCHLAGE L SERIES / CLASSROOM FUNCTION	
		2	FLUSH BOLT (INACTIVE LEAF)		1 @ HEAD, 1 @ FLOOR
		2	SURFACE CLOSERS	HOLD OPEN & OVERHEAD STOP	
		1	THRESHOLD		
		1	PERIMETER DOOR GASKET		
	NOTE: ACTIVE LEAF TO HAVE FULL HEIGHT ASTRAGAL. INACTIVE LEAF TO RECEIVE STRIKE FOR MORTISE LOCKET.				
Set B2-2	**SINGLE (CONTROL ROOM)**				
	Doors: 101B1, 107C, 200A1, 203A1, 205C, 301A				
		4	HINGE	NON-REMOVEABLE PIN (NRP)	
		1	MORTISE LOCKSET	SCHLAGE L SERIES / CLASSROOM FUNCTION	
		1	SURFACE CLOSER	HOLD OPEN & OVERHEAD STOP	
		1	THRESHOLD		
		1	PERIMETER DOOR GASKET		
		1	WALL STOP		DOOR 107C, 205C ONLY
Set B2-3	**EXTERIOR - SINGLE (PASSAGE)**				
	Doors: 100A, 100B, 100D, 101A1, 101B, 102B, 102C, 102D, 103A, 104A, 200A, 201C, 202C, 204C, 300A, ST1-1A, ST1-2A, ST2-1A, ST2-1B, ST2-2A, ST2-3A				
		4	HINGE	NON-REMOVEABLE PIN (NRP)	
		1	MORTISE LOCKSET	SCHLAGE L SERIES / PASSAGE FUNCTION	
		1	SURFACE CLOSER	OVERHEAD STOP	
		3	SILENCER		
Set B2-4	**DOUBLE (PASSAGE)**				
	Doors: 102A, 102E, 102F				
		8	HINGE	NON-REMOVEABLE PIN (NRP)	4 HINGE PER DOOR PANEL
		2	MORTISE LOCKSET (W/ VERTICAL ROD)	SCHLAGE LM SERIES / PASSAGE FUNCTION	
		2	SURFACE CLOSER	OVERHEAD STOP	
		2	SILENCER		1 PER LEAF
Set B2-5	**INTERIOR - SINGLE (PASSAGE)**				
	Doors: 100C, 101C, 104B, 104C, 107A, 107B, 108A, 111A, 200B, 201A, 201B, 202A, 202B, 203A, 203B, 204A, 205A, 205B, 206A				
		4	HINGE	NON-REMOVEABLE PIN (NRP)	
		1	MORTISE LOCKSET (W/ VERTICAL ROD)	SCHLAGE L SERIES / PASSAGE FUNCTION	
		3	SILENCER		

DOOR HARDWARE

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT — MARY C. MCGRATH — C-24435 — REN-08-30-23 — STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA — Resource Management Agency — APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC

CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

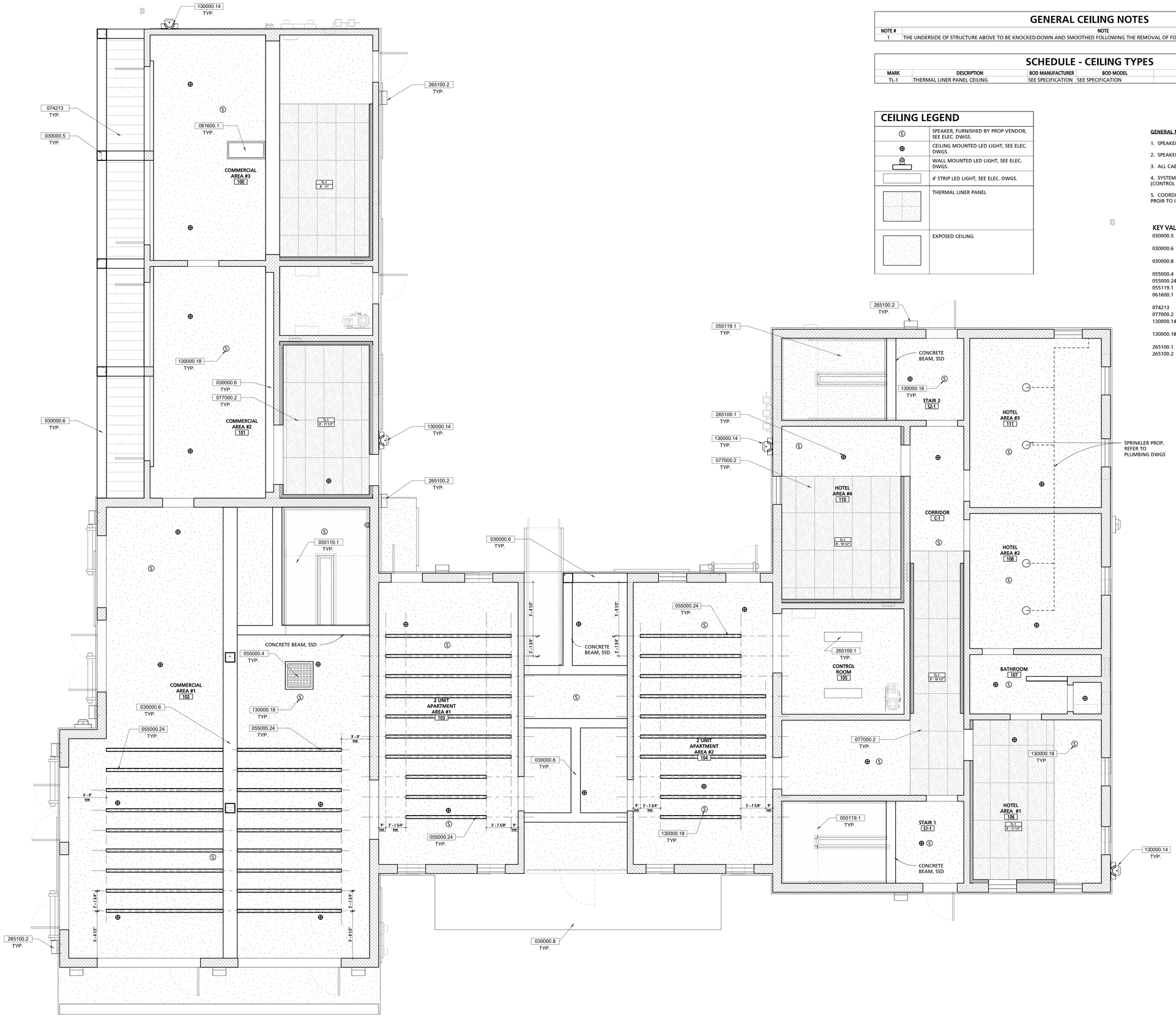
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 64 OF 123

SHEET TITLE
DOOR/WINDOW SCHEDULE & DETAILS

SHEET NO
B2-A600

BID SET



1 **FIRST FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

GENERAL CEILING NOTES

NOTE #	NOTE
1	THE UNDERSIDE OF STRUCTURE ABOVE TO BE KNOCKED-DOWN AND SMOOTHED FOLLOWING THE REMOVAL OF FORMS.

SCHEDULE - CEILING TYPES

MARK	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
TL-1	THERMAL LINER PANEL CEILING	SEE SPECIFICATION	SEE SPECIFICATION	

CEILING LEGEND

S	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
	CEILING MOUNTED LED LIGHT, SEE ELEC. DWGS.
	WALL MOUNTED LED LIGHT, SEE ELEC. DWGS.
	4' STRIP LED LIGHT, SEE ELEC. DWGS.
	THERMAL LINER PANEL
	EXPOSED CEILING

GENERAL NOTE:

1. SPEAKER LOCATION SHALL BE AS INDICATED BY S
2. SPEAKER CABLING DESIGN SHALL BE BY SYSTEM PROVIDER.
3. ALL CABLING SHALL BE WITHIN METAL CONDUIT.
4. SYSTEM CONTROLS SHALL LOCATED WITHIN ROOM 105 (CONTROL ROOM).
5. COORDINATE FINAL SPEAKER LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.24	MAZE PANEL SYSTEM; SEE SHEET A905
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
074213	METAL SOFFIT PANELS
077000.2	THERMAL LINING SYSTEM CEILING PANELS
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
130000.18	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 65 OF 123

SHEET TITLE
REFLECTED CEILING PLAN - FIRST FLOOR PLAN

SHEET NO
B2-A800

BID SET

GENERAL CEILING NOTES

NOTE #	NOTE
1	THE UNDERSIDE OF STRUCTURE ABOVE TO BE KNOCKED-DOWN AND SMOOTHED FOLLOWING THE REMOVAL OF FORMS.

SCHEDULE - CEILING TYPES

MARK	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
TL-1	THERMAL LINER PANEL CEILING	SEE SPECIFICATION	SEE SPECIFICATION	

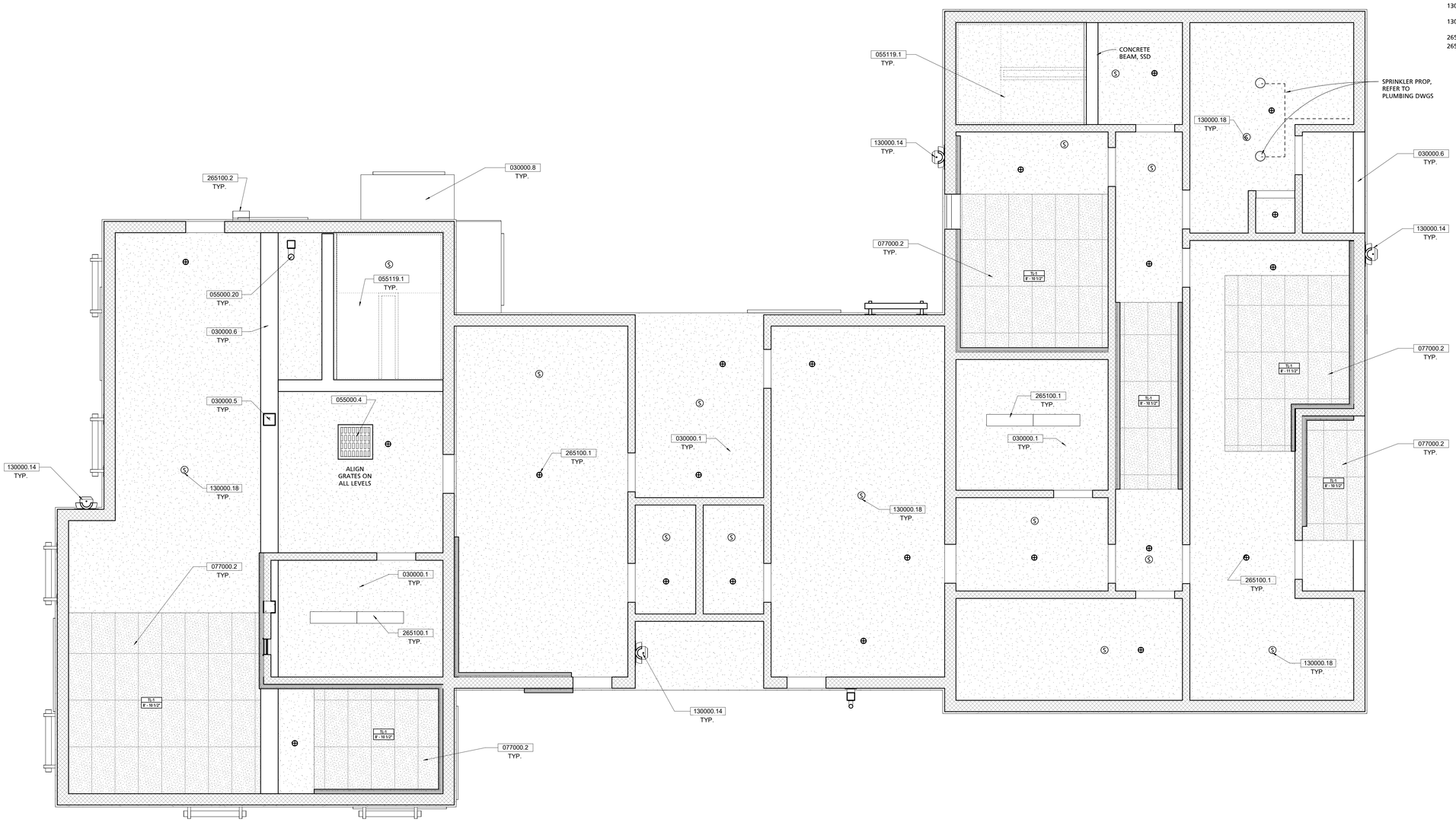
CEILING LEGEND

Ⓢ	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
⊕	CEILING MOUNTED LED LIGHT, SEE ELEC. DWGS.
	WALL MOUNTED LED LIGHT, SEE ELEC. DWGS.
	4' STRIP LED LIGHT, SEE ELEC. DWGS.
	THERMAL LINER PANEL
	EXPOSED CEILING

GENERAL NOTE:

1. SPEAKER LOCATION SHALL BE AS INDICATED BY Ⓢ
2. SPEAKER CABLING DESIGN SHALL BE BY SYSTEM PROVIDER.
3. ALL CABLING SHALL BE WITHIN METAL CONDUIT.
4. SYSTEM CONTROLS SHALL LOCATED WITHIN ROOM 105 (CONTROL ROOM).
5. COORDINATE FINAL SPEAKER LOCATIONS WITH ARCHITECT PROIR TO INSTALLATION.

KEY VALUE	KEYNOTE TEXT
030000.1	CONCRETE SLAB, REFER TO STRUCTURAL DWGS
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.8	CANTILEVERED CONCRETE SLAB, REFER TO STRUCTURAL DRAWINGS
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.20	GALVANIZED STEEL COLUMN TIE-OFF; REFER TO STRUCTURAL DWGS
055119.1	GALVANIZED STEEL GRATE STAIR, TYP.
077000.2	THERMAL LINING SYSTEM CEILING PANELS
130000.14	16"X16" WALL OPENING BY CONTRACTOR, EXHAUST FAN BY FIRE PROP VENDOR
130000.18	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS
265100.2	WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS



1 **SECOND FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO. 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 66 OF 123

SHEET TITLE
REFLECTED CEILING PLAN - SECOND FLOOR PLAN

SHEET NO
B2-A801

BID SET

GENERAL CEILING NOTES

NOTE #	NOTE
1	THE UNDERSIDE OF STRUCTURE ABOVE TO BE KNOCKED-DOWN AND SMOOTHED FOLLOWING THE REMOVAL OF FORMS.

SCHEDULE - CEILING TYPES

MARK	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
TL-1	THERMAL LINER PANEL CEILING	SEE SPECIFICATION	SEE SPECIFICATION	

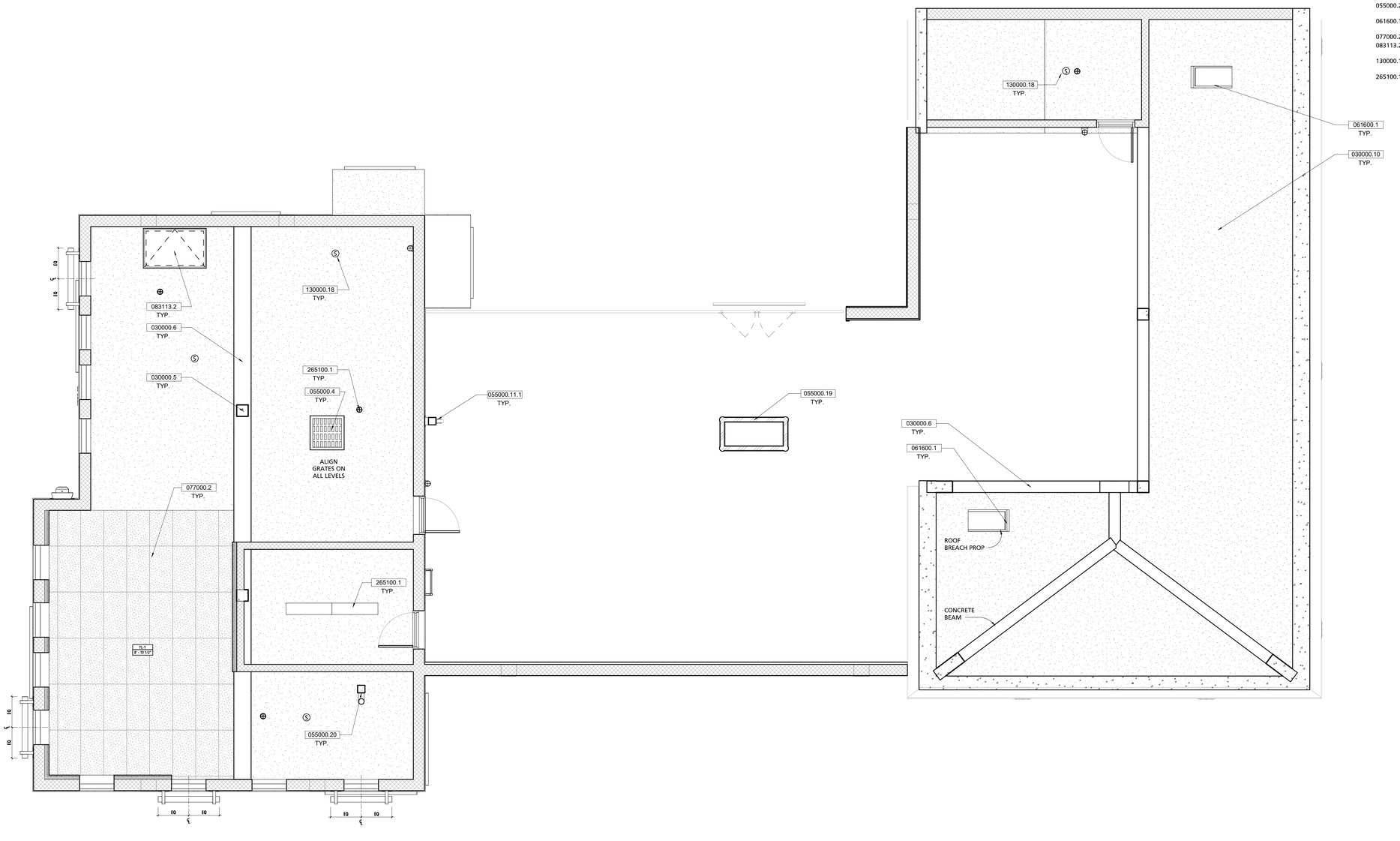
CEILING LEGEND

Ⓢ	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
⊕	CEILING MOUNTED LED LIGHT, SEE ELEC. DWGS.
⊕	WALL MOUNTED LED LIGHT, SEE ELEC. DWGS.
	4' STRIP LED LIGHT, SEE ELEC. DWGS.
	THERMAL LINER PANEL
	EXPOSED CEILING

GENERAL NOTE:

1. SPEAKER LOCATION SHALL BE AS INDICATED BY Ⓢ
2. SPEAKER CABLING DESIGN SHALL BE BY SYSTEM PROVIDER.
3. ALL CABLING SHALL BE WITHIN METAL CONDUIT.
4. SYSTEM CONTROLS SHALL LOCATED WITHIN ROOM 105 (CONTROL ROOM).
5. COORDINATE FINAL SPEAKER LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.

KEY VALUE	KEYNOTE TEXT
030000.5	CONCRETE COLUMN, REFER TO STRUCTURAL DRAWINGS
030000.6	CONCRETE BEAM, REFER TO STRUCTURAL DRAWINGS
030000.10	SLOPED CONCRETE ROOF SLAB, REFER TO STRUCTURAL DRAWINGS
055000.4	3'-0" X 3'-0" ACCESS HATCH
055000.11.1	9'-0' H GALVANIZED POST / WALL RAPPELLING TIE-OFFS, REFER TO STRUCTURAL DWGS
055000.19	MOCK R.T.U. RAPPELLING TIE-OFF, REFER TO STRUCTURAL DWGS
055000.20	GALVANIZED STEEL COLUMN TIE-OFF; REFER TO STRUCTURAL DWGS
061600.1	ROOF CHOP OUT PANEL - 2'X4', SEE SHEET A904
077000.2	THERMAL LINING SYSTEM CEILING PANELS
083113.2	EXTERIOR STEEL FLOOR ACCESS DOOR AND FRAME (36"X60")
130000.18	SPEAKER, FURNISHED BY PROP VENDOR, SEE ELEC. DWGS.
265100.1	LIGHTING, REFER TO ELECTRICAL DWGS



1 **THIRD FLOOR REFLECTED CEILING PLAN**
1/4" = 1'-0"

0 2' 4' 8'

T P

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB | CHECKED BY GC
CONSULTANT JOB NO 20-126 | DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

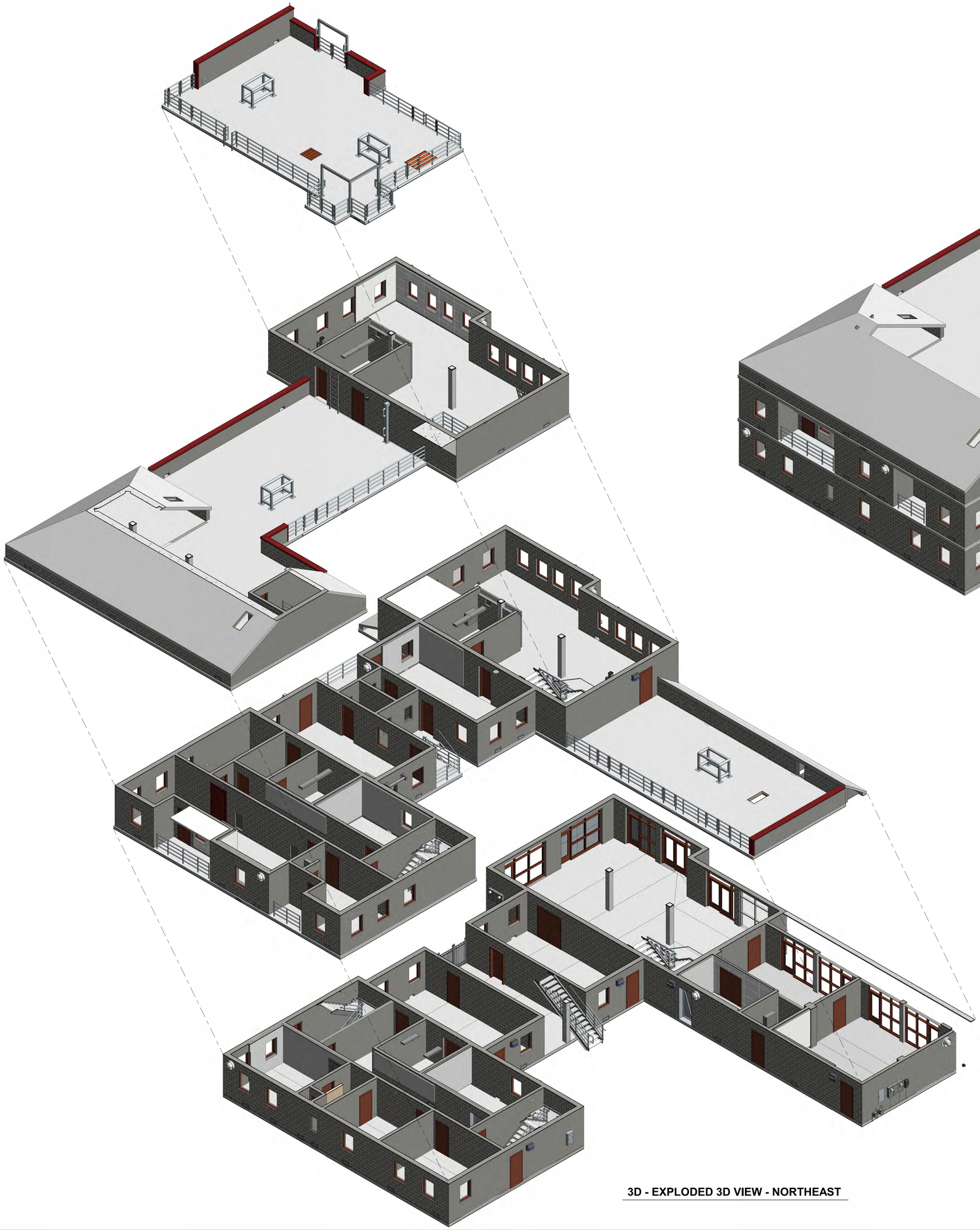
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 67 OF 123

SHEET TITLE
REFLECTED CEILING PLAN
- THIRD FLOOR PLAN

SHEET NO
B2-A802

BID SET



3D - EXPLODED 3D VIEW - NORTHEAST

3D VIEW - NORTHEAST

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO. 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

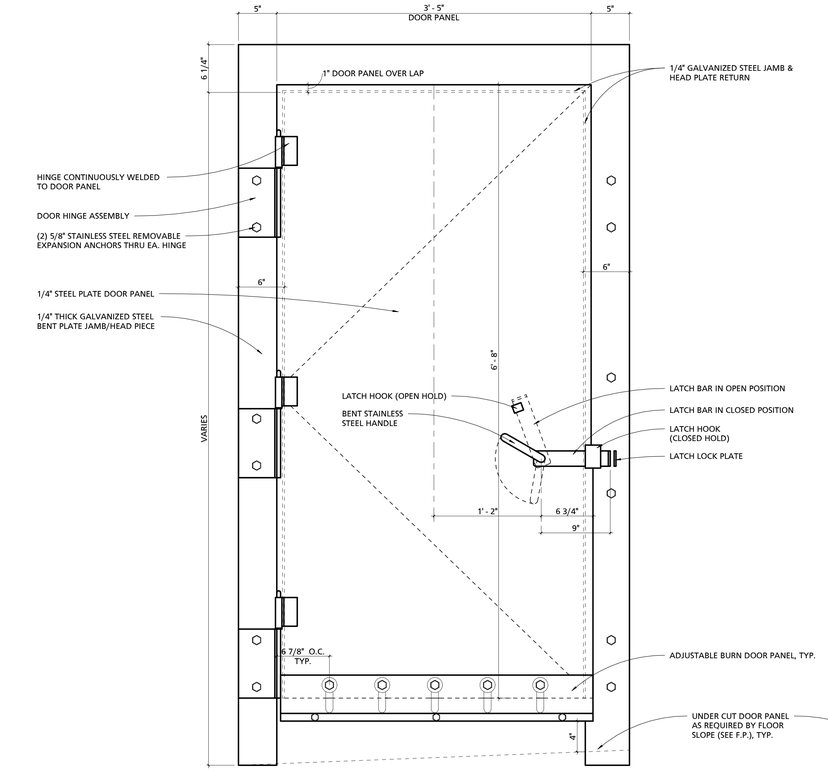
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 68 OF 123

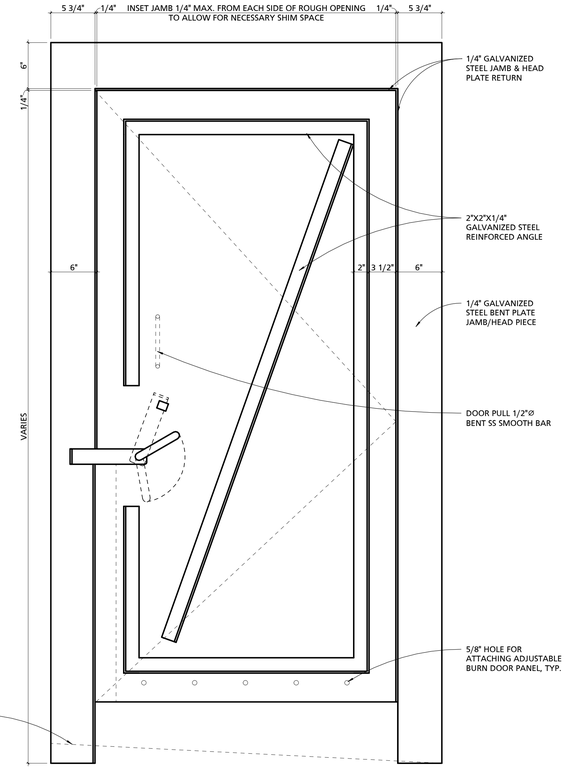
SHEET TITLE
EXPLODED 3D VIEW

SHEET NO
B2-A900

BID SET

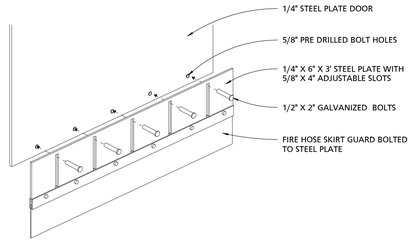


PULL SIDE

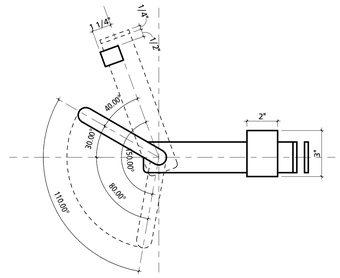


PUSH SIDE

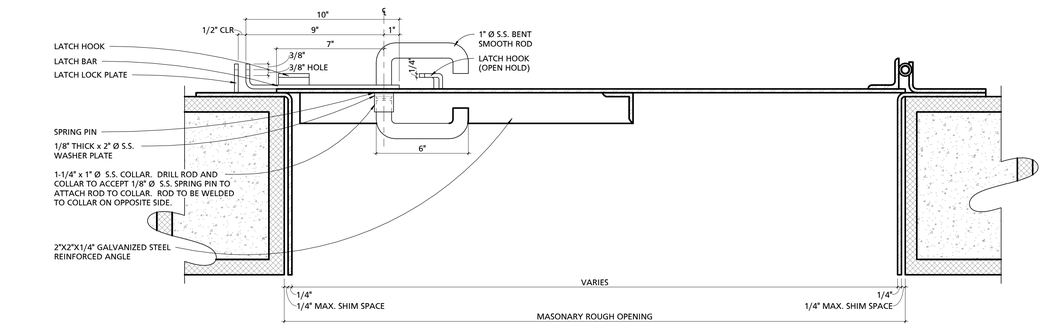
1 BURN DOOR ELEVATIONS
1 1/2" = 1'-0"



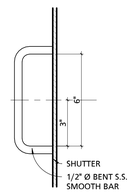
3 ADJUSTABLE BURN DOOR PANEL
1 1/2" = 1'-0"



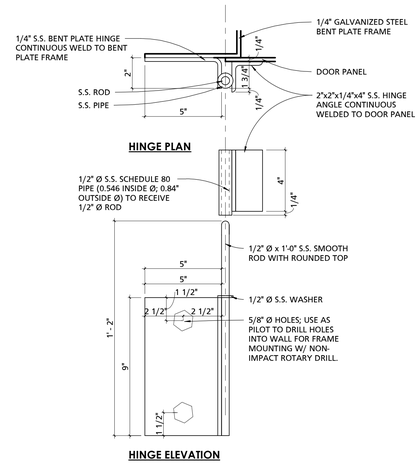
4 HANDLE ELEVATION
3" = 1'-0"



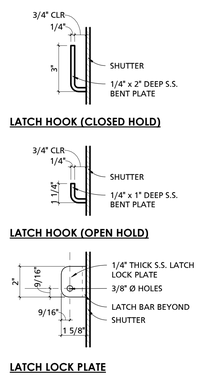
2 PLAN OF BURN DOOR HANDLE
3" = 1'-0"



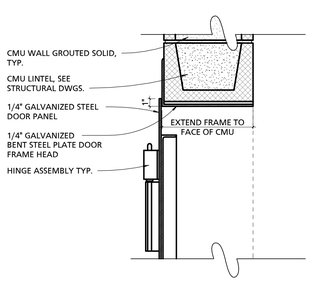
5 DOOR HANDLE DETAIL
3" = 1'-0"

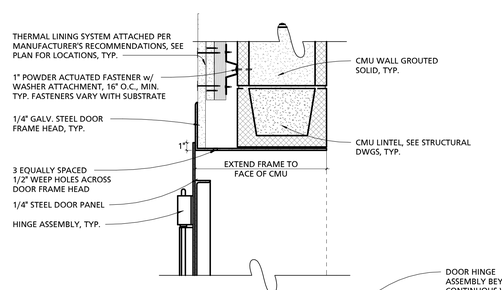


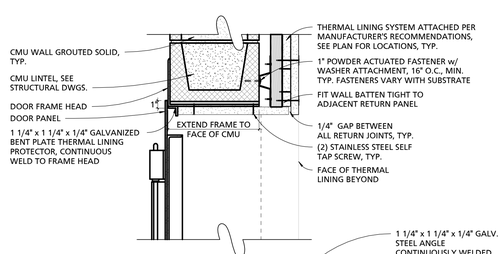
6 HINGE DETAIL
3" = 1'-0"

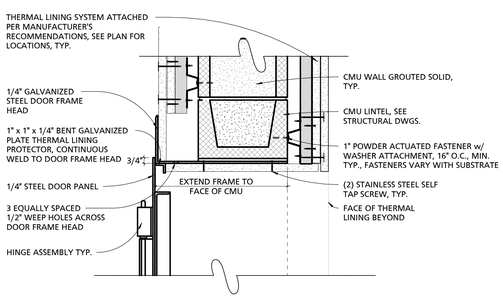


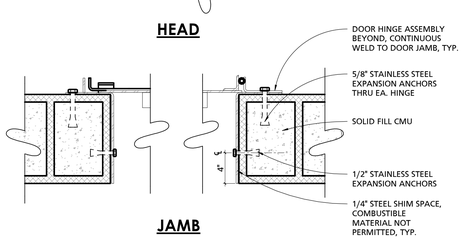
7 LATCH DETAILS
3" = 1'-0"

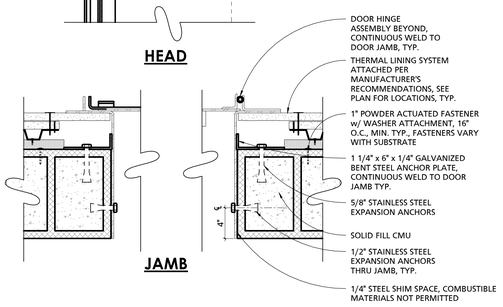


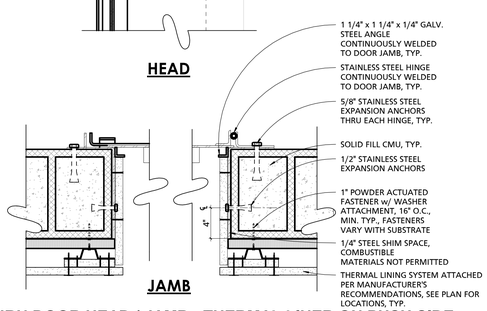


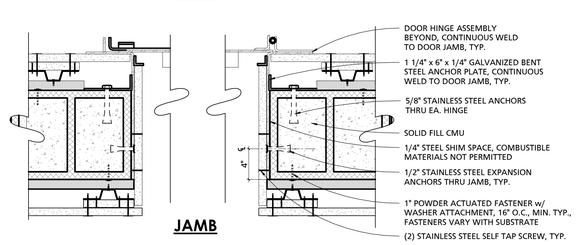












8 BURN DOOR HEAD / JAMB - NO THERMAL LINER
1 1/2" = 1'-0"

9 BURN DOOR HEAD / JAMB - THERMAL LINER ON PULL SIDE
1 1/2" = 1'-0"

10 BURN DOOR HEAD / JAMB - THERMAL LINER ON PUSH SIDE
1 1/2" = 1'-0"

11 BURN DOOR HEAD / JAMB - THERMAL LINER ON BOTH SIDES
1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

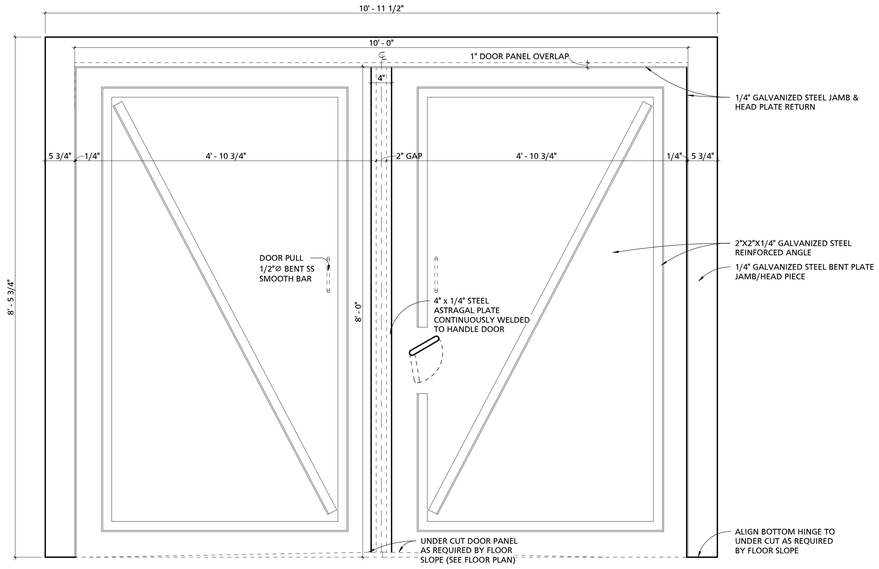
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 69 OF 123

SHEET TITLE
BURN DOOR DETAILS

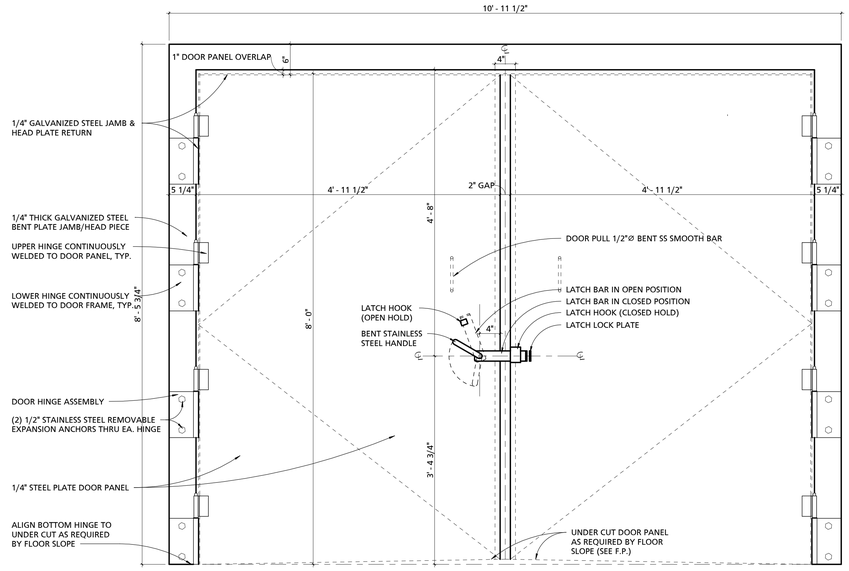
SHEET NO
A900

BID SET



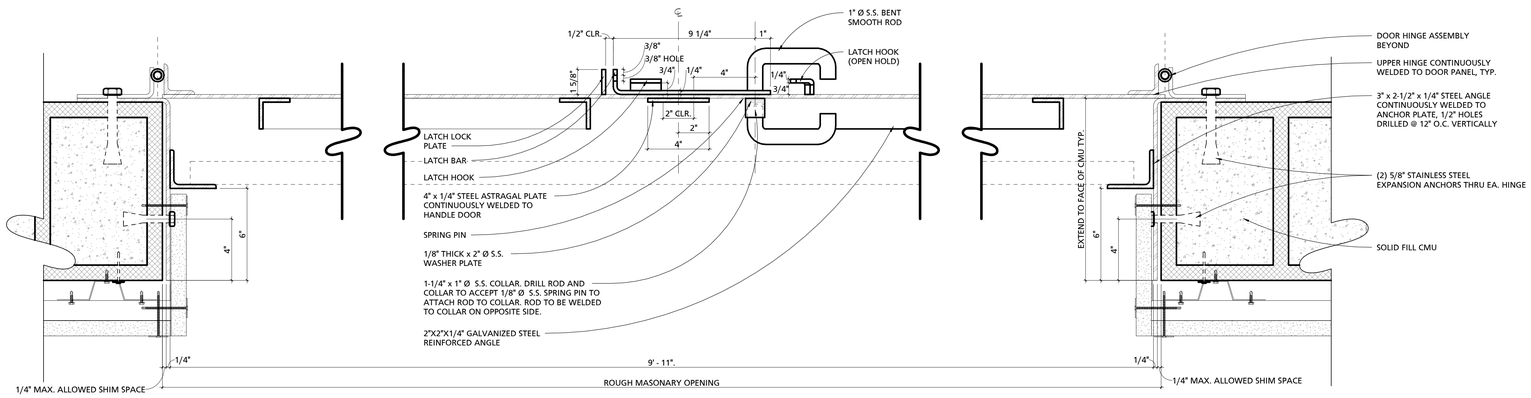
PUSH SIDE

1 DOUBLE BURN DOOR ELEVATION - PUSH SIDE
1" = 1'-0"

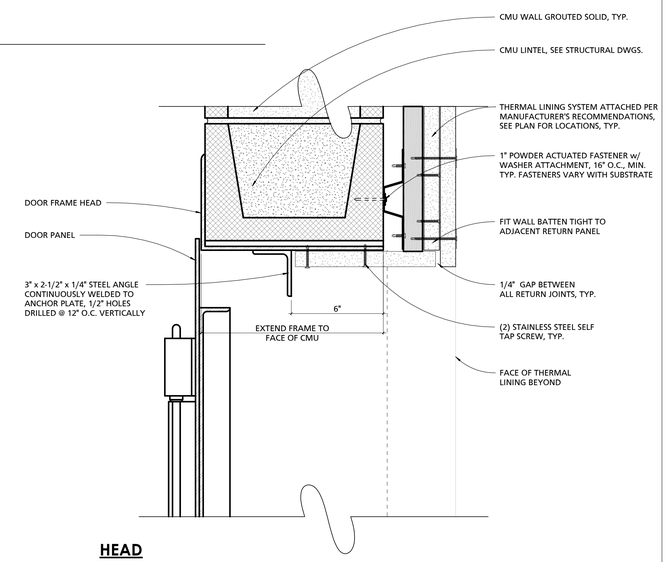


PULL SIDE

2 DOUBLE BURN DOOR ELEVATION - PULL SIDE
1" = 1'-0"

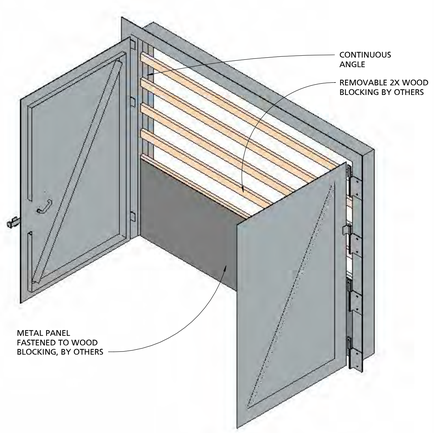


3 DOUBLE BURN DOOR JAMB DETAILS
3" = 1'-0"

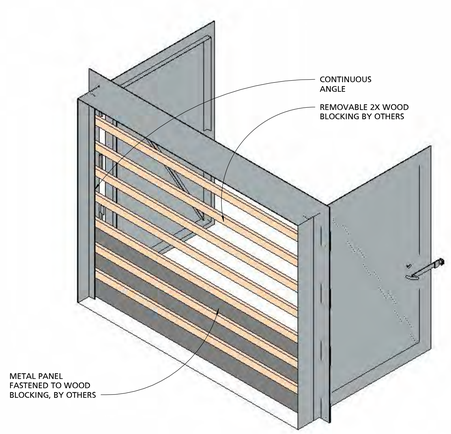


HEAD

4 BURN DOOR HEAD- THERMAL LINER ON PUSH SIDE
3" = 1'-0"



5 DOUBLE BURN DOOR - PULL SIDE



6 DOUBLE BURN DOOR - PUSH SIDE

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

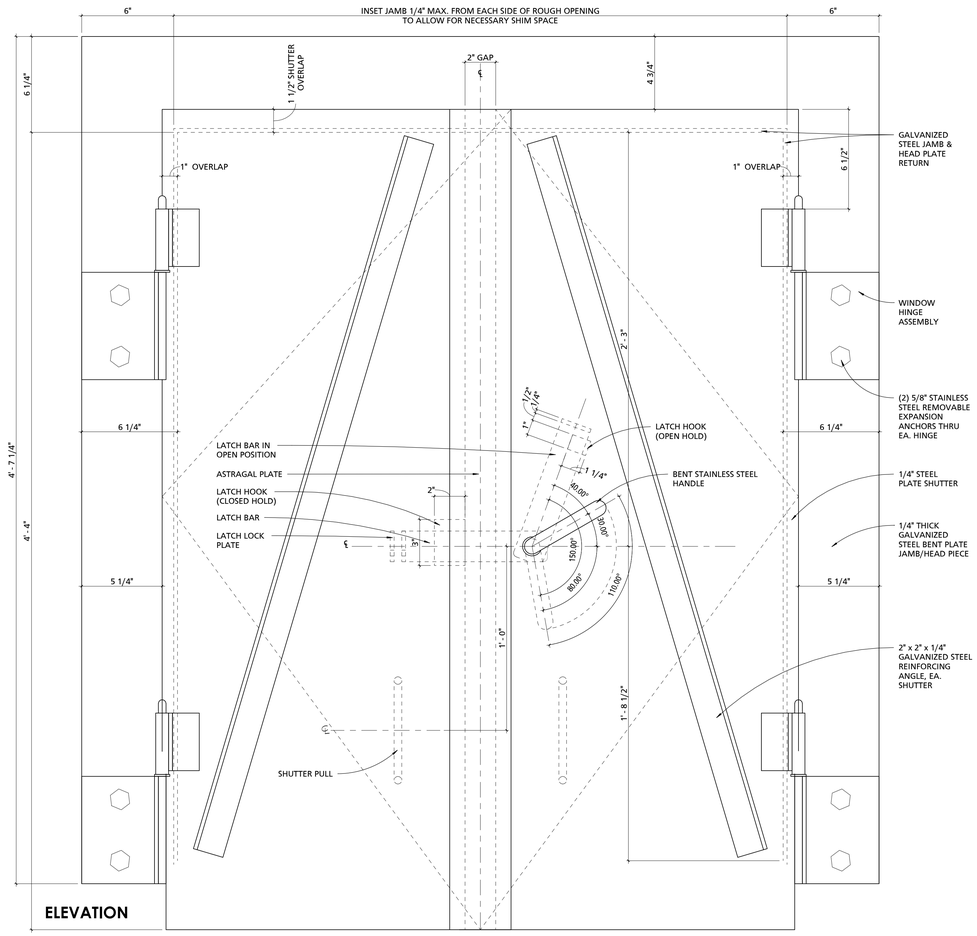
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 70 OF 123

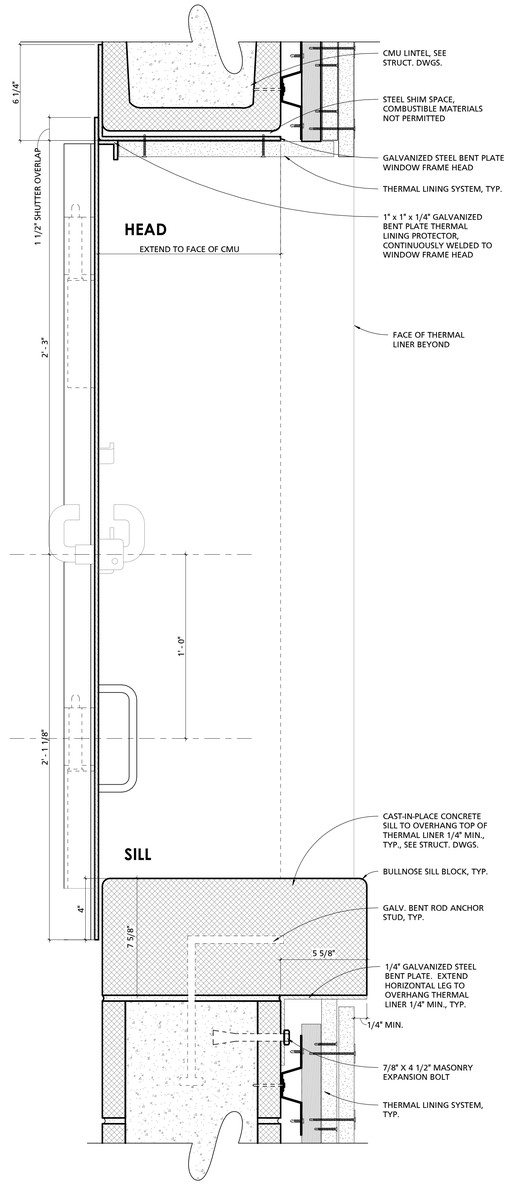
SHEET TITLE
DOUBLE BURN DOOR DETAILS

SHEET NO
A900.1

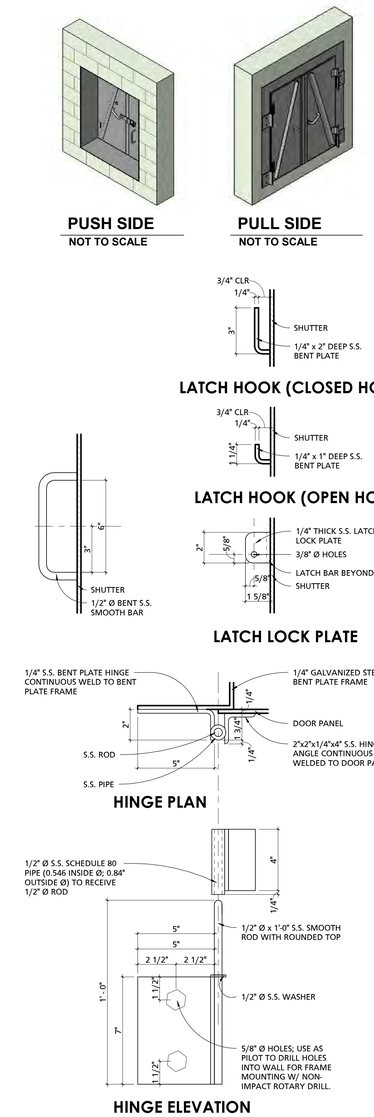
BID SET



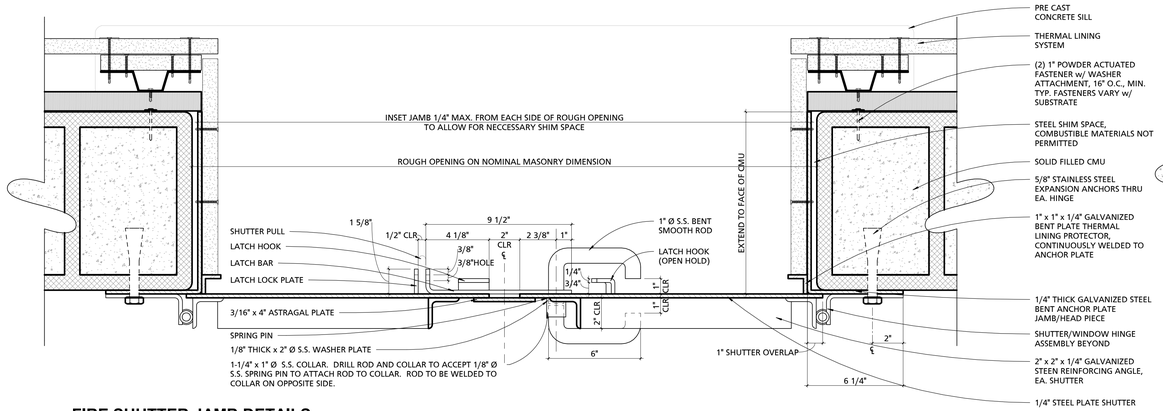
1 FIRE SHUTTER DETAILS
3" = 1'-0"



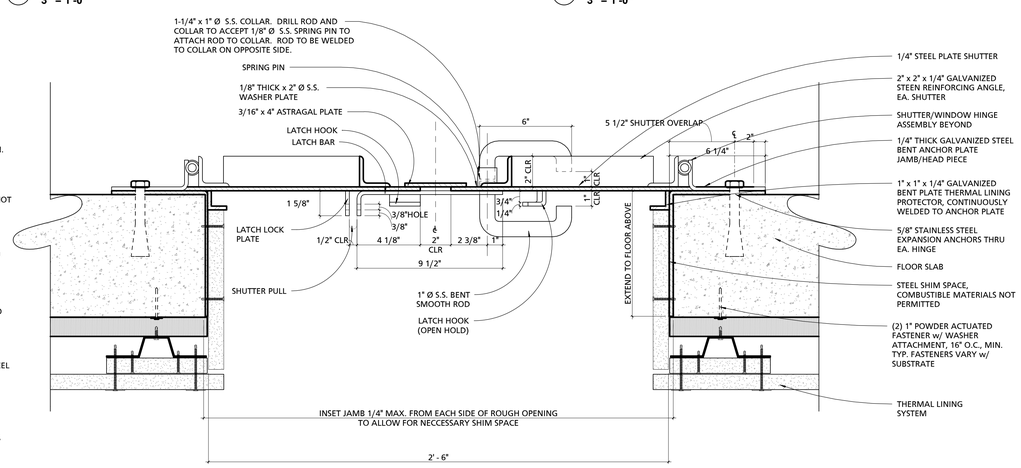
3 FIRE SHUTTER HEAD AND SILL DETAILS
3" = 1'-0"



4 FIRE SHUTTER HARDWARE
3" = 1'-0"



2 FIRE SHUTTER JAMB DETAILS
3" = 1'-0"



5 FIRE HATCH DETAILS
3" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathcharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

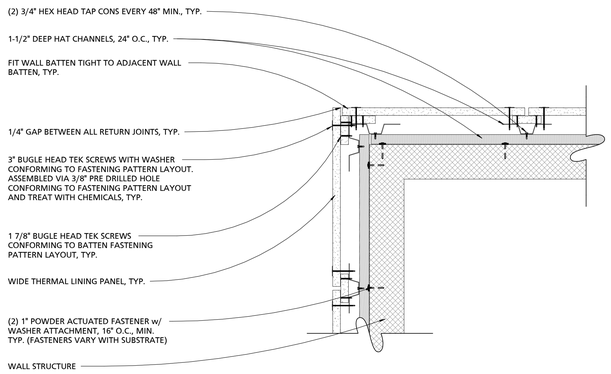
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 71 OF 123

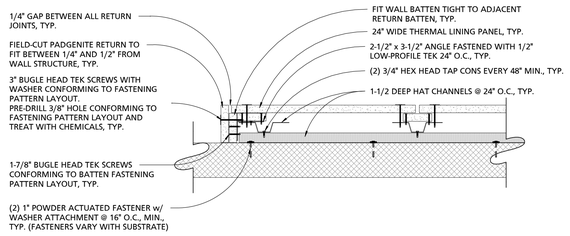
SHEET TITLE
FIRE SHUTTER DETAILS

SHEET NO
A901

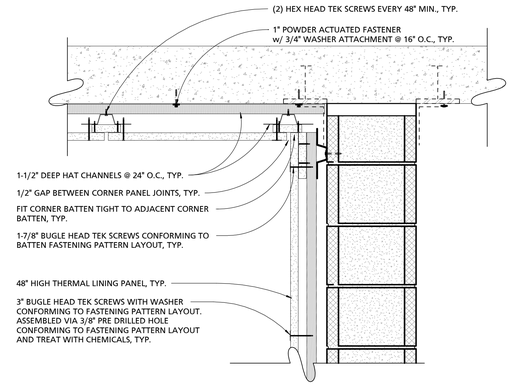
BID SET



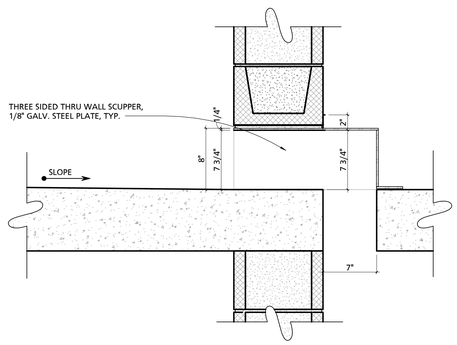
1 TYPICAL THERMAL LINING OUTSIDE CORNER DETAIL
1 1/2" = 1'-0"



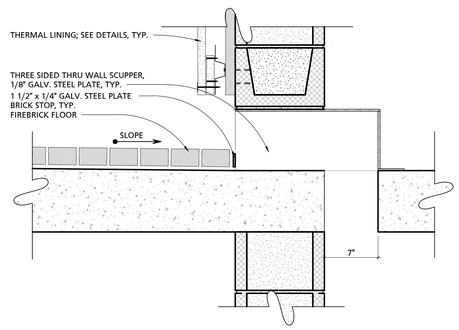
2 TYPICAL THERMAL LINING END RETURN DETAIL
1 1/2" = 1'-0"



3 TYPICAL THERMAL LINING CEILING TO WALL DETAIL
1 1/2" = 1'-0"

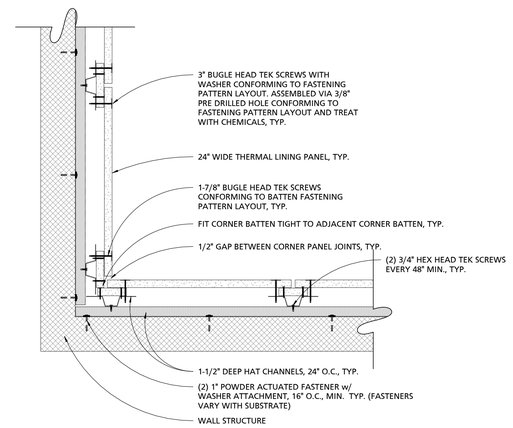


SECTION

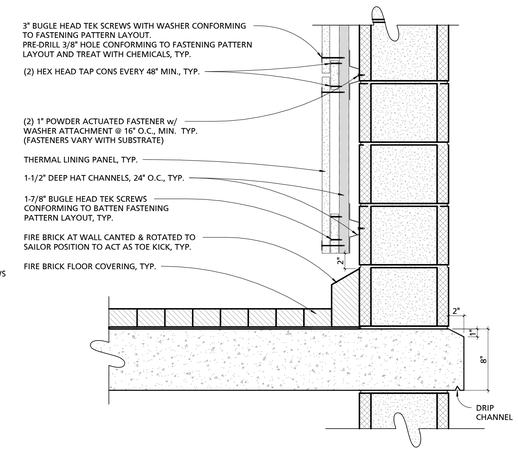


SECTION

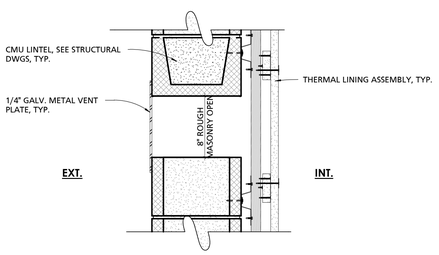
4 THRU-WALL/FLOOR SCUPPER DETAILS
1 1/2" = 1'-0"



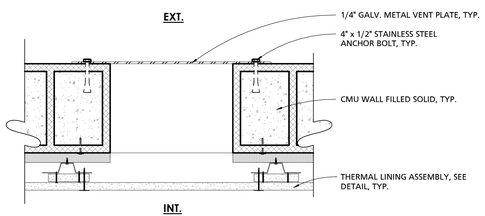
5 TYPICAL THERMAL LINING INSIDE CORNER DETAIL
1 1/2" = 1'-0"



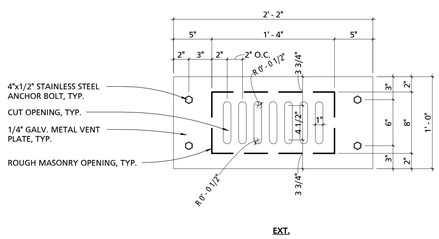
6 TYPICAL THERMAL LINING TO FLOOR DETAIL
1 1/2" = 1'-0"



SECTION

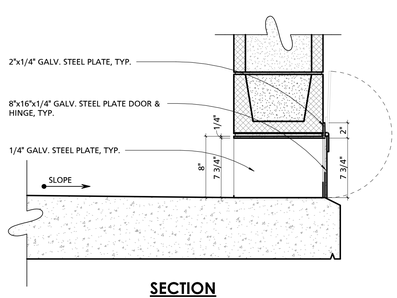


PLAN

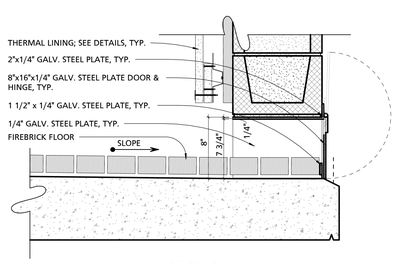


ELEVATION

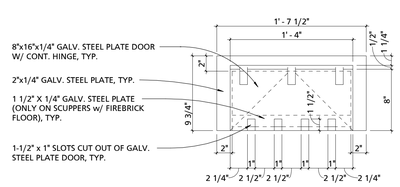
7 TYPCIAL WALL VENT DETAILS
1 1/2" = 1'-0"



SECTION

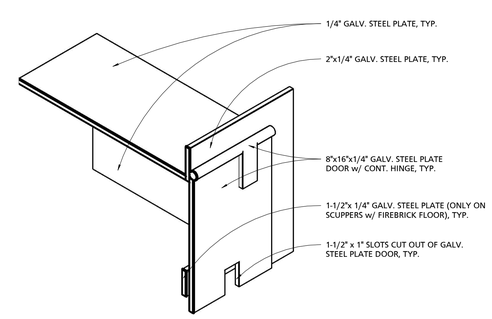


SECTION



ELEVATION

8 TYPICAL SCUPPER DETAILS
1 1/2" = 1'-0"



9 SCUPPER AXON
1 1/2" = 1'-0"

BID SET

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

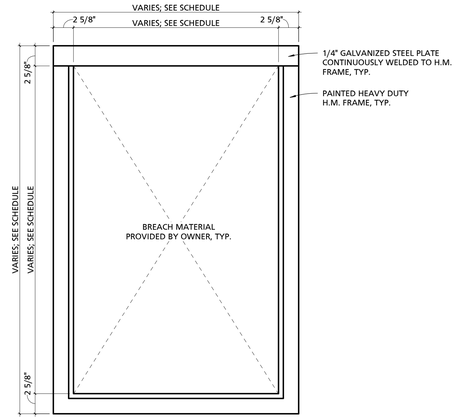
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO

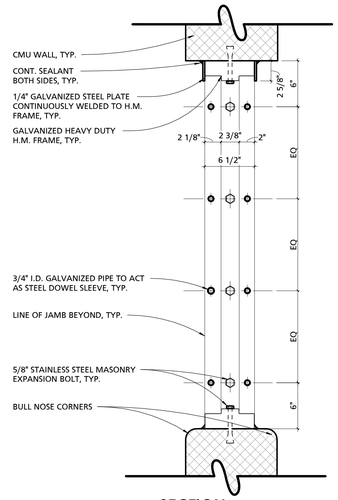
SHEET 72 OF 123

SHEET TITLE
THERMAL LINING, SCUPPER, AND VENT DETAILS

SHEET NO
A902

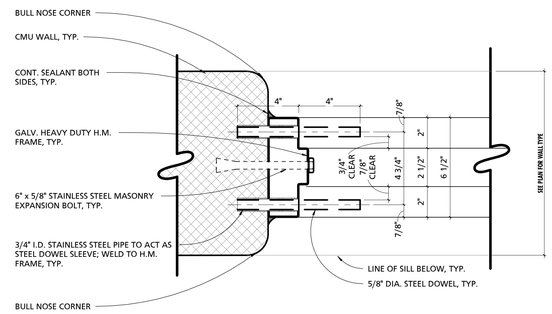


ELEVATION



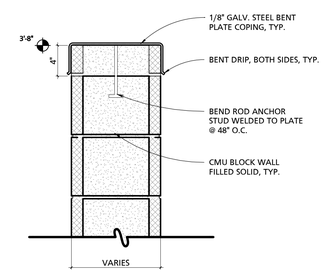
SECTION

1 REMOVABLE PANEL WINDOW PROP DETAILS
1 1/2" = 1'-0"

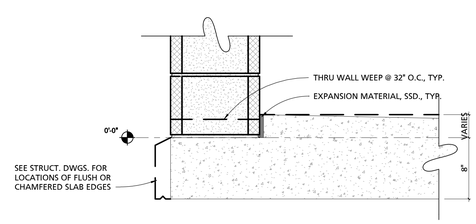


JAMB

2 REMOVABLE PANEL WINDOW JAMB DETAIL
3" = 1'-0"



3 WALL CAP DETAIL
1 1/2" = 1'-0"



4 WEEP DETAIL @ SLOPED SLAB
1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

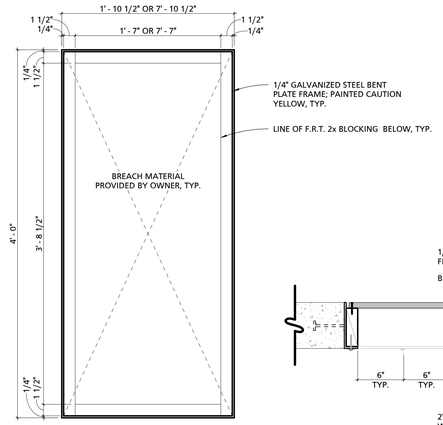
DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

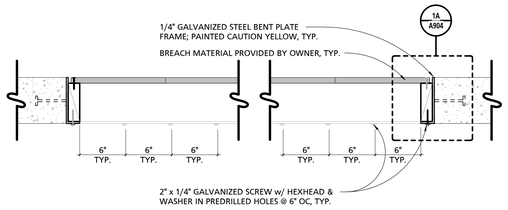
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 73 OF 123
SHEET TITLE WINDOW DETAILS
SHEET NO A903

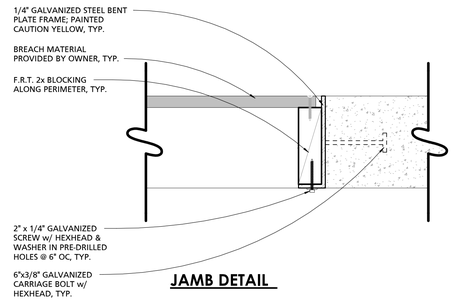


ELEVATION



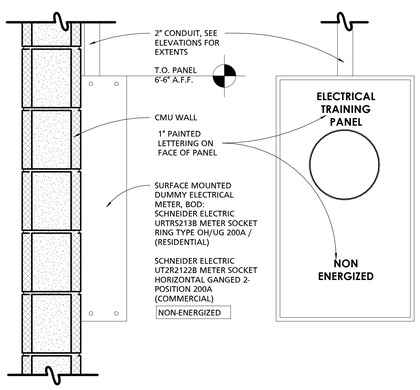
SECTION

1 TYPICAL ROOF CHOP OUT PANEL PROP
1 1/2" = 1'-0"

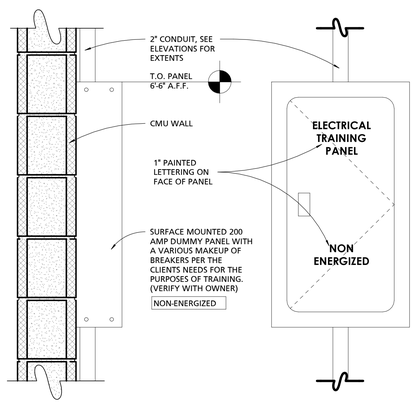


JAMB DETAIL

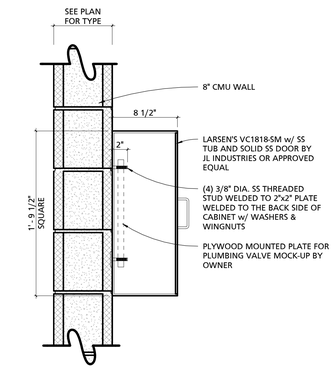
1A TYPICAL ROOF CHOP OUT PANEL PROP - JAMB
3" = 1'-0"



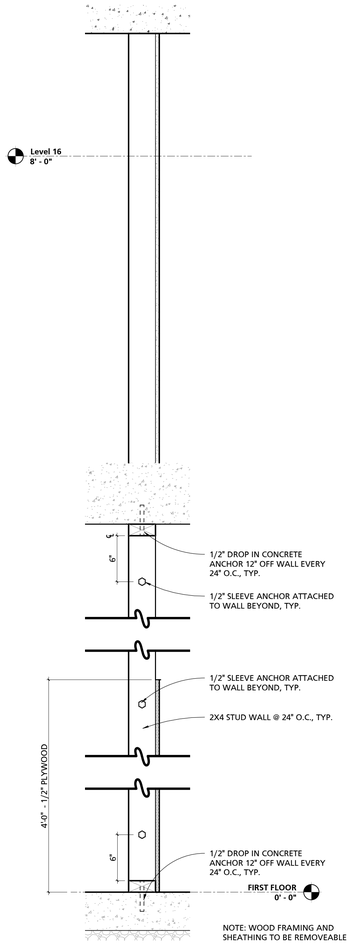
2 TYPICAL MOCK ELECTRICAL METER DETAIL
1 1/2" = 1'-0"



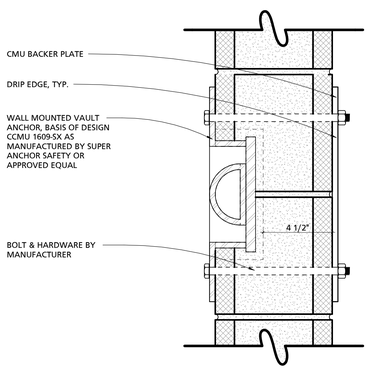
3 TYPICAL MOCK ELECTRICAL PANEL DETAIL
1 1/2" = 1'-0"

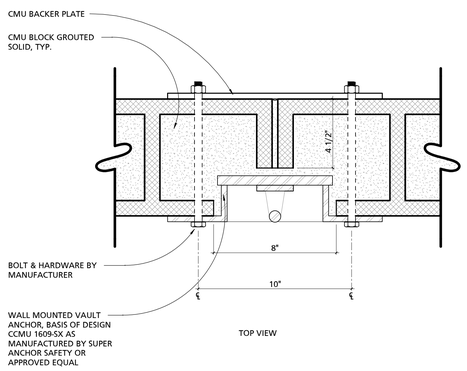


4 TYPICAL MOCK VALVE CABINET DETAIL
1 1/2" = 1'-0"

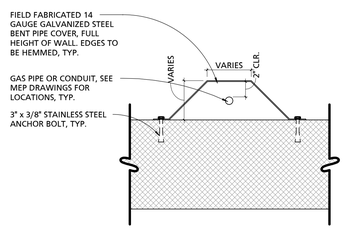


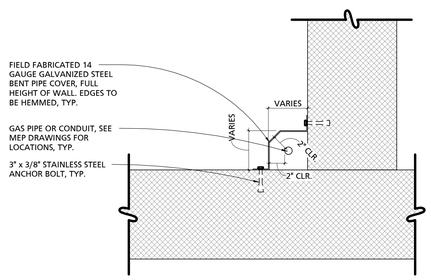
5 DENVER DRILL REMOVABLE WALL DETAIL
1 1/2" = 1'-0"





6 TYPICAL RECESSED LADDER TIE-OFF
3" = 1'-0"





7 TYPICAL PIPE AND CONDUIT ENCLOSURE DETAILS
1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
DRAWN BY JB
CHECKED BY GC
CONSULTANT JOB NO 20-126
DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

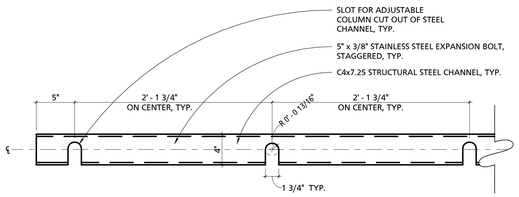
165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 74 OF 123

SHEET TITLE
FIRE PROPS DETAILS

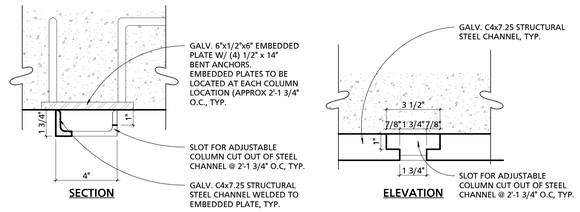
SHEET NO
A904

BID SET



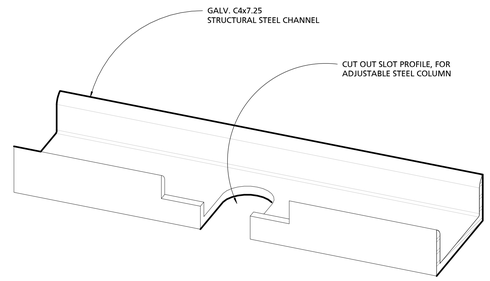
PLAN

1 MAZE COLUMN CHANNEL DETAIL
1 1/2" = 1'-0"

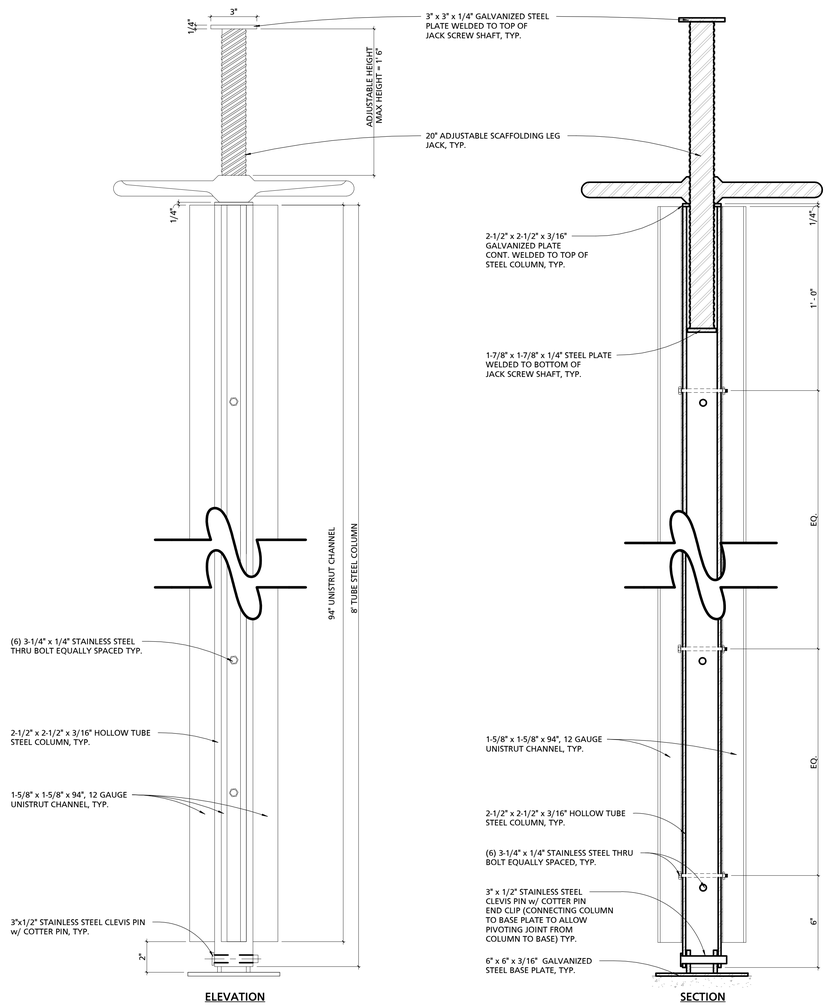


SECTION ELEVATION

2 MAZE COLUMN CHANNEL DETAIL
3" = 1'-0"



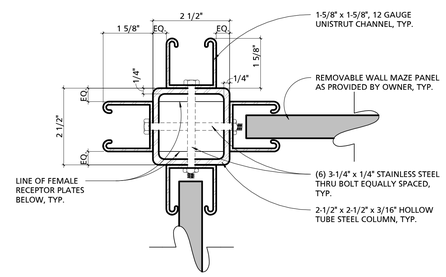
2A MAZE COLUMN CHANNEL AXON
6" = 1'-0"



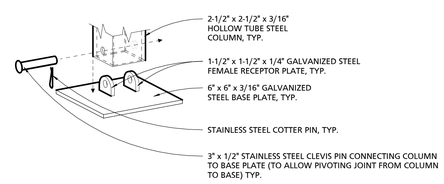
ELEVATION SECTION

NOTE:
- CONTRACTOR TO PROVIDE QTY OF EIGHTY (80) ADJUSTABLE MAZE COLUMNS.
- PROVIDE TWO (2) MOCK UP ADJUSTABLE MAZE COLUMNS.

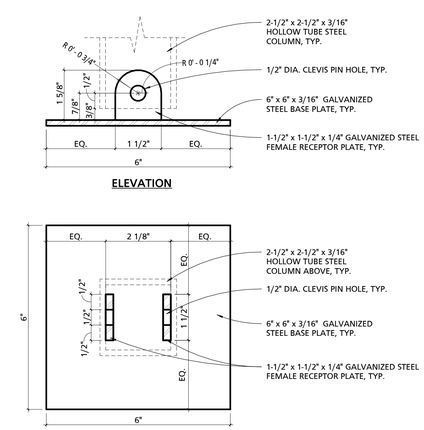
3 ADJUSTABLE MAZE COLUMN ELEVATION & SECTION
3" = 1'-0"



4 ADJUSTABLE MAZE COLUMN PLAN DETAIL
6" = 1'-0"



5 ADJUSTABLE MAZE COLUMN BASE DETAIL
3" = 1'-0"



6 ADJUSTABLE MAZE COLUMN BASE DETAIL
6" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

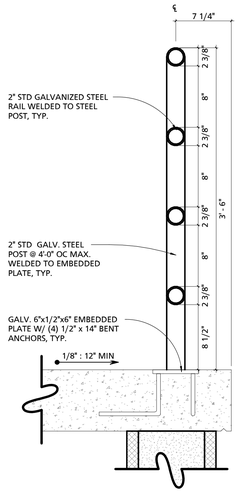
COUNTY DWG NO

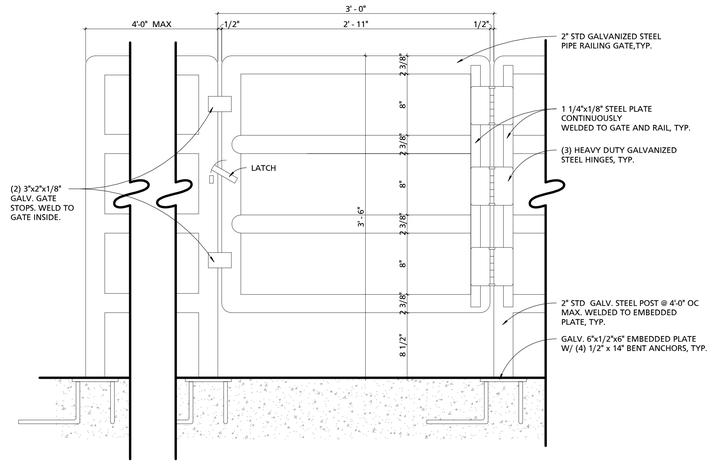
SHEET 75 OF 123

SHEET TITLE
MAZE PANEL DETAILS

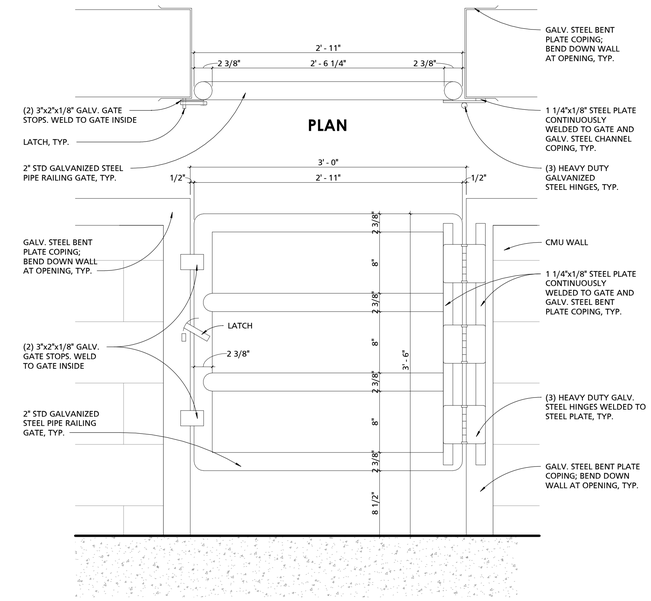
SHEET NO
A905

BID SET



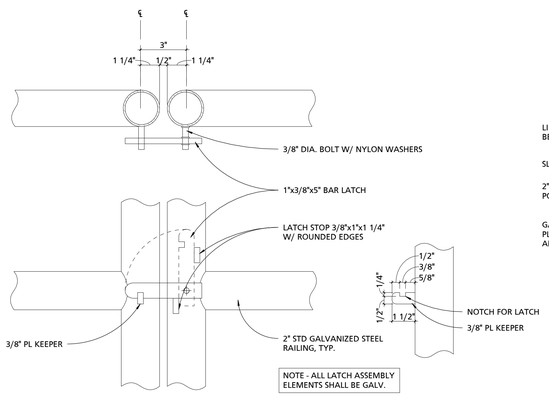


GATE ATTACHED TO PIPE RAILINGS

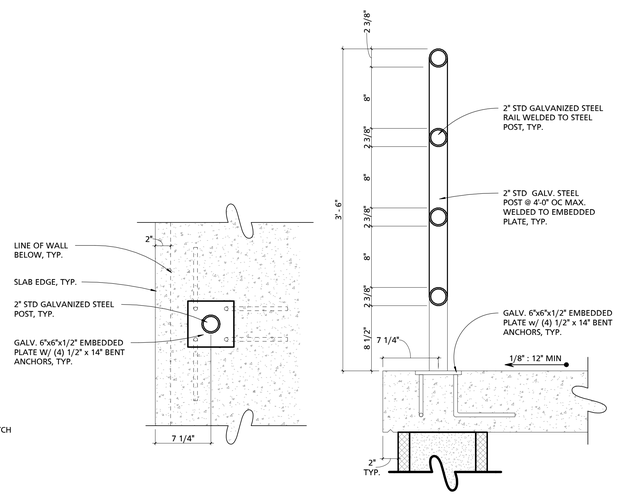


GATE ATTACHED TO GALV. CHANNEL COPING

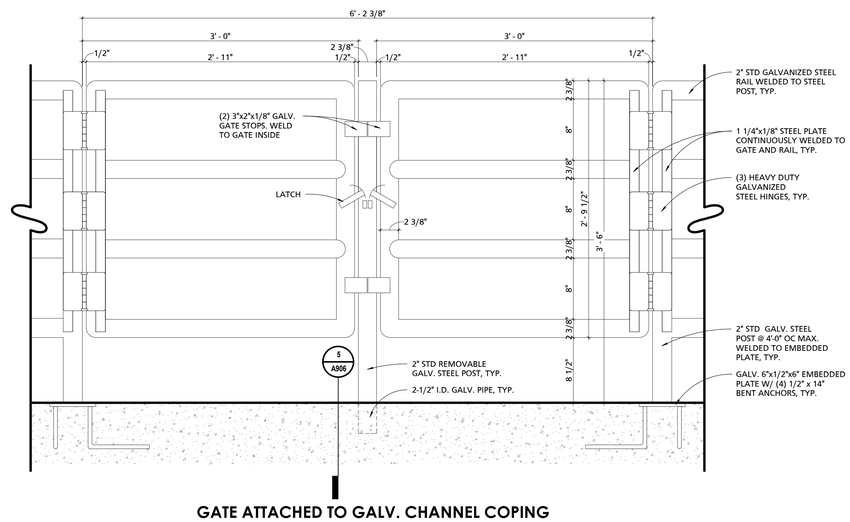
1 RAILING & GATE DETAIL
1 1/2" = 1'-0"



2 GATE LATCH DETAIL
3" = 1'-0"

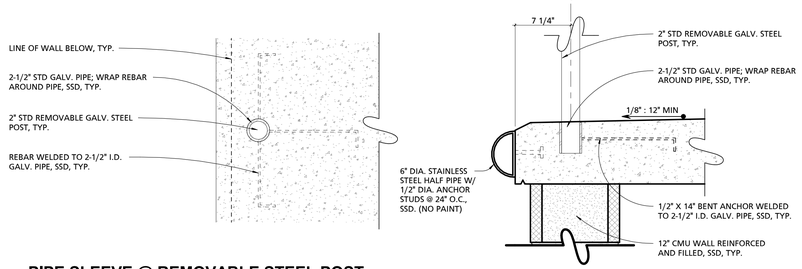


3 2-3/8" PIPE MOUNTING DETAILS
1 1/2" = 1'-0"

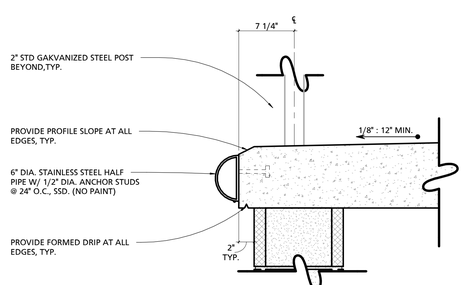


GATE ATTACHED TO GALV. CHANNEL COPING

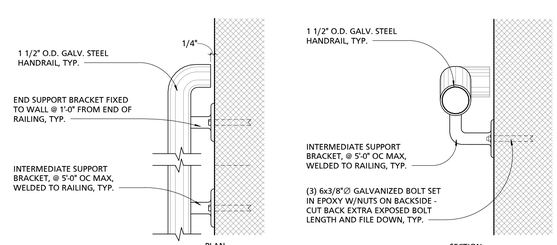
4 DOUBLE GATE DETAIL
1 1/2" = 1'-0"



5 PIPE SLEEVE @ REMOVABLE STEEL POST
1 1/2" = 1'-0"



6 SLAB EDGE
1 1/2" = 1'-0"



NOTE: PROVIDE 1-1/2" DIA. GALVANIZED STEEL HANDRAIL. SECURE TO GUARDRAIL OR WALL WITH MANUFACTURER'S STEEL ELBOW BRACKET.

7 TYPICAL HANDRAIL WALL BRACKET DETAIL
3" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

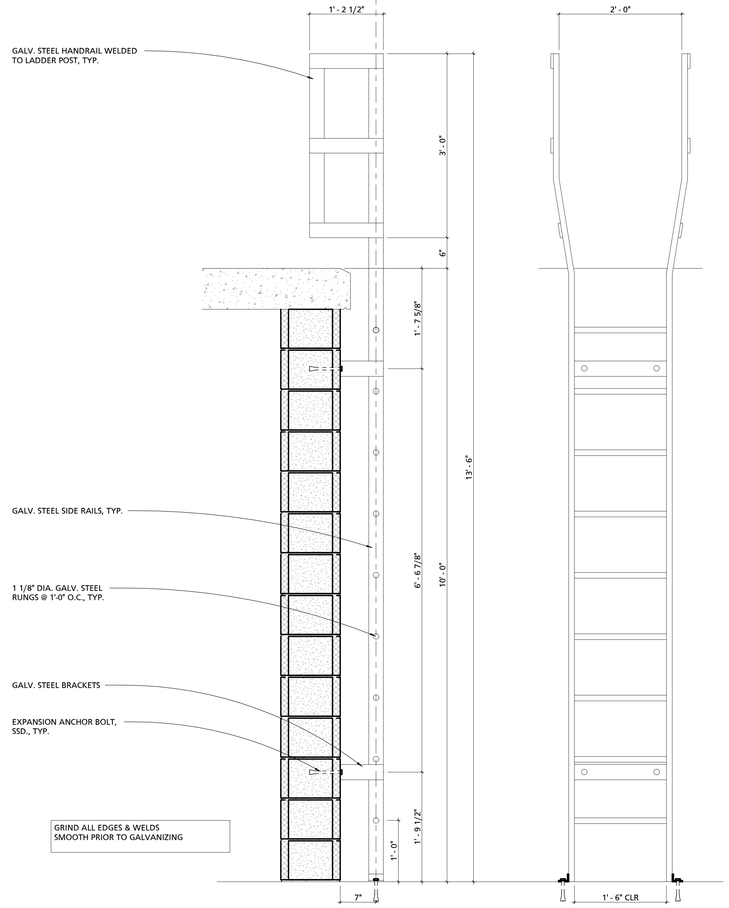
COUNTY DWG NO

SHEET 76 OF 123

SHEET TITLE
RAILING DETAILS

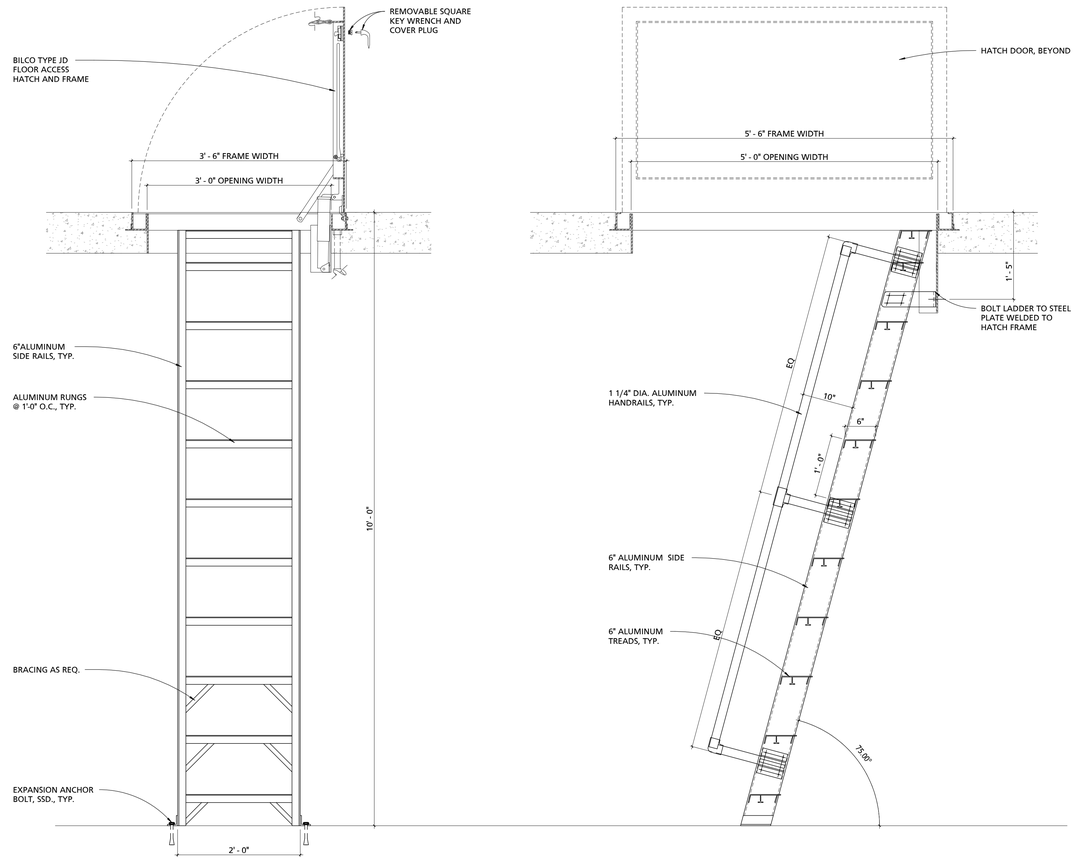
SHEET NO
A906

BID SET



1 LADDER DETAILS

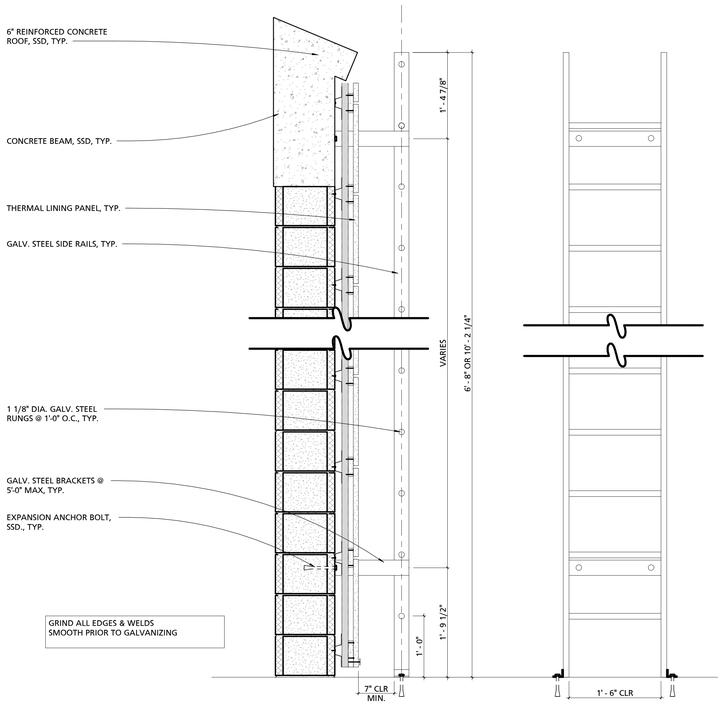
1" = 1'-0"



2 SHIPS LADDER DETAILS

1" = 1'-0"

ALACO H1000-75
75° SHIPS LADDER



3 LADDER DETAILS AT BURN ROOMS

1" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

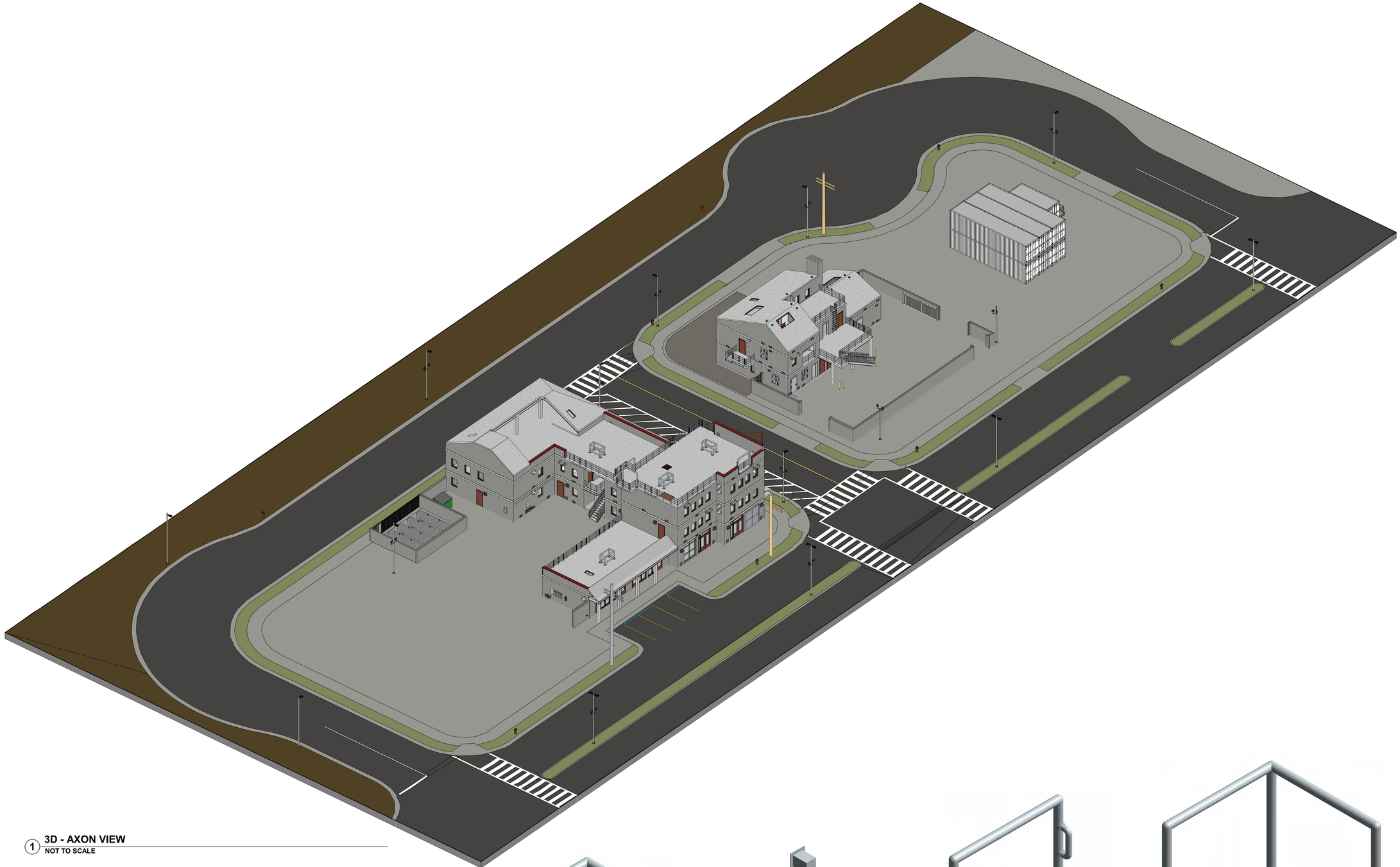
COUNTY DWG NO

SHEET 77 OF 123

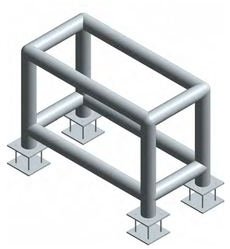
SHEET TITLE
LADDER DETAILS

SHEET NO
A907

BID SET

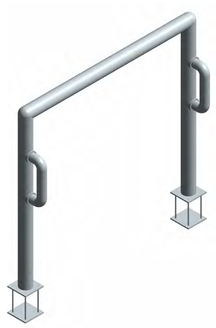


1 **3D - AXON VIEW**
NOT TO SCALE

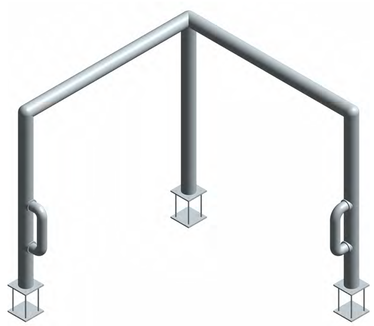


2 **MOCK RTU RAPPELLING TIE OFF TYPE 3 AXON**
NOT TO SCALE

3 **POST / WALL RAPPELLING TIE OFF TYPE 2 AXON**
NOT TO SCALE



4 **HIGH BAR RAPPELLING TIE OFF TYPE 6 AXON**
NOT TO SCALE



5 **HIGH BAR RAPPELLING TIE OFF TYPE 5 AXON**
NOT TO SCALE

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY Author	CHECKED BY Checker
CONSULTANT JOB NO 20-126	DATE 08/21/2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 78 OF 123

SHEET TITLE
3D - AXON VIEWS

SHEET NO
A908

BID SET

MATERIAL SPECIFICATIONS

GENERAL

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE GOVERNING CODE. SEE 'PROJECT DATA'

CONSTRUCTION LIABILITY
THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, AND THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL HARMLESS FROM ANY LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

CONCRETE & REINFORCING

REINFORCING STEEL
BARS #4 AND LARGER FOR REINFORCING OF COLUMNS, WALLS, BEAMS,GIRDERS & FOOTINGS RESISTING SEISMIC LOAD SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A706. ALL OTHER BARS MAY BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A706 OR A615. LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318 - CURRENT EDITION UNLESS NOTED OTHERWISE ON THE PLANS. REINFORCING FOR SHOTCRETE SHALL HAVE NON CONTACT LAP SPLICES PER CBC, CURRENT GOVERNING EDITION. BARS TO BE WELDED OR FIELD BENT SHALL CONFORM TO ASTM A706.

MECHANICAL REINFORCEMENT COUPLING DEVICE
MECHANICAL COUPLING OF REINFORCEMENT SHALL BE LENTON STANDARD COUPLERS BY ERICO (IAPMO ES ER 0129) OR APPROVED EQUAL.

CONCRETE
CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 301 & 318. CONCRETE SHALL BE READY-MIXED CONCRETE IN ACCORDANCE WITH ASTM C94.

MAXIMUM WATER-CEMENT RATIO, BY WEIGHT

28 DAY COMPRESSIVE STRENGTH	WATER-CEMENT RATIO
5000 PSI CONCRETE	0.40
4000 PSI CONCRETE	0.45
3500 PSI CONCRETE	0.45

AVERAGE DRYING SHRINKAGE FOR CONCRETE AFTER 21 DAYS OF DRYING SHALL NOT EXCEED 0.040% IN SUSPENDED SLABS AND 0.048% IN SLABS ON GRADE.

AT THE CONTRACTOR'S OPTION, AN AIR ENTRAINING AGENT CONFORMING TO THE LATEST REVISION OF ASTM SPECIFICATION C260 MAY BE ADDED TO THE CONCRETE TO PROVIDE UP TO A MAXIMUM OF 3% ± 1.5% ENTRAINED AIR. CEMENT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT PER ASTM DESIGNATION C150, TYPE II. NO MORE THAN 15% BY WEIGHT OF CEMENT MAY BE REPLACED BY FLY ASH CONFORMING TO ASTM C618, CLASS N OR F.

CONCRETE ELEMENT	MIN 28 DAY COMPRESSIVE STRENGTH	MAX SIZE AGGREGATE (INCHES)	SLUMP (INCHES)
FOOTINGS	4000	1-1/2	3
SLABS ON GRADE	3500	1	4
CONCRETE BEAMS & SUSPENDED SLABS	5000	3/4	5

SLUMP WILL BE MEASURED AT THE TRUCK DISCHARGE. SLUMPS NOTED ABOVE ARE FOR CONCRETE WITHOUT ADMIXTURES TO BE CONSOLIDATED USING VIBRATION. FORMWORK CONSTRAINTS, CONGESTION OF REBAR, AND PUMPING OF CONCRETE MAY REQUIRE INCREASED SLUMP BEYOND THE SLUMP LISTED ABOVE. THE CONTRACTOR SHALL ADJUST THE SLUMP UP TO 8" MAX USING ADMIXTURES AS NECESSARY TO PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED WITHOUT SEGREGATION OR EXCESSIVE BLEEDING. ALL ADMIXTURES SHALL BE NOTED IN THE SUBMITTED MIX DESIGN AND ARE SUBJECT TO THE ENGINEER'S REVIEW. THE SPECIAL INSPECTOR SHALL BE PROVIDED WITH A BATCH TICKET AND WEIGHT TAG UPON DELIVERY OF EACH LOAD OF CONCRETE.

ALL CONCRETE SHALL BE PLACED WITH MECHANICAL VIBRATION UNLESS NOTED OTHERWISE.

UNDER SLAB MATERIALS
SLAB MEMBRANE SHALL BE 15 MIL POLYETHYLENE FILM, UNLESS NOTED OTHERWISE. LAP SLAB MEMBRANE PER THE MANUFACTURER'S RECOMMENDATIONS, BUT NO LESS THAN 2 FEET.

GRAVEL SHALL BE 3/4" CLEAN MATERIAL MEETING THE REQUIREMENTS OF ACI 302.1R.

NON-SHRINK GROUT
NON SHRINK GROUT SHALL BE FLOWABLE, WITH A MINIMUM 7 DAY COMPRESSIVE STRENGTH OF 5000 PSI. NON-SHRINK GROUT SHALL BE MASTERFLOW 928 GROUT AS MANUFACTURED BY BASF OR APPROVED EQUAL.

MASONRY

STRUCTURAL MASONRY (CMU)
STRUCTURAL MASONRY (CMU) SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 530 & 530.1. COMPLIANCE WITH SPECIFIED DESIGN STRENGTH METHOD SHALL BE BY THE UNIT STRENGTH METHOD. AT THE CONTRACTOR'S OPTION, THE PRISM TEST METHOD MAY BE USED TO CONFIRM COMPLIANCE WITH SPECIFIED DESIGN STRENGTH.

MASONRY UNITS SHALL BE OPEN ENDED MEDIUM WEIGHT UNITS CONFORMING TO ASTM DESIGNATION C90. ALL CELLS SHALL BE GROUTED SOLID. F'm = 2000 PSI. WALL REINFORCEMENT SHALL BE RESTRAINED BY MECHANICAL POSITIONERS AT 48" OC, MAX.

MORTAR SHALL CONFORM TO ASTM C270 TYPE S OR M AND SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI AT 28 DAYS. MASONRY CEMENT MAY NOT BE USED IN MORTAR.

GROUT SHALL BE COARSE GROUT CONFORMING TO ASTM C476. THE GROUT SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. SLUMP SHALL BE 8" TO 10".

POST INSTALLED ANCHORS

EXISTING CONCRETE SURFACES SHALL BE SCANNED PER "AS-BUILT INFORMATION" ON **S0.01** TO ENSURE EXISTING REINFORCEMENT REMAINS UNDAMAGED DURING POST INSTALLED ANCHOR INSTALLATION.

ADHESIVE ANCHORING SYSTEMS FOR CONCRETE
ADHESIVE ANCHORING SYSTEMS SHALL BE:
- HILTI HIT-RE 500 V3 (ICC ESR-3814) OR HIT-HY 200 (ICC ESR 3187)
- SIMPSON SET-XP (ICC ESR-2508) OR AT-XP (IAPMO UES ER-263)
- DEWALTPOWERS PURE 110+ (ICC ESR-3298) OR AC100+ GOLD (ICC ESR-2582)
- APPROVED EQUAL

INSTALLATION OF ANCHORS AND ADHESIVE INCLUDING DRILLING AND CLEANING OF HOLES SHALL BE IN ACCORDANCE WITH THE CURRENT ICC OR IAPMO REPORT. ADHESIVES SHALL BE USED ONLY IN APPLICATIONS PERMITTED BY THE ADHESIVE'S ICC OR IAPMO REPORT. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT TIME OF ANCHOR INSTALLATION.

ADHESIVE ANCHORING SYSTEMS FOR GROUTED CONCRETE BLOCK
ADHESIVE ANCHORING SYSTEMS SHALL BE:
- HILTI HIT HY70 (ICC ESR-2682)
- SIMPSON SET-XP (IAPMO UES ER-265) OR AT-XP (IAPMO UES ER-281)
- DEWALTPOWERS AC100+ GOLD (ICC-ES ESR-3200)
- APPROVED EQUAL

INSTALLATION OF ANCHORS AND ADHESIVE INCLUDING DRILLING AND CLEANING OF HOLES SHALL BE IN ACCORDANCE WITH THE CURRENT ICC OR IAPMO REPORT. ADHESIVES SHALL BE USED ONLY IN APPLICATIONS PERMITTED BY THE ADHESIVE'S ICC OR IAPMO REPORT.

EXPANSION ANCHORS FOR CONCRETE
EXPANSION ANCHORS SHALL BE:
- HILTI KWIK BOLT TZ2 ANCHORS (ICC ESR-4266).
- SIMPSON STRONG BOLT 2 WEDGE ANCHOR (ICC ESR-3037)
- DEWALTPOWERS POWER-STUD+ SD2 (ICC ESR-2502)
- APPROVED EQUAL

CONTRACTOR SHALL TORQUE ANCHORS IN ACCORDANCE WITH THE ICC OR IAPMO REPORT. EXPANSION ANCHORS SHALL USE WASHERS SIZED TO PREVENT CRUSHING OF THE ATTACHED MEMBER UNDER THE INSTALLATION TORQUE.

EXPANSION ANCHORS FOR GROUTED CONCRETE BLOCK
EXPANSION ANCHORS SHALL BE:
- HILTI KWIK BOLT TZ2 WEDGE ANCHORS (ICC ESR-4561)
- SIMPSON STRONG BOLT 2 EXPANSION ANCHOR (IAPMO ER-240)
- DEWALTPOWERS POWER-STUD+ SD1 (ICC ESR-2966)
- APPROVED EQUAL.

CONTRACTOR SHALL TORQUE ANCHORS IN ACCORDANCE WITH THE ICC OR IAPMO REPORT. EXPANSION ANCHORS SHALL USE WASHERS SIZED TO PREVENT CRUSHING OF THE ATTACHED MEMBER UNDER THE INSTALLATION TORQUE.

STRUCTURAL STEEL

STRUCTURAL STEEL AND MISCELLANEOUS IRON
STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC CODE OF STANDARD PRACTICE.

1. WIDE FLANGE AND STRUCTURAL TEE SHAPES SHALL CONFORM TO ASTM A992.
2. CHANNELS AND ANGLES SHALL CONFORM TO ASTM A36.
3. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO ASTM A500, GRADE C.
4. STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B.
5. STRUCTURAL PLATE SHALL CONFORM TO ASTM A36 OR ASTM A572 GR50.
6. RAISED-PATTERN FLOOR PLATE SHALL CONFORM TO ASTM A786.

ALL STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL RECEIVE SHOP PRIME COAT EXCEPT ON SURFACES RECEIVING WELDS, EMBEDDED IN CONCRETE, OR AT SLIP CRITICAL HIGH STRENGTH BOLTS WHICH SHALL BE TOUCHED UP AFTER CONNECTION IS COMPLETE. STRUCTURAL STEEL AND MISCELLANEOUS IRON WHICH IS TO HAVE SPRAY ON FIREPROOFING SHALL NOT BE PAINTED. STRUCTURAL STEEL PERMANENTLY EXPOSED TO WEATHER SHALL RECEIVE TWO COATS OF SEMI-GLOSS ALKYD ENAMEL COMPATIBLE WITH PRIMER.

MACHINE BOLTS, ANCHOR BOLTS AND THREADED RODS
BOLTS, NUTS, WASHERS AND RODS PERMANENTLY EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.

1. BOLTS SHALL CONFORM TO ASTM A307 GRADE A OR B OR A36.
2. ANCHOR BOLTS AND RODS SHALL CONFORM TO ASTM F1554 GR 36.
3. ALL BOLTS & LAG SCREWS SHALL HAVE STANDARD STEEL WASHERS, U.N.O.
4. NUTS SHALL BE AS SHOWN BELOW AND FINISH SHALL MATCH FASTENER.
5. BOLT HOLES SHALL BE STANDARD SIZE (BOLT DIA + 1/16") TYP, U.N.O.

FASTENER GRADE AND SIZE	NUT CLASS	NUT STYLE
ASTM A36 , ASTM A307A, F1554 1/4" TO 1-1/2"	ASTM A563-A	HEX
ASTM A36 , ASTM A307A, F1554, OVER 1-1/2" TO 4"	ASTM A563-A	HEAVY HEX
ASTM A307B, 1/4" TO 4"	ASTM A563-A	HEAVY HEX

WELDING
ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS PER AWS "STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. ALL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS WELDING CODE. ARC WELDING ELECTRODES SHALL BE E70 SERIES FOR A36, A53, A500, A572 & A992 MATERIAL, AND E80 SERIES FOR A706 REINFORCING STEEL.

WELD METAL TOUGHNESS SHALL BE REPORTED ON THE ELECTRODE MANUFACTURER'S CERTIFICATE OF COMPLIANCE. ALL ELECTRODES SHALL BE LOW HYDROGEN WITH A MINIMUM CVN VALUE OF 20 FT-LBS AT -20 DEGREE F. EXCEPTIONS: METAL DECK WELDING, STAIR AND HANDRAIL WELDING, LIGHT GAGE STEEL WELDING.

TACK WELDS, AIR-ARC GOUGING AND FLAME CUTTING SHALL NOT BE PERFORMED WITHOUT ADEQUATE PREHEAT OR INCORPORATION INTO THE FINAL WELD.

THE FILLER METAL MANUFACTURER'S PUBLISHED RECOMMENDATIONS SHALL BE THE BASIS FOR DETERMINING THE ALLOWABLE RANGE OF ESSENTIAL VARIABLES FOR THE PRE QUALIFIED WPS. UNLESS NOTED OTHERWISE ON THE PLANS, BACK-UP BARS FOR CJP WELDS SHALL BE REMOVED FOLLOWED BY BACKGOUGING AND BACKWELDING.

GENERAL NOTES

1. CONSIDER GENERAL NOTES AS APPLYING TO ALL DRAWINGS.
2. DO NOT SCALE DRAWINGS. SCALE SHOWN FOR REFERENCE ONLY.
3. THE CONTRACTOR SHALL REFER TO THE PROJECT SPECIFICATIONS IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, AND MEP CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND RESOLVED PRIOR TO BIDDING AND PROCEEDING WITH THE WORK.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS REQUIRED TO COMPLETE THE PROJECT. NO PORTION OF THE STRUCTURE SHALL BE CONSIDERED TO BE SELF SUPPORTING UNTIL THE ENTIRE VERTICAL AND LATERAL LOAD RESISTING SYSTEM IS IN PLACE.
6. THE CONTRACTOR SHALL PROTECT AND SHORE ALL EXCAVATIONS WITH BRACING AND SHORING AS REQUIRED TO MAINTAIN SOIL STABILITY.
7. CONSTRUCT THOSE FEATURES OF THE PROJECT, WHICH MAY NOT BE FULLY SHOWN, IN MANNER SIMILAR TO THAT USED FOR SIMILAR FEATURES.
8. CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, U.N.O.
9. CENTERLINES OF FOUNDATION GRADE BEAMS COINCIDE WITH CENTERLINES OF WALLS, U.N.O.
10. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, U.N.O.
11. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING PROPOSED FOUNDATION CONSTRUCTION JOINT LOCATIONS, DETAILS, AND THE PLACEMENT SEQUENCE FOR THE STRUCTURAL ENGINEER'S APPROVAL PRIOR TO PROCEEDING WITH WORK.
12. NO CONSTRUCTION JOINTS WILL BE PERMITTED IN BEAMS, WALLS, AND SLABS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
13. SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE ENGINEER.
    SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS. VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ARCHITECTURAL DRAWINGS AND MECHANICAL DRAWINGS. NOTIFY STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES TYPICAL, U.N.O.

SUBMITTALS

SUBMITTALS FOR THE ENGINEERS REVIEW WILL BE REQUIRED AS FOLLOWS:
1. REINFORCING STEEL SHOP DRAWINGS
2. MIX DESIGNS
3. STRUCTURAL MASONRY (CMU) CERTIFICATES OF COMPLIANCE AND GROUT MIX DESIGNS
4. MASONRY CONTROL JOINT SHOP DRAWINGS
5. STRUCTURAL STEEL AND MISCELLANEOUS METALS SHOP DRAWINGS
6. WELDING PROCEDURE SPECIFICATIONS (AND PQR IF APPLICABLE)

NOTES:
1. CONTRACTOR SHALL ELECTRONICALLY SUBMIT SUBMITTALS FOR REVIEW OR SHALL SUBMIT A MINIMUM OF TWO SETS OF HARD PRINTS FOR REVIEW.
2. THE GENERAL CONTRACTOR SHALL REVIEW EACH SUBMITTAL PRIOR TO FORWARDING TO ARCHITECT AND STRUCTURAL ENGINEER. THE GENERAL CONTRACTOR SHALL VERIFY THAT THE SHOP DRAWING IS COORDINATED AMONG ALL CONSTRUCTION TRADES AND THAT THE ARCHITECT'S AND STRUCTURAL ENGINEER'S COMMENTS FROM ANY PREVIOUS SUBMITTALS ARE ADDRESSED.
3. CONTRACTOR SHALL SUBMIT IN WRITING, ANY REQUEST FOR MODIFICATIONS TO THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING REQUESTED.
4. REVISIONS FROM PREVIOUS SUBMITTALS SHALL BE CLEARLY MARKED BY CLOUDS.
5. FABRICATION SHALL NOT PROCEED UNTIL SUBMITTALS HAVE BEEN REVIEWED BY THE ENGINEER.

CONTRACTOR'S STATEMENT OF RESPONSIBILITY
EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A SEISMIC OR WIND-FORCE RESISTING SYSTEM OR COMPONENT SHALL ISSUE A WRITTEN STATEMENT OF RESPONSIBILITY IN COMPLIANCE WITH SECTION 1704.4 OF THE CURRENT GOVERNING EDITION OF THE CALIFORNIA BUILDING CODE. THE CONTRACTORS STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

PROJECT DESCRIPTION

BURN BUILDING

LEVELS: 3 STORY

FOUNDATION: CONTINUOUS GRADE BEAMS AND ISOLATED COLUMN FOUNDATIONS & CONCRETE SLAB ON GRADE

FLOOR SYSTEM: 1 WAY CONCRETE SLAB ON CONCRETE BEAM AND COLUMNS

ROOF SYSTEM: 1 WAY CONCRETE SLAB ON CONCRETE BEAM AND COLUMNS

LATERAL FORCE RESISTING SYSTEM: SPECIAL REINFORCED MASONRY SHEARWALLS

DIAPHRAGMS: CONCRETE SLAB

CHORDS & COLLECTORS: REINFORCING IN MASONRY WALLS

MULTI-PURPOSE BUILDING

LEVELS: 4 STORY

FOUNDATION: CONTINUOUS GRADE BEAMS AND ISOLATED COLUMN FOUNDATIONS & CONCRETE SLAB ON GRADE

FLOOR SYSTEM: 1 WAY CONCRETE SLAB ON CONCRETE BEAM AND COLUMNS

ROOF SYSTEM: 1 WAY CONCRETE SLAB ON CONCRETE BEAM AND COLUMNS

LATERAL FORCE RESISTING SYSTEM: SPECIAL REINFORCED MASONRY SHEARWALLS

DIAPHRAGMS: CONCRETE SLAB

CHORDS & COLLECTORS: REINFORCING IN MASONRY WALLS

PROJECT DATA

1. PLANS AND CALCULATIONS FOR THE STRUCTURAL DESIGN WERE BASED UPON:
   - GOVERNING CODE: 2019 CALIFORNIA BUILDING CODE
   - SOILS REPORT: "GEOTECHNICAL ENGINEERING AND GEOLOGIC/SEISMIC HAZARD INVESTIGATION" BY COTTON, SHIRES AND ASSOCIATES, INC. DATED JULY 2020

2. VERTICAL LOADS:
   FLOOR LIVE LOAD = 100 PSF
   ROOF LIVE LOAD = 50 PSF

3. EARTHQUAKE DESIGN DATA:
   EQUIVALENT LATERAL FORCE PROCEDURE
   $V = \frac{S_{DS}\, I}{R} W$
   $S_{S} = 1.686$; $S_{1} = 0.624$
   $S_{DS} = 1.124$; $S_{D1} = 0.707$
   I = 1.0; RISK CATEGORY II
   SITE CLASS = D; SEISMIC DESIGN CAT = D
   SEISMIC RESISTING SYSTEM: SPECIAL REINFORCED MASONRY WALLS
   $R = 5.0$; $\Omega_0 = 2.5$; $C_d = 3.5$

   V = 0.225 W [LRFD]

4. WIND DESIGN DATA:
   BASIC WIND SPEED = 95 MPH
   RISK CATEGORY II
   WIND EXPOSURE = C
   INTERNAL PRESSURE COEFFICIENT = +0.18, -0.18
   DESIGN WIND PRESSURE = 18.5 PSF
   WALL COMPONENTS AND CLADDING PRESSURE = +21.8 (ALL ZONES), -29.2 PSF (ZONE 5) [LRFD]
   ROOF COMPONENTS AND CLADDING PRESSURE = +16.0 (ALL ZONES), -45.8 PSF (ZONE 2) [LRFD]

   NOTE: COMPONENTS & CLADDING PRESSURES ABOVE ARE WORST CASE PRESSURES BASED ON 10 SF TRIBUTARY AREA AND MAY BE REDUCED PER ASCE 7. POSITIVE AND NEGATIVE PRESSURES SIGNIFY WIND ACTING TOWARD AND AWAY FROM SURFACES, RESPECTIVELY.

5. FOUNDATION DESIGN CRITERIA:
   BEARING PRESSURES:
   DL + LL 2000 PSF
   TOTAL LOAD 2667 PSF

SHEET INDEX

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MN STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DAVID AUSTIN G. LEGG
No. 58623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO | SHEET 79 OF 123

SHEET TITLE
MATERIALS SPECIFICATIONS & PROJECT INFORMATION

SHEET NO S001

TESTING AND SPECIAL INSPECTION

GENERAL

THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR DURING CONSTRUCTION ON THE FOLLOWING TYPES OF WORK.

SPECIAL INSPECTOR

- THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE HIS COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF A PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- TESTING AND INSPECTIONS WILL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY SELECTED AND EMPLOYED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL. PROCEDURAL AND ACCEPTANCE CRITERIA ARE SET FORTH IN THE 2019 CALIFORNIA BUILDING CODE (CBC) SEC. 1704.

DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR

- THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPLICABLE PROJECT DRAWINGS AND SPECIFICATIONS.
- THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE OWNER OR OWNER'S DESIGNATED REPRESENTATIVE, THE ARCHITECT OR PROJECT MANAGER, THE STRUCTURAL ENGINEER OF RECORD, THE CONTRACTOR AND OTHER PERSONS DESIGNATED BY THE OWNER OR OWNER'S REPRESENTATIVE. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF UNCORRECTED, TO THE PROPER DESIGN AUTHORITY AND TO THE BUILDING OFFICIAL.
- THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE CBC.

SOILS & FOUNDATIONS

SOILS

- PERIODICALLY INSPECT MATERIALS BELOW FOOTING FOR BEARING CAPACITY.
- PERIODICALLY INSPECT EXCAVATIONS FOR PROPER DEPTH.
- PERIODICALLY PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS.
- CONTINUOUSLY VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.
- PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY SITE HAS BEEN PREPARED PROPERLY.

FOUNDATIONS

PRIOR TO THE CONTRACTOR REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE SOILS ENGINEER SHALL ADVISE THE BUILDING DEPARTMENT OF THE FOLLOWING IN WRITING:

- THAT THE BUILDING PAD WAS PREPARED IN ACCORDANCE WITH THE SOILS REPORT.
- THAT THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILLED AND COMPACTED.
- THAT THE FOUNDATION COMPLY WITH THE SOILS REPORT AND THE APPROVED PLANS.

CONCRETE & REINFORCING

REINFORCING STEEL

- VERIFY THAT MILL CERTIFICATES SHOW REINFORCING STEEL IS IN COMPLIANCE WITH PROJECT SPECIFICATIONS.
- TAKE A 5' LONG SAMPLE OF EACH BAR SIZE FROM EACH HEAT FOR EACH TYPE OF REINFORCING STEEL SHALL BE TESTED FOR ULTIMATE STRENGTH, YIELD STRESS, MODULUS OF ELASTICITY AND PERCENT ELONGATION AT RUPTURE.
- PERIODICALLY INSPECT THE PLACEMENT OF REINFORCING STEEL FOR SHOTCRETE, FOR CONCRETE WHICH IS REQUIRED TO HAVE CONTINUOUS INSPECTION AND FOR MASONRY.
- CONTINUOUSLY INSPECT THE INSTALLATION OF ALL MECHANICAL COUPLING DEVICES.

BOLTS INSTALLED IN CONCRETE

- PERIODICALLY INSPECT INSTALLATION OF BOLTS AND CONTINUOUSLY INSPECT PLACEMENT OF CONCRETE AROUND SUCH BOLTS.

CONCRETE

- CONTINUOUSLY INSPECT THE PLACEMENT OF ALL CONCRETE EXCEPT PERIODIC INSPECTION MAY BE PROVIDED FOR THE PLACEMENT OF CONCRETE FOR FOUNDATIONS WITH f'c EQUAL TO 2500 PSI OR LESS AND NON-STRUCTURAL SLABS ON GRADE.
- SAMPLE CONCRETE: ASTM C172, EXCEPT SLUMP SHALL COMPLY WITH ASTM C94.
- TEST SLUMP: ASTM C143, ONE TEST AT POINT OF TRUCK DISCHARGE FOR 150 CY OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE; ADDITIONAL TESTS REQUIRED WHEN CONCRETE CONSISTENCY SEEMS TO HAVE CHANGED.
- TEST AIR CONTENT: ASTM C173, VOLUMETRIC METHOD FOR LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE, ONE FOR EACH 150 CY PLACED OR FRACTION THEREOF FOR EACH TYPE OF AIR-ENTRAINED CONCRETE.
- TEST CONCRETE TEMPERATURE: TEST HOURLY WHEN AIR TEMPERATURE IS 50 DEGREES F. (10 DEGREES C.) AND BELOW, AND WHEN 85 DEGREES F. (29 DEGREES C.) AND ABOVE; AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE.
- TAKE COMPRESSION TEST SPECIMENS: ASTM C31, TAKE ONE SET OF 3 STANDARD CYLINDERS FOR EACH 150 CY OF CONCRETE OR 5000 SQ. FT. OF SLABS & WALLS OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE TAKEN EACH DAY. MOLD AND STORE CYLINDERS FOR LABORATORY CURED TEST SPECIMENS EXCEPT WHEN FIELD-CURE TEST SPECIMENS ARE REQUIRED.
- TAKE FIELD CURED COMPRESSION TEST SPECIMENS: ASTM C31, TAKE ONE SET OF 3 STANDARD CYLINDERS FOR EACH 150 CY OF CONCRETE OR 5000 SQ. FT. OF SLABS & WALLS OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE PLACED EACH DAY; WHEN THE CONTRACTOR PLANS TO REMOVE FORM WORK, FALSE WORK OR SHORING SOONER THAN 7 DAYS FOR VERTICAL FORM WORK AND 14 DAYS FOR SHORING AND FALSE WORK; OR WHEN POST-TENSIONING IS REQUIRED.
- TEST COMPRESSIVE STRENGTH: ASTM C39; ONE SPECIMEN TESTED AT 7 DAYS, TWO SPECIMENS TESTED AT 28 DAYS.
- TEST DRYING SHRINKAGE: ASTM C157, TAKE 1 SET OF 3 DRYING SHRINKAGE SAMPLES FOR EACH DAY'S POUR OF SLABS ON GRADE, SUSPENDED SLABS, AND POST-TENSIONED CONCRETE SLABS.

NON-SHRINK GROUT

- TAKE TEST SPECIMENS AND CONTINUOUSLY INSPECT THE PLACEMENT OF NON-SHRINK GROUT.

MASONRY

STRUCTURAL MASONRY (LEVEL B INSPECTION)

- VERIFY THAT LETTERS OF CERTIFICATION FOR UNITS AND GROUT ARE IN COMPLIANCE WITH THE PROJECT SPECIFICATIONS AND PROJECT SUBMITTALS.
- AT START OF CONSTRUCTION, VERIFY PROPORTIONS OF SITE-PREPARED MORTAR, CONSTRUCTION OF MORTAR JOINTS, AND LOCATION OF REINFORCEMENT.
- PERIODICALLY INSPECT SIZE OF STRUCTURAL ELEMENTS, ANCHOR ASSEMBLIES, AND REINFORCEMENT SIZE, GRADE AND TYPE.
- PRIOR TO GROUTING, VERIFY THAT GROUT SPACE IS CLEAN, PLACEMENT OF REINFORCING, ANCHOR ASSEMBLIES, CONSTRUCTION OF MORTAR JOINTS AND PROPORTIONS OF SITE-PREPARED GROUT COMPLY WITH SPECIFICATIONS.
- CONTINUOUSLY INSPECT GROUT PLACING.
- TEST GROUT TEMPERATURE HOURLY WHEN AIR TEMPERATURE IS 40 DEGREES F. AND BELOW, AND WHEN 90 DEGREES F. (29 DEGREES C.) AND ABOVE.
- CONTINUOUSLY INSPECT PREPARATION OF REQUIRED PRISMS.
- TEST 3 PRISMS FOR EACH 5000 SQUARE FEET OF WALL.

POST INSTALLED ANCHORS

POST-INSTALLED ANCHORS

- THE SPECIAL INSPECTOR SHALL VERIFY THE INSPECTION REQUIREMENTS WITH THE ICC REPORT FOR EACH ANCHOR TYPE.
- THE SPECIAL INSPECTOR SHALL VERIFY THE INITIAL INSTALLATIONS OF EACH TYPE AND SIZE OF ANCHOR BY CONSTRUCTION PERSONNEL.
- PERIODICALLY INSPECT PLACEMENT OF POST-INSTALLED ANCHORS.
- CONTINUOUSLY INSPECT PLACEMENT OF OVERHEAD (VERTICAL UP) POST-INSTALLED ANCHORS.
- THE SPECIAL INSPECTOR SHALL VERIFY THE FOLLOWING AND RECORD THE INSTALLATION IN THE INSPECTION REPORT:
  1. ANCHOR TYPE, SIZE, AND DIMENSIONS.
  2. HOLE DIMENSIONS AND CLEANLINESS.
  3. ANCHOR SPACING.
  4. EDGE DISTANCE.
  5. ANCHOR EMBEDMENT.
  6. TORQUE VALUE (AS APPLICABLE).
  7. ADHESIVE TYPE AND EXPIRATION (AS APPLICABLE).
  8. ADHESIVE ANCHOR INSTALLER CERTIFICATION (AS APPLICABLE).

STRUCTURAL STEEL

STRUCTURAL STEEL AND MISCELLANEOUS IRON

- VERIFY THAT MILL CERTIFICATES SHOW STRUCTURAL STEEL AND MISCELLANEOUS IRON IS IN COMPLIANCE WITH PROJECT SPECIFICATIONS.

WELDING

- VERIFY WELDER CERTIFICATIONS, COMPLIANCE WITH WELDING PROCEDURE SPECIFICATIONS AND PQR (IF APPLICABLE).
- CONTINUOUSLY INSPECT ALL STRUCTURAL WELDING, INCLUDING WELDING OF REINFORCING STEEL.

EXCEPTIONS:

- SINGLE PASS FILLET WELDS NOT EXCEEDING 5/16" MAY HAVE PERIODIC INSPECTION.
- FLOOR AND ROOF DECK WELDING MAY HAVE PERIODIC INSPECTION.
- WELDED STUDS USED FOR DIAPHRAGM OR COMPOSITE CONSTRUCTION MAY HAVE PERIODIC INSPECTION.
- WELDED SHEET STEEL FOR COLD FORMED STEEL FRAMING MAY HAVE PERIODIC INSPECTION.
- WELDED STAIRS AND RAILING SYSTEMS MAY HAVE PERIODIC INSPECTION.

NONDESTRUCTIVE TESTING:

- MAGNETIC PARTICLE TESTING OF 100% OF WEBS WHERE WELDING OF PLATES HAS OCCURRED IN THE K-AREA.
- ULTRASONIC TESTING OF 100% OF COMPLETE JOINT PENETRATION GROOVE WELDS ON MATERIALS 5/16" THICK AND GREATER.
- MAGNETIC PARTICLE TESTING OF 25% OF COMPLETE JOINT PENETRATION GROOVE WELDS OF BEAM TO COLUMN JOINTS.
- ULTRASONIC TESTING OF 100% OF COMPLETE JOINT PENETRATION GROOVE WELDS ON TEE AND CORNER JOINTS WHERE MATERIAL THICKER THAN 3/4" IS CONNECTED TO BASE METAL THICKER THAN 1-1/2".

EXCEPTION:

- THE RATE OF TESTING FOR ULTRASONIC WELDS MAY BE REDUCED TO 25% IF THE FAILURE RATE MEETS THE REQUIREMENTS OF AISC 341 APPENDIX Q.

ABBREVIATIONS

ABBREVIATIONS

@	AT
ø	DIAMETER
#	NUMBER
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAILING
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BVC	BEGIN VERTICAL CURVE
C-C	CENTER TO CENTER
CL	CENTERLINE
CF	CUBIC FOOT
CIDH	CAST IN DRILLED HOLE
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CLG	CEILING
CLR	CLEAR. CLEARANCE
CMP	CORRUGATED STEEL PIPE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CSK	COUNTERSINK
CY	CUBIC YARD
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DET	DETAIL
DF	DOUGLAS FIR
DIAG	DIAGONAL
ø	DIAMETER
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DWG	DRAWING
(E)	EXISTING
EA	EACH
EC	END HORIZONTAL CURVE
ECR	END CURB RETURN
EL	ELEVATION
ELEV	ELEVATOR
EMB	EMBANKMENT
EN	EDGE NAILING
EQ	EQUAL
EVC	END VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPRESSWAY
FBC	FRAMED BEAM CONNECTION
FG	FINISHED GRADE
FIN	FINISH(ED)
FL	FLOW LINE
FND	FOUNDATION
FOC	FACE OF CONCRETE
FOHC	FREE OF HEART CENTER
FOM	FACE OF MASONRY
FOS	FACE OF STUD(S)
FP	FULL PENETRATION
FS	FAR SIDE
FTG	FOOTING
Ga	GAUGE
GALV	GALVANIZED
GLB	GLUE LAMINATED BEAM
H or HT	HEIGHT
HDR	HEADER
HEX	HEXAGONAL
HGR	HANGER
HORIZ	HORIZONTAL
HS	HIGH STRENGTH
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STRUCTURAL SECTION
ID	INSIDE DIAMETER
INSP	INSPECTION/INSPECTOR
INSUL	INSULATION
JT	JOINT
KIPS	ONE THOUSAND POUNDS
LBS	POUNDS
LF	LINEAR FOOT
LGS	LIGHT GAUGE STEEL
LL	LIVE LOAD
LLBB	LONG LEGS BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LOL	LAYOUT LINE
LONGIT	LONGITUDINAL
LS	LAG SCREW(S)
LT	LEFT
LW	LIGHT WEIGHT
MAX	MAXIMUM
MB	MACHINE BOLT(S)
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM, MINUTES
MISC	MISCELLANEOUS
MOD	MODIFIED OR MODIFY
(N)	NEW
NIC	NOT IN CONTRACT
No.	NUMBER
ø	NOMINAL DIAMETER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OG	ORIGINAL GROUND
OH	OPPOSITE HAND
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST
PL	STEEL PLATE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE OR PORTLAND CEMENT CONCRETE
PCP	PERFORATED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PDF	POWDER DRIVEN FASTENER
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
P/L	PROPERTY LINE
PL	PLATE
PLY	PLYWOOD
POC	POINT ON HORIZONTAL CURVE
POT	POINT ON TANGENT
POVC	POINT ON VERTICAL CURVE
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OR POST TENSION
PTDF	PRESSURE TREATED DOUGLAS FIR
PVC	POLYVINYL CHLORIDE
RAD or R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REINF	REINFORCED, REINFORCING
REQ'D	REQUIRED
REV	REVISION
RS	ROUGH SAWN
RT	RIGHT
RW	RETAINING WALL
RWD	REDWOOD
R/W	RIGHT OF WAY
SAD	SEE ARCHITECTURAL DRAWINGS
SCHED	SCHEDULE
SEC	SECTION
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SLRS	SEISMIC LOAD RESISTING SYSTEM
SM	SHEET STEEL
SMS	SHEET STEEL SCREW
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STAG	STAGGERED
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
STS	SELF TAPPING SCREW
SYM	SYMMETRICAL
T&G	TONGUE AND GROOVE
TBR	TO BE REMOVED
TEMP	TEMPORARY
TO	TOP OF
TOF	TOP OF FOOTING
TOP	TOP OF PLATE
TOS	TOP OF SLAB OR STEEL
TOW	TOP OF WALL
TRANS	TRANSVERSE
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
VERT	VERTICAL
W/	WITH
WF	WIDE FLANGE
WP	WATERPROOF or WORKPOINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

STRUCTURAL OBSERVATION

REQUIRED OBSERVATION BY THE STRUCTURAL ENGINEER OF RECORD

1. FOUNDATION REINFORCING.
2. CMU CONSTRUCTION PRIOR TO GROUTING.
3. SLAB REINFORCING.

CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 2 WORKING DAYS PRIOR TO THE TIME WHEN HIS PRESENCE IS REQUIRED. PLEASE NOTE THAT THESE OBSERVATIONS ARE INDEPENDENT OF INSPECTIONS REQUIRED BY THE BUILDING DEPARTMENT.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEWIS
No. 58623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

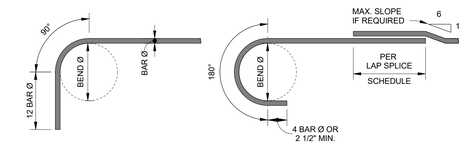
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 80 OF 123

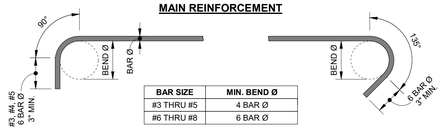
SHEET TITLE
TESTING & SPECIAL INSPECTION

SHEET NO
S002



BAR SIZE	MIN. BEND Ø
#3 THRU #8	6 BAR Ø
#9 THRU #11	8 BAR Ø

MAIN REINFORCEMENT



BAR SIZE	MIN. BEND Ø
#3 THRU #5	4 BAR Ø
#6 THRU #8	6 BAR Ø

STIRRUPS & TIES

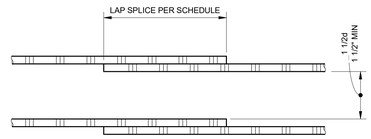
REINFORCING BAR HOOKS

1 1/2" = 1'-0"

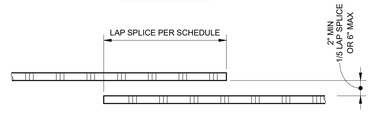
1 / S101

MINIMUM LAP SPLICE SCHEDULE							
BAR SIZE	POSITION	LAP SPLICE LENGTH IN INCHES					
		F'c ≤ 3500 PSI		F'c = 4000 PSI		F'c = 5000 PSI	
		CLASS A	CLASS B	CLASS A	CLASS B	CLASS A	CLASS B
#3	TOP	24	28	24	25	24	24
	BOTTOM	24	24	24	24	24	24
#4	TOP	29	38	25	33	24	29
	BOTTOM	24	29	24	25	24	24
#5	TOP	36	47	31	41	28	36
	BOTTOM	28	36	24	31	24	28
#6	TOP	43	56	37	49	34	44
	BOTTOM	33	43	29	37	26	34
#7	TOP	63	81	54	71	49	63
	BOTTOM	48	63	42	54	38	49
#8	TOP	72	93	62	81	56	72
	BOTTOM	55	72	48	62	43	56
#9	TOP	81	105	70	91	63	81
	BOTTOM	62	81	54	70	48	63
#10	TOP	91	118	79	102	71	92
	BOTTOM	70	91	61	79	54	71
#11	TOP	101	131	87	114	78	102
	BOTTOM	78	101	67	87	60	78

NOTES:
1. LAP SPLICE LOCATIONS SHALL BE APPROVED BY THE ENGINEER.
2. LAP SPLICES SHALL BE CONTACT (CLASS B) FOR CAST-IN-PLACE CONCRETE UNLESS NOTED OTHERWISE.
3. TOP BARS ARE HORIZONTAL BARS WITH 12 INCHES OR MORE OF FRESH CONCRETE BELOW THE BAR.
4. WHEN TWO BARS OF DIFFERENT SIZE ARE SPLICED, USE THE LARGER LAP LENGTH.
5. STAGGER LAP SPLICES WHERE POSSIBLE. WHERE CLASS A SPLICES ARE CALLED OUT ON THE DRAWINGS, STAGGER LAP SPLICES 24 INCHES FOR ADJACENT BARS.
6. LAP SPLICES NOTED ARE FOR NORMAL WEIGHT CONCRETE. LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.3 FOR LIGHTWEIGHT CONCRETE.
7. NO SPLICES ARE ALLOWED FOR #14 AND #18 REINFORCEMENT.
8. BAR DEVELOPMENT LENGTHS EQUAL CLASS A LAP SPLICE LENGTHS.
9. ENTIRE BUNDLED BARS SHALL NOT BE LAP SPLICED. LAP SPLICES OF INDIVIDUAL BARS WITHIN THE BUNDLE SHALL NOT OVERLAP.
10. AT CONTRACTOR'S OPTION, MECHANICAL COUPLERS MAY BE SUBSTITUTED FOR LAP SPLICES. MECHANICAL COUPLERS SHALL HAVE AN ICC REPORT AND SHALL DEVELOP 125% OF THE YIELD STRENGTH OF THE BAR.
11. LAP SPLICES OF REINFORCING BARS IN SHOTCRETE SHALL UTILIZE THE NONCONTACT LAP SPLICE METHOD WITH A MINIMUM CLEARANCE OF 2 INCHES BETWEEN BARS. THE USE OF CONTACT LAP SLICES NECESSARY FOR SUPPORT OF THE REINFORCING IS PERMITTED WHEN APPROVED BY THE BUILDING OFFICIAL.



CONTACT SPLICE



NON - CONTACT SPLICE

LAP SPLICE SCHEDULE FOR CONCRETE

1" = 1'-0"

2 / S101

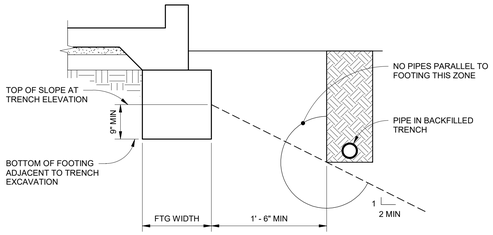
MINIMUM CONCRETE COVER SCHEDULE	
ELEMENT	CLEAR COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER: #5 AND SMALLER #6 AND LARGER	 1 1/2" 2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS & JOISTS: #11 AND SMALLER #14 AND #18 BEAMS & COLUMNS PRIMARY REINFORCEMENT, TIES, STIRRUPS, & SPIRALS SHELLS & FOLDED PLATE MEMBERS #6 AND SMALLER #6 AND LARGER	 3/4" 1 1/2" 1 1/2" 1/2" 3/4"

NOTES:
1. COVERS NOTED SHALL BE USED UNLESS NOTED OTHERWISE ON THE CONTRACT DOCUMENTS.
2. COVERS NOTED ARE FOR CAST-IN-PLACE, NON-PRESTRESSED MEMBERS.
3. MINIMUM CLEAR COVER FOR BUNDLED BARS SHALL BE THE LESSER OF THE EQUIVALENT DIAMETER OF THE BUNDLE AND 2".

MINIMUM CONCRETE COVER SCHEDULE

1" = 1'-0"

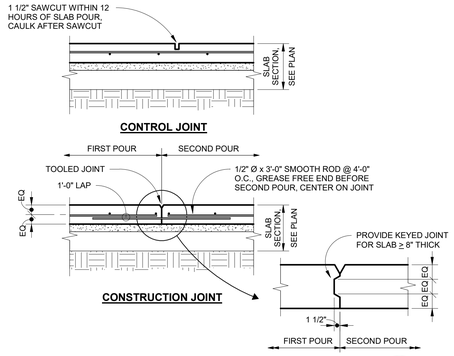
3 / S101



EXCAVATION PARALLEL TO FTG

3/4" = 1'-0"

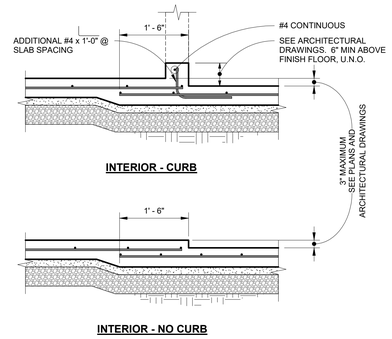
4 / S101



SLAB JOINT

3/4" = 1'-0"

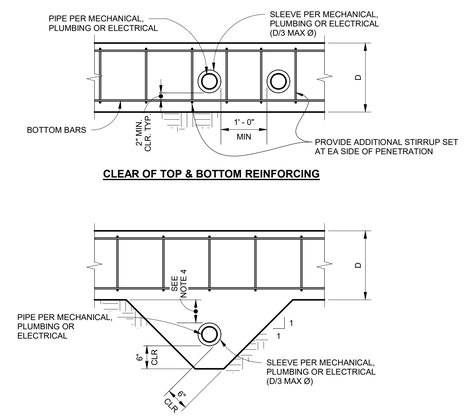
5 / S101

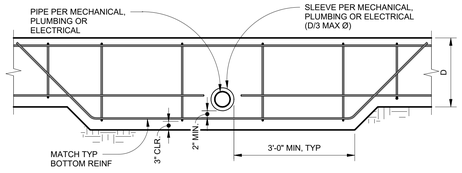


SLAB DEPRESSION

3/4" = 1'-0"

6 / S101



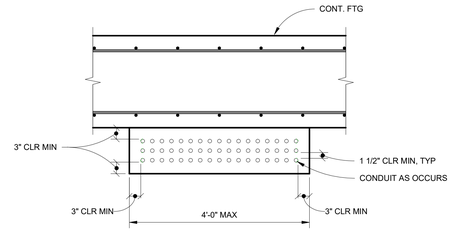


NOTES:
1. SLEEVE ID 2" LARGER THAN PIPE OD OR BELL OD.
2. SEAL VOID BETWEEN PIPE AND SLEEVE WITH ELASTIC WATERPROOF MATERIAL, TYP.
3. DETAIL APPLICABLE TO MAXIMUM 8"Ø SLEEVE.
4. NO FTG EXTENSION REQ'D FOR PIPE DEEPER THAN 12" BELOW FTG (SLEEVE STILL REQ'D).
5. WHERE PENETRATION CONFLICTS WITH REBAR TIE, OMIT TIE & PROVIDE 1 ADDITIONAL TIE EACH SIDE OF SLEEVE.

FOOTING PENETRATIONS

3/4" = 1'-0"

7 / S101

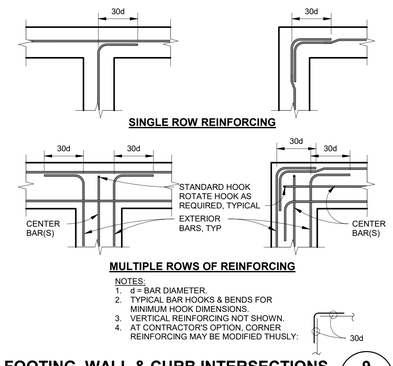


NOTE:
1. CONDUIT IS NOT PERMITTED TO RUN UNDER COLUMN FOOTINGS
2. IF UTILITY TRENCH IS POURED AFTER FOOTING, FILL TRENCH WITH CONCRETE SLURRY (f'_c = 1500 PSI).

CONDUITS UNDER FOOTING

3/4" = 1'-0"

8 / S101

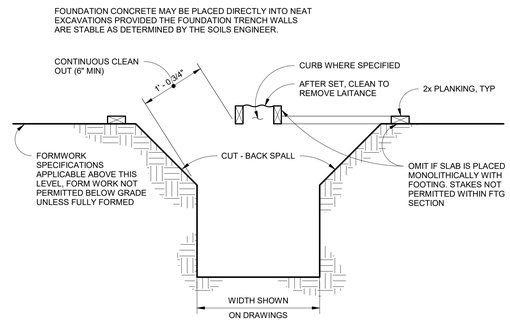


NOTES:
1. d = BAR DIAMETER.
2. TYPICAL BAR HOOKS & BENDS FOR MINIMUM HOOK DIMENSIONS.
3. VERTICAL REINFORCING NOT SHOWN.
4. AT CONTRACTOR'S OPTION, CORNER REINFORCING MAY BE MODIFIED THUSLY:

FOOTING, WALL & CURB INTERSECTIONS

3/4" = 1'-0"

9 / S101

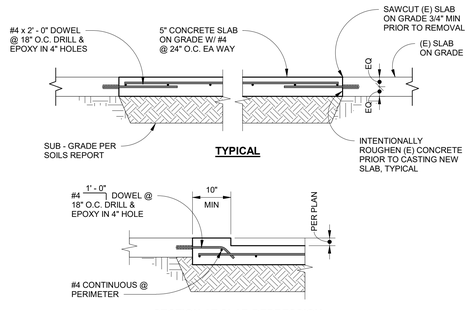


MANDATORY MIN FORMWORK (UNLESS FULLY FORMED)

FORMING DETAIL

1" = 1'-0"

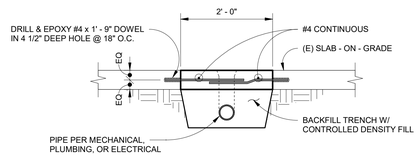
10 / S101



SLAB INFILL

3/4" = 1'-0"

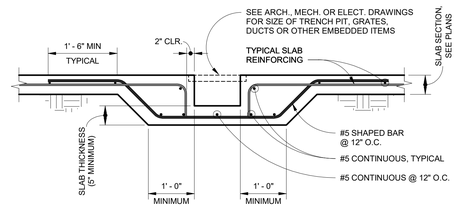
11 / S101



SLAB TRENCH INFILL

3/4" = 1'-0"

12 / S101



SLAB TRENCH / PIT

3/4" = 1'-0"

13 / S101

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
AUSTIN G. LEE
No. S8923
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

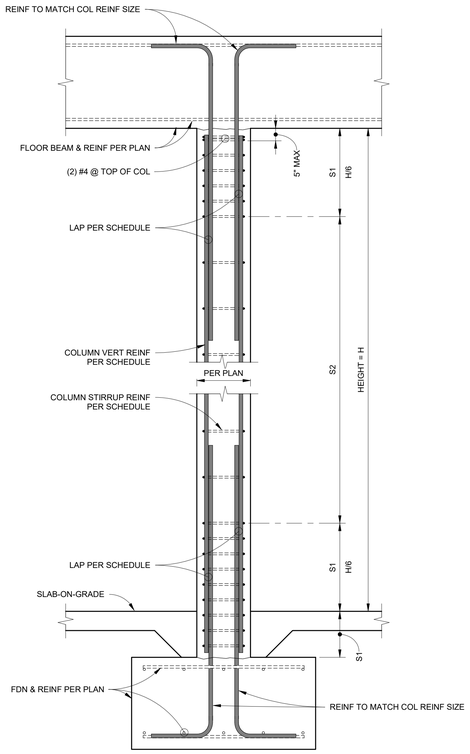
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 81 OF 123

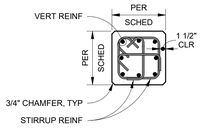
SHEET TITLE
TYPICAL DETAILS No. 1

SHEET NO
S101

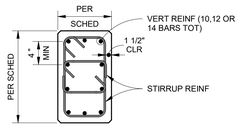


CONCRETE COLUMN SCHEDULE

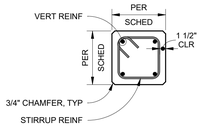
TYPE	WIDTH	HEIGHT	VERTICAL BARS	S1 TIES	S2 TIES
C1	12"	12"	(8) #8	#4 @ 3" OC	#4 @ 6" OC
C2	8"	8"	(4) #7	#4 @ 2" OC	#4 @ 5" OC



SECTION @ SQUARE COLUMN w/ 8 VERT BARS



SECTION @ RECTANGULAR COLUMN



SECTION @ SQUARE COLUMN w/ 4 VERT BARS

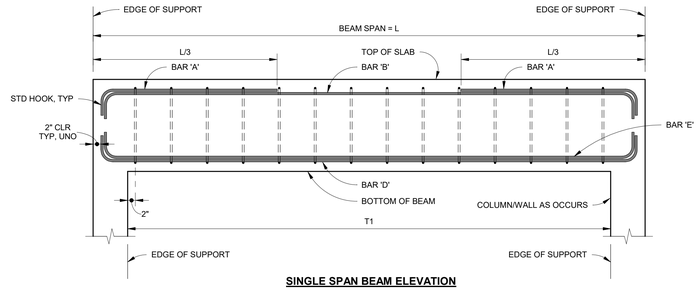
CONCRETE COLUMN DETAILS

3/4" = 1'-0"

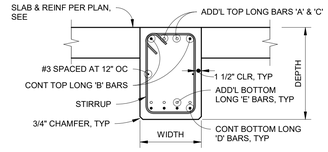
1 / S102

CONCRETE BEAM SCHEDULE

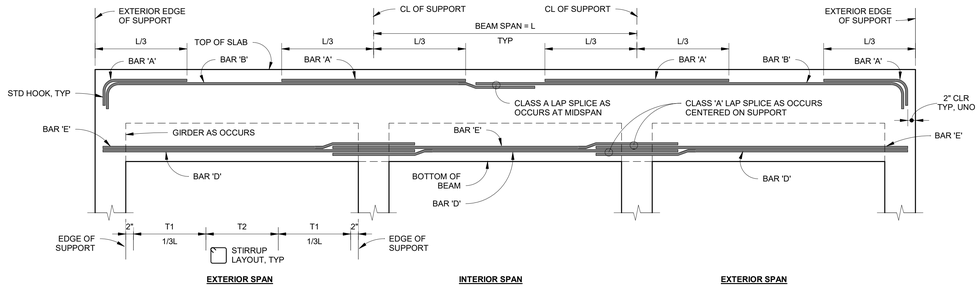
DESCRIPTION	WIDTH	DEPTH	'A' BARS	'B' BARS	'D' BARS	'E' BARS	T1
BM-1	12"	12"	N/A	(3) #6	(3) #6	N/A	#4 @ 4.5" OC
BM-2	12"	16"	N/A	(3) #6	(3) #6	N/A	#4 @ 6.5" OC
BM-3	12"	16"	(2) #6	(2) #6	(4) #6	N/A	#4 @ 6.5" OC
BM-4	12"	24"	N/A	(4) #8	(4) #8	N/A	#4 @ 10.5" OC
BM-5	18"	24"	(3) #8	(3) #8	(6) #8	N/A	#4 @ 10.5" OC
BM-6	12"	18"	N/A	(4) #6	(4) #6	N/A	#4 @ 10.5" OC
SE-1	12"	8"	N/A	(2) #6	(2) #6	N/A	#4 @ 2.5" OC
SE-2	8"	16"	N/A	(2) #7	(2) #7	N/A	#4 @ 6.5" OC



SINGLE SPAN BEAM ELEVATION



TYPICAL BEAM SECTION

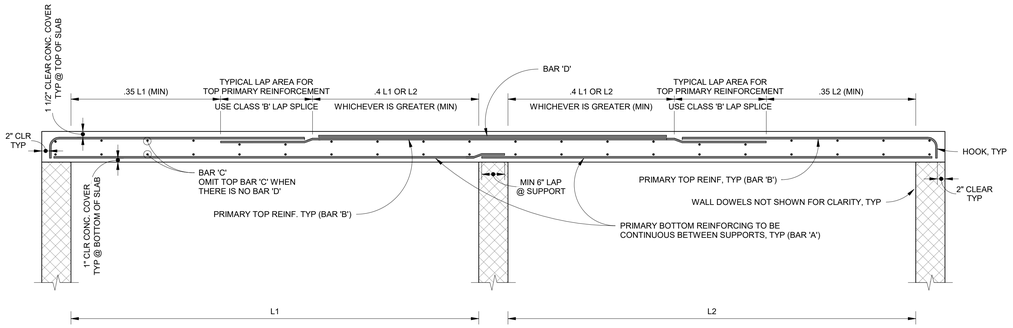


MULTIPLE SPAN BEAM ELEVATION

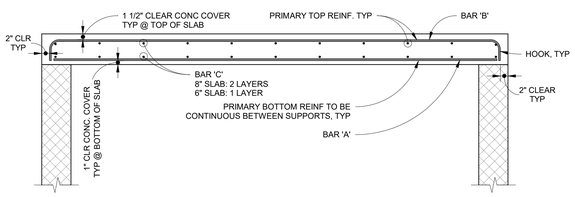
CONCRETE BEAM DETAILS

3/4" = 1'-0"

2 / S102



CONTINUOUS SPAN



SINGLE SPAN

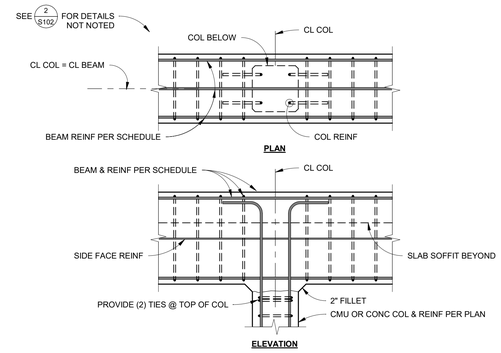
ONE WAY SLAB SCHEDULE

TYPE	THICKNESS	BAR 'A'	BAR 'B'	BAR 'C'	BAR 'D'
RS-1	6" MIN	#6 @ 12" OC	-	#4 @ 12" OC	#6 @ 12" OC
RS-2	6" MIN	#6 @ 8" OC	-	#4 @ 12" OC	#6 @ 12" OC
S-1	8" MIN	#6 @ 12" OC	#6 @ 12" OC	#4 @ 12" OC	-

TYPICAL ONE-WAY SLAB REINFORCING DETAILS

3/4" = 1'-0"

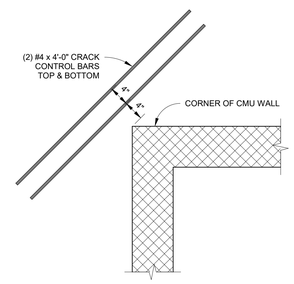
3 / S102



TYPICAL BEAM TO COLUMN

3/4" = 1'-0"

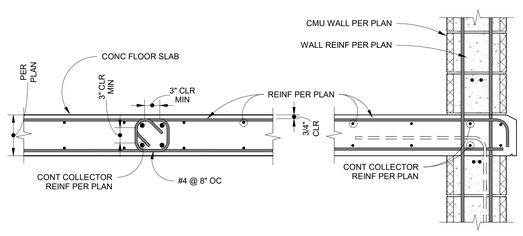
4 / S102



TYPICAL CRACK CONTROL BARS @ SLAB CORNERS

1" = 1'-0"

5 / S102



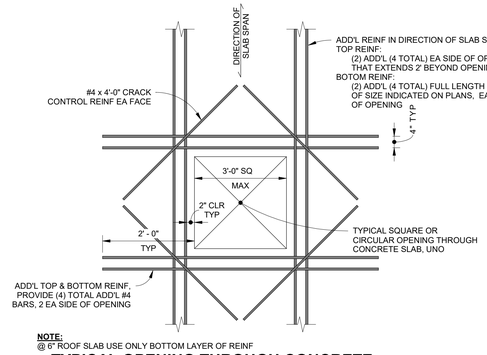
NOTES:

1. PROVIDE MECHANICAL COUPLER @ SPLICES, STAGGER SPLICES @ ADJACENT BARS
2. AT TRANSITION POINT OF CONT REINF NOTED ON PLAN, REDUCE # OF CONT BARS AS INDICATED

TYPICAL COLLECTOR SLAB REINFORCING DETAIL

1" = 1'-0"

6 / S102



NOTE:
@ 6" ROOF SLAB USE ONLY BOTTOM LAYER OF REINF

TYPICAL OPENING THROUGH CONCRETE SLAB

3/4" = 1'-0"

7 / S102

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN C. LEGG — No. 56623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

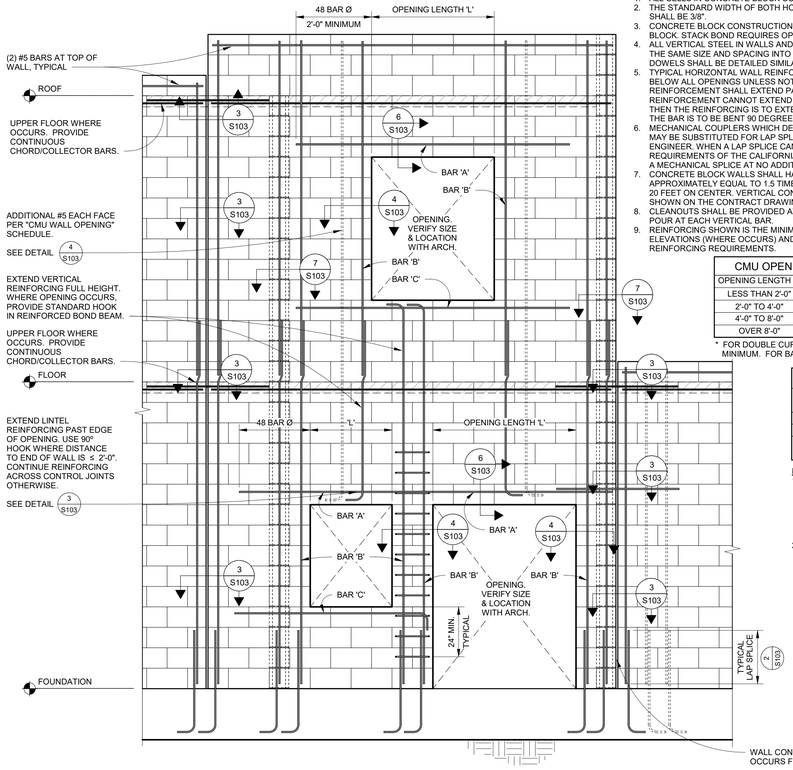
COUNTY DWG NO — SHEET 82 OF 123

SHEET TITLE
TYPICAL DETAILS No. 2

SHEET NO
S102

REINFORCED STRUCTURAL MASONRY NOTES:

1. ALL CELLS IN CONCRETE BLOCK CONSTRUCTION SHALL BE FULLY GROUTED.
2. THE STANDARD WIDTH OF BOTH HORIZONTAL AND VERTICAL MORTAR JOINTS SHALL BE 3/8".
3. CONCRETE BLOCK CONSTRUCTION SHALL BE RUNNING BOND WITH OPEN ENDED BLOCK. STACK BOND REQUIRES OPEN ENDED BLOCK AT ALL BOND BEAM UNITS.
4. ALL VERTICAL STEEL IN WALLS AND COLUMNS SHALL BE LAPPED WITH DOWELS OF THE SAME SIZE AND SPACING INTO THE FOOTING UNLESS NOTED OTHERWISE. DOWELS SHALL BE DETAILED SIMILAR TO TYPICAL WALL DOWELS.
5. TYPICAL HORIZONTAL WALL REINFORCEMENT SHALL BE INSTALLED ABOVE AND BELOW ALL OPENINGS UNLESS NOTED OTHERWISE ON THE DRAWINGS. REINFORCEMENT SHALL EXTEND PAST OPENINGS 48 BAR DIAMETERS, MINIMUM. IF REINFORCEMENT CANNOT EXTEND A FULL 48 BAR DIAMETERS PAST THE OPENING, THEN THE REINFORCING IS TO EXTEND AS FAR AS POSSIBLE AND THE REST OF THE BAR IS TO BE BENT 90 DEGREES, EITHER UP OR DOWN.
6. MECHANICAL COUPLERS WHICH DEVELOP 125% OF THE BARS' YIELD STRENGTH MAY BE SUBSTITUTED FOR LAP SPLICES UPON SUBMITTAL AND REVIEW BY THE ENGINEER. WHEN A LAP SPLICE CANNOT BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, THE ENGINEER MAY SPECIFY A MECHANICAL SPLICE AT NO ADDITIONAL COST TO THE OWNER.
7. CONCRETE BLOCK WALLS SHALL HAVE VERTICAL CONTROL JOINTS AT A SPACING APPROXIMATELY EQUAL TO 1.5 TIMES THE WALL HEIGHT BUT NO GREATER THAN 20 FEET ON CENTER. VERTICAL CONTROL JOINTS SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT DRAWINGS.
8. CLEANOUTS SHALL BE PROVIDED AT THE BOTTOM COURSE OF EVERY GROUT POUR AT EACH VERTICAL BAR.
9. REINFORCING SHOWN IS THE MINIMUM REQUIRED FOR ALL OPENINGS. SEE WALL ELEVATIONS (WHERE OCCURS) AND FRAMING PLANS FOR ADDITIONAL REINFORCING REQUIREMENTS.



CMU OPENING REINFORCEMENT SCHEDULE			
OPENING LENGTH 'L'	BAR 'A'	BAR 'B'	BAR 'C'
LESS THAN 2'-0"	(1) #6 *	(1) #6 *	(1) #6 *
2'-0" TO 4'-0"	(2) #6	(1) #6 *	(1) #6 *
4'-0" TO 8'-0"	(2) #6	(2) #6	(2) #6
OVER 8'-0"	(2) #6 *	(2) #6	(2) #6

* FOR DOUBLE CURTAIN WALLS, PROVIDE BAR EACH FACE MINIMUM. FOR BAR 'A', DOUBLE REINFORCING IN SINGLE LAYER.

ADDITIONAL REINFORCING [1,2]	
OPENING LENGTH 'L'	ADDITIONAL VERTICAL TRIM STEEL EACH SIDE
L < 4' - 0"	NO ADDITIONAL BARS
L ≤ 8' - 0"	(2) ADDITIONAL #6 BARS
L > 8' - 0"	(2) #6 @ 8" O.C. (4) ADDITIONAL TOTAL

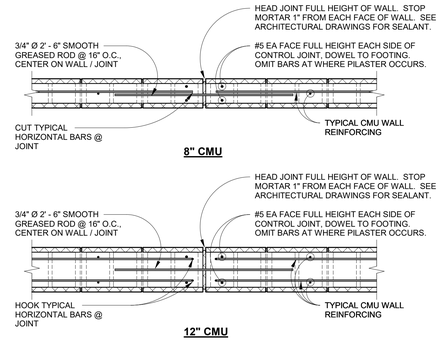
NOTES:
1. ADDITIONAL VERTICAL TRIM STEEL NOT REQUIRED WHERE PILASTER, COLUMN, OR RETURN WALL OCCURS ADJACENT TO OPENING (WITHIN 1'-4")
   SEE DETAIL 4 S103
2. FOR OPENINGS FOR ROUND DUCTS 24" Ø MAX, CONSTRUCT SQUARE OPENING W/ MINIMUM (2) COURSES ABOVE & BELOW & GROUT BACK SOLID AROUND DUCT.

WALL ELEVATION
1/2" = 1'-0" — 1 / S103

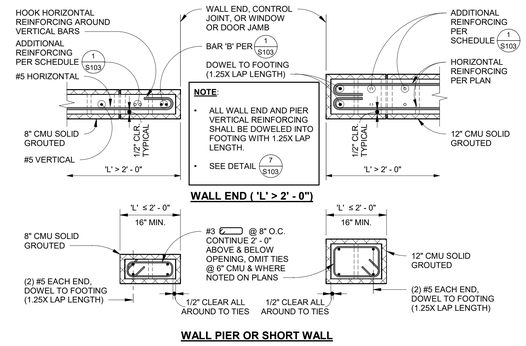
LAP SPLICE SCHEDULE		
BAR SIZE	STANDARD LAP LENGTH	REDUCED LAP LENGTH
#3	16"	16"
#4	26"	22"
#5	40"	28"
#6	74"	50"
#7	102"	68"
#8	152"	102"

NOTES:
1. LAP SPLICE LOCATION SHALL BE APPROVED BY THE ENGINEER.
2. THE REDUCED LAP LENGTH MAY BE USED WHEN BOTH THE CLEAR COVER & BAR SPACING BETWEEN ADJACENT BARS IS EQUAL TO OR GREATER THAN 3".
3. WHEN TWO BARS OF DIFFERENT SIZE ARE SPLICED, USE LONGER LAP LENGTH.

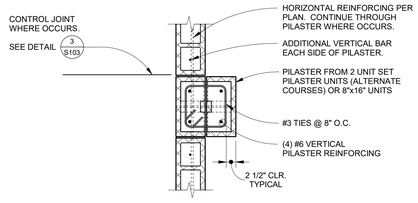
LAP SPLICE SCHEDULE FOR MASONRY
3/4" = 1'-0" — 2 / S103



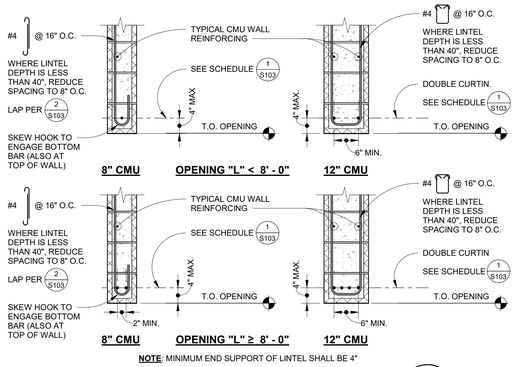
CONTROL JOINT
3/4" = 1'-0" — 3 / S103



WALL END / PIER
3/4" = 1'-0" — 4 / S103



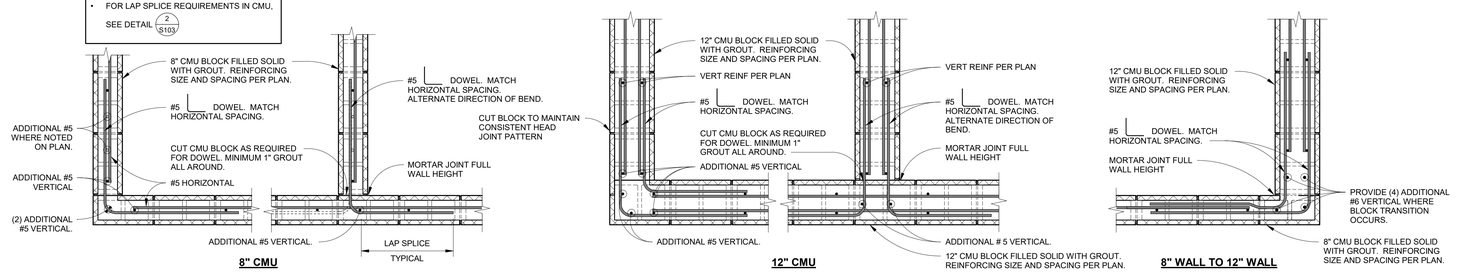
CMU PILASTER
3/4" = 1'-0" — 5 / S103



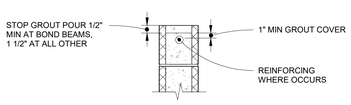
NOTE: MINIMUM END SUPPORT OF LINTEL SHALL BE 4"

LINTEL
3/4" = 1'-0" — 6 / S103

NOTE:
- ALL VERTICAL REINFORCING SHALL BE DOWELED INTO FOOTING WITH STANDARD HOOK.
- FOR LAP SPLICE REQUIREMENTS IN CMU, SEE DETAIL 2 S103

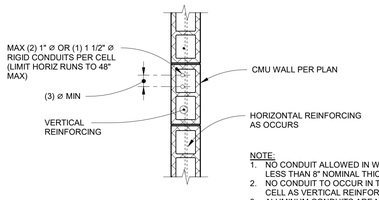


WALL CORNERS & INTERSECTIONS
3/4" = 1'-0" — 7 / S103



NOTE:
COMPLY WITH THIS DETAIL WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER

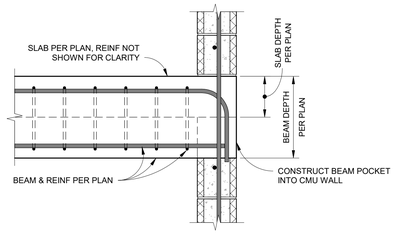
CMU HORIZONTAL CONSTRUCTION JOINT
1" = 1'-0" — 8 / S103



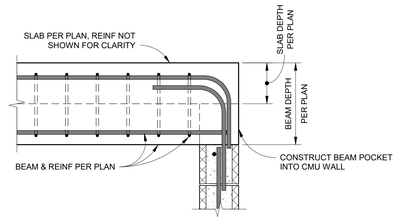
NOTE:
1. NO CONDUIT ALLOWED IN WALLS LESS THAN 8" NOMINAL THICKNESS.
2. NO CONDUIT TO OCCUR IN THE SAME CELL AS VERTICAL REINFORCEMENT.
3. ALUMINUM CONDUITS ARE NOT PERMITTED TO BE PLACED IN CMU WALL.

PLAN

CONDUIT IN CMU WALLS
3/4" = 1'-0" — 9 / S103



TYPICAL CONCRETE BEAM INTO CMU WALL
1" = 1'-0" — 10 / S103



TYPICAL CONCRETE BEAM INTO CMU WALL @ ROOF
1" = 1'-0" — 11 / S103

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEE — No. 56623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

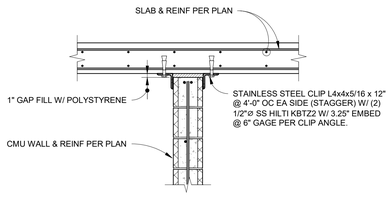
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO — SHEET 83 OF 123

SHEET TITLE
TYPICAL DETAILS No. 3

SHEET NO
S103



REINFORCED NON-STRUCTURAL MASONRY WALL PARTITION NOTES:

1. ALL CELLS IN CONCRETE BLOCK CONSTRUCTION SHALL BE FULLY GROUTED.
2. THE STANDARD WIDTH OF BOTH HORIZONTAL AND VERTICAL MORTAR JOINTS SHALL BE 3/8".
3. CONCRETE BLOCK CONSTRUCTION SHALL BE RUNNING BOND WITH OPEN ENDED BLOCK. STACK BOND REQUIRES OPEN ENDED BLOCK AT ALL BOND BEAM UNITS.
4. ALL VERTICAL STEEL IN WALLS AND COLUMNS SHALL BE LAPPED WITH DOWELS OF THE SAME SIZE AND SPACING INTO THE FOOTING UNLESS NOTED OTHERWISE. DOWELS SHALL BE DETAILED SIMILAR TO TYPICAL WALL DOWELS.
5. TYPICAL HORIZONTAL WALL REINFORCEMENT SHALL BE INSTALLED ABOVE AND BELOW ALL OPENINGS UNLESS NOTED OTHERWISE ON THE DRAWINGS. REINFORCEMENT SHALL EXTEND PAST OPENINGS 30" MINIMUM. IF REINFORCEMENT CANNOT EXTEND A FULL 30" PAST THE OPENING, THE REINFORCING IS TO EXTEND AS FAR AS POSSIBLE AND THE REST OF THE BAR IS TO BE BENT 90°, EITHER UP OR DOWN
6. CONCRETE BLOCK WALLS SHALL HAVE VERTICAL CONTROL JOINTS AT A SPACING APPROXIMATELY EQUAL TO 1.5 TIMES THE WALL HEIGHT BUT NO GREATER THAN 20 FEET ON CENTER. VERTICAL CONTROL JOINTS SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT DRAWINGS.
7. CLEANOUTS SHALL BE PROVIDED AT THE BOTTOM COURSE OF EVERY GROUT POUR AT EACH VERTICAL BAR FOR LIFTS EXCEEDING 5'-4" IN HEIGHT.

LAP SPLICE SCHEDULE

BAR SIZE	STANDARD LAP LENGTH	REDUCED LAP LENGTH
#5	40"	28"
#6	74"	50"

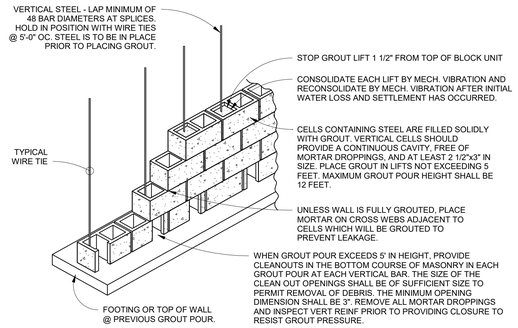
NOTES:

1. LAP SPLICE LOCATIONS SHALL BE APPROVED BY THE ENGINEER.
2. THE REDUCED LAP LENGTH MAY BE USED WHEN BOTH THE CLEAR COVER & BAR SPACING BETWEEN ADJACENT BARS IS EQUAL TO OR GREATER THAN 3".
3. WHEN TWO BARS OR DIFFERENT SIZE ARE SPLICED, USE THE LONGER LAP LENGTH.

TYPICAL TOP OF CMU PARTITION DETAIL

3/4" = 1'-0"

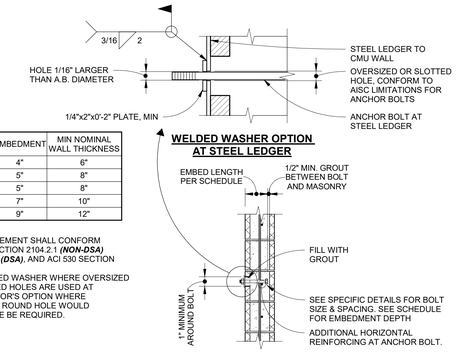
1 / S104



TYPICAL REINFORCED MASONRY CONSTRUCTION (VERT REINF ONLY)

1/2" = 1'-0"

2 / S104



BOLT SIZE	EMBEDMENT	MIN NOMINAL WALL THICKNESS
1/2"Ø	4"	6"
5/8"Ø	5"	8"
3/4"Ø	5"	8"
7/8"Ø	7"	10"
1"Ø	9"	12"

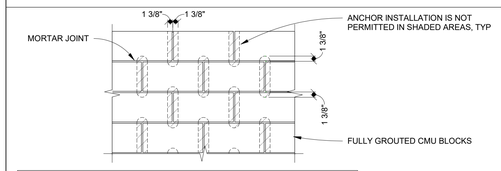
NOTES:

1. BOLT PLACEMENT SHALL CONFORM TO CBC SECTION 2104.2.1 ***(NON-DSA)*** 2104A.1.3.1 ***(DSA)***, AND ACI 530 SECTION 9.1.6.
2. USE WELDED WASHER WHERE OVERSIZED OR SLOTTED HOLES ARE USED AT CONTRACTOR'S OPTION WHERE STANDARD ROUND HOLE WOULD OTHERWISE BE REQUIRED.

BOLT IN CMU WALL

3/4" = 1'-0"

4 / S104



HILTI KWIK-BOLT 3

ANCHOR DIAMETER (IN)	MINIMUM EMBEDMENT (IN)	ALLOWABLE SHEAR (LB)	ALLOWABLE TENSION (LB)	TEST (2x ALLOWABLE TENSION) (LB)
1/4	2	342	432	432
3/8	2 1/2	1054	626	626
1/2	3 1/2	1853	724	724
5/8	4	2123	1035	1035
3/4	4 3/8	2627	1368	1368

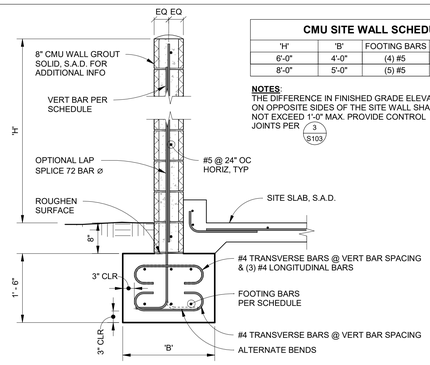
NOTES:

1. TABULATED VALUES BASED ON 80% OF THE ICC REPORT ESR-1385. INSTALLATION SHALL BE IN ACCORDANCE WITH THE ICC REPORT.
2. ANCHORS MUST BE INSTALLED A MINIMUM OF 1 3/8" FROM ANY VERTICAL JOINT.
3. EMBEDMENT DEPTH IS MEASURED FROM OUTSIDE FACE OF CMU.
4. ANCHOR LOCATIONS ARE LIMITED TO ONE PER MASONRY CELL WITH A MINIMUM SPACING OF 8" O.C. THE MINIMUM EDGE DISTANCE IS 12".
5. TENSION TEST 50% OF ANCHORS. IF ANY ANCHOR FAILS, ALL ANCHORS MUST BE TESTED.

EXPANSION ANCHORS IN GROUT FILLED CMU

3/4" = 1'-0"

3 / S104



CMU SITE WALL SCHEDULE

'H'	'B'	FOOTING BARS	WALL VERT BARS
6'-0"	4'-0"	(4) #5	#5 @ 24" OC
8'-0"	5'-0"	(5) #5	#5 @ 16" OC

NOTES:
THE DIFFERENCE IN FINISHED GRADE ELEVATION ON OPPOSITE SIDES OF THE SITE WALL SHALL NOT EXCEED 1'-0" MAX. PROVIDE CONTROL JOINTS PER 3 / S103

CMU SITE WALL DETAIL

3/4" = 1'-0"

5 / S104

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

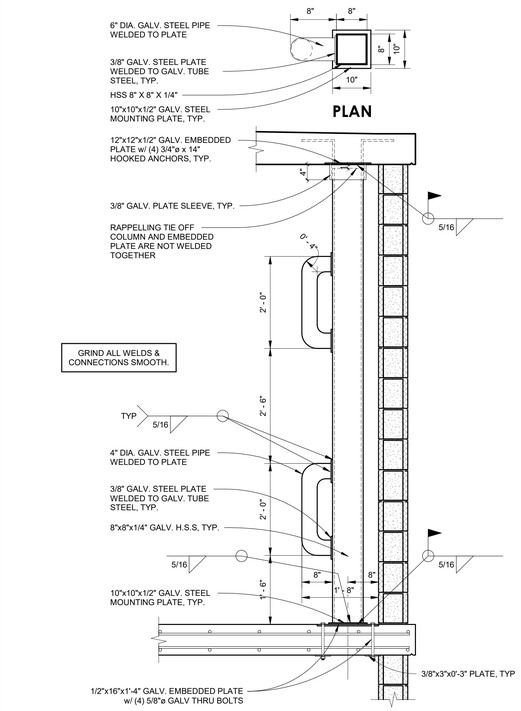
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 84 OF 123

SHEET TITLE
TYPICAL DETAILS No. 4

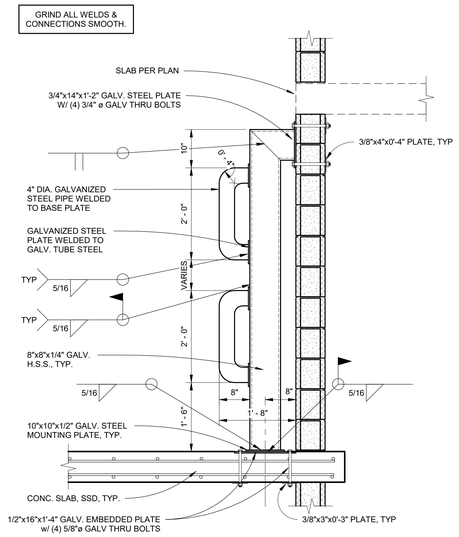
SHEET NO
S104



WALL RAPPELLING TIE OFF DETAIL TYPE 1

3/4" = 1'-0"

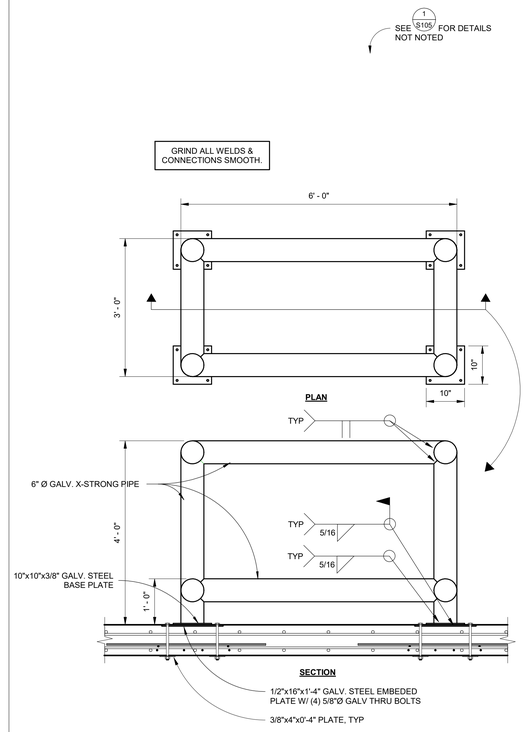
1 / S105



WALL RAPPELLING TIE OFF DETAIL TYPE 2

3/4" = 1'-0"

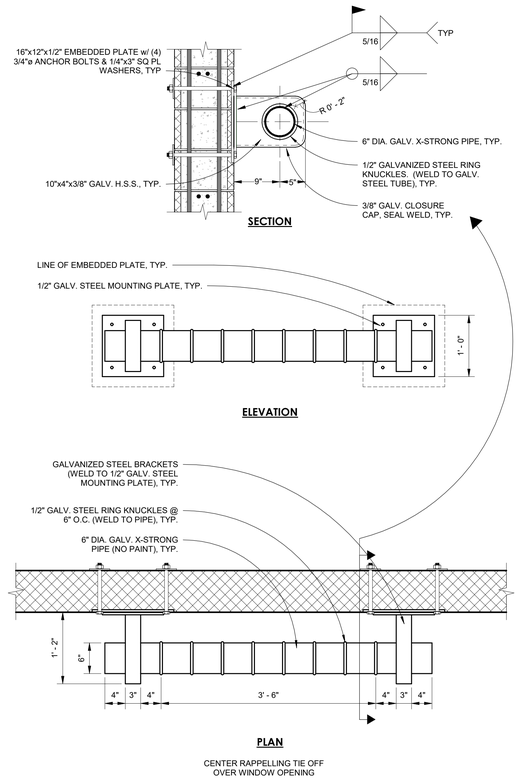
2 / S105



MOCK RTU RAPPELLING TIE OFF DETAIL TYPE 3

3/4" = 1'-0"

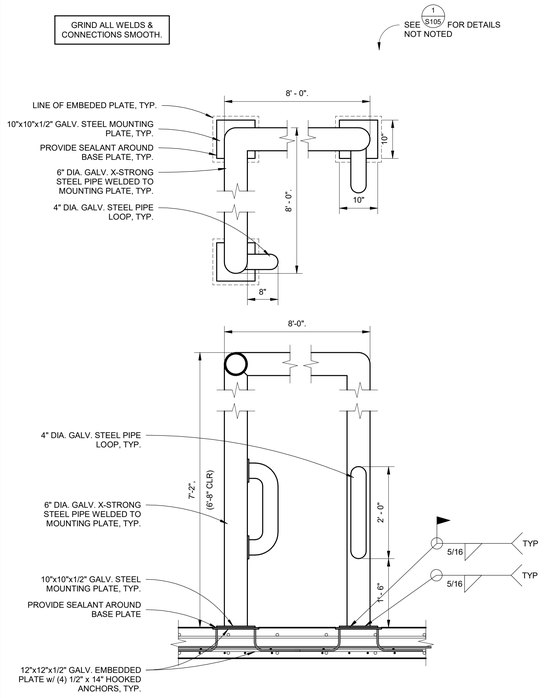
4 / S105



WALL RAPPELLING TIE OFF DETAIL TYPE 4

1" = 1'-0"

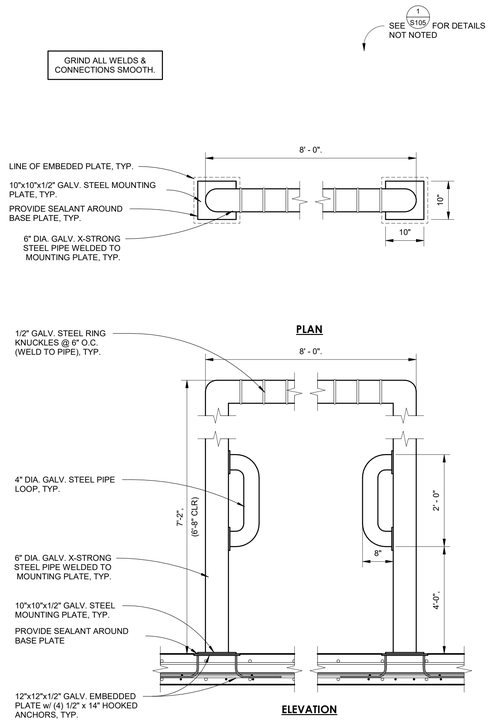
6 / S105



MOCK RTU RAPPELLING TIE OFF TYPE 5 DETAIL

3/4" = 1'-0"

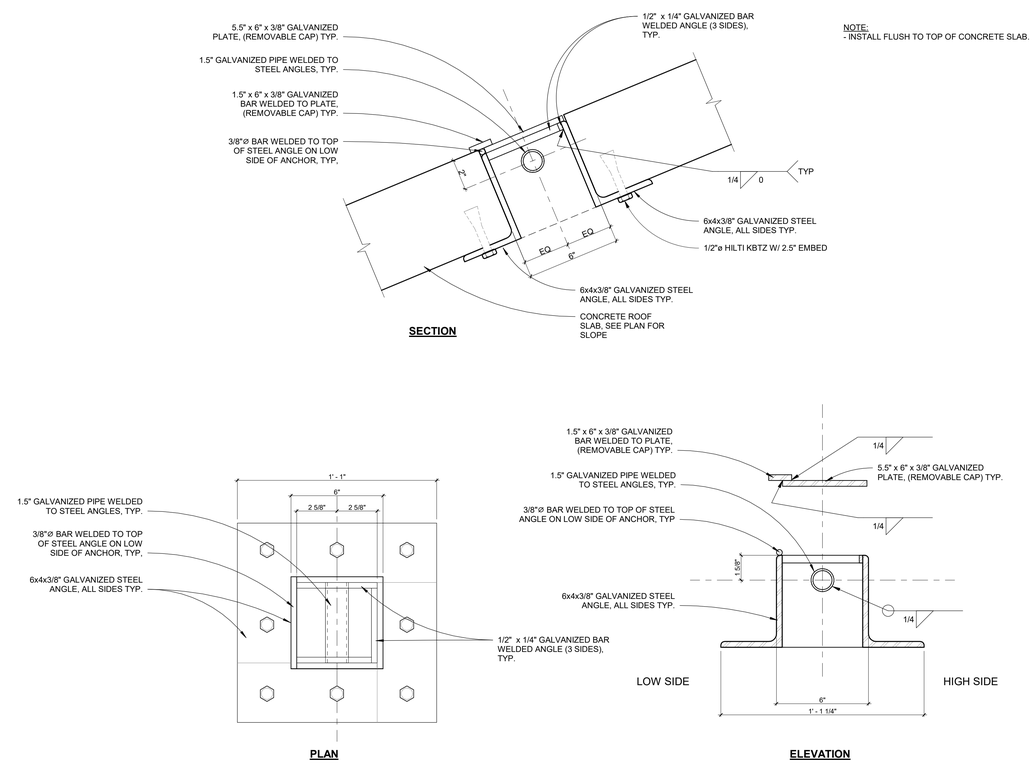
5 / S105



HIGH BAR RAPPELLING TIE OFF TYPE 6 DETAIL

3/4" = 1'-0"

3 / S105



EMBEDDED TIE OFF DETAILS

3" = 1'-0"

7 / S105

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEE — No. 56623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

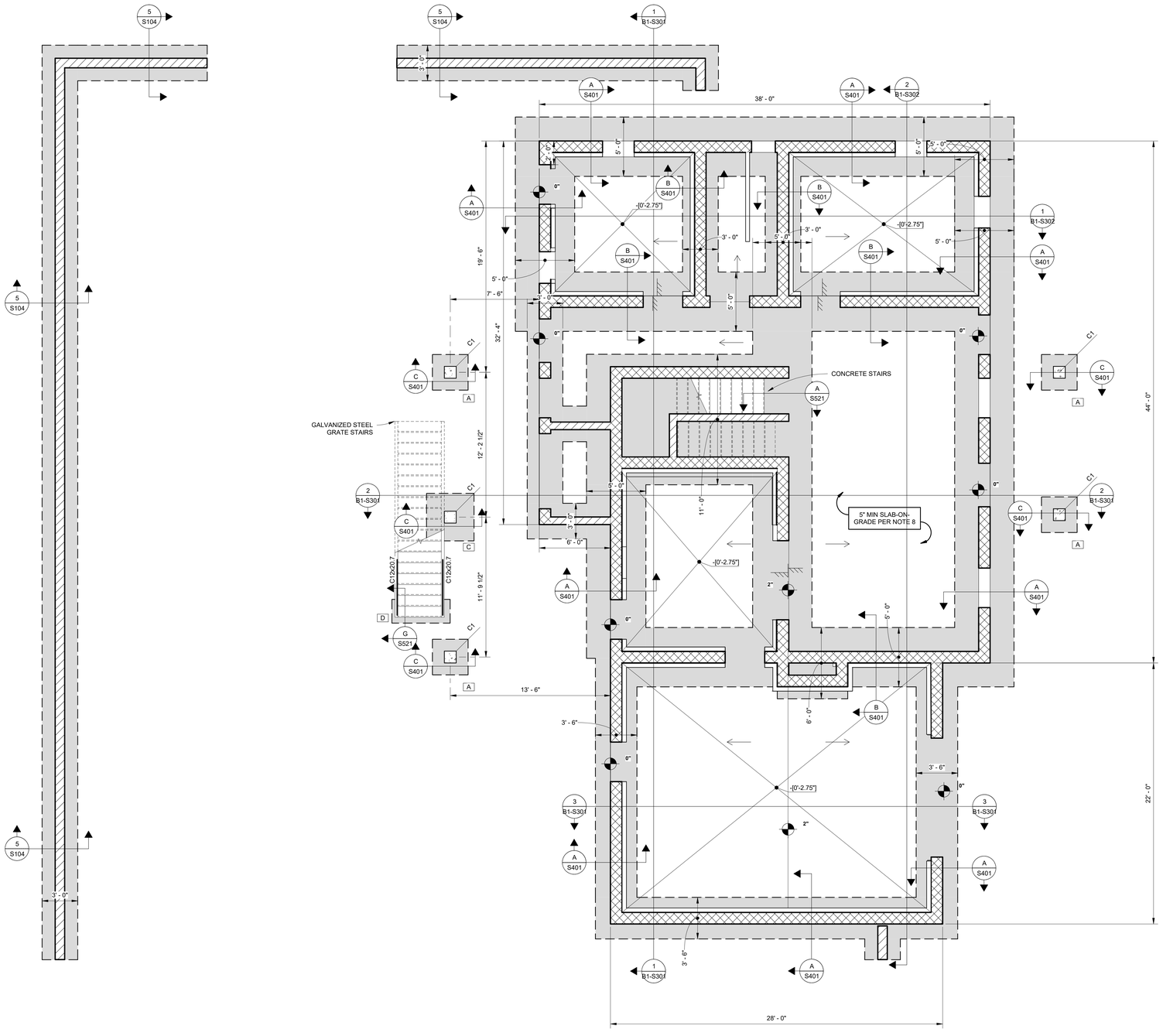
COUNTY SPEC NUMBER CP23-02

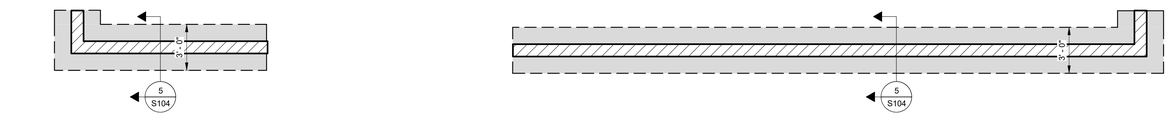
COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 85 OF 123

SHEET TITLE
TYPICAL DETAILS No. 5

SHEET NO S105





FOUNDATION PLAN

1/4" = 1'-0"

FOUNDATION PLAN NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001 & S002.
2. SEE SHEET S101-S105 FOR TYPICAL FOUNDATION DETAILS.
3. TOP OF SLAB & GROUND FLOOR REFERENCE ELEVATION = +[0' - 0"] TYP, U.N.O.
4. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
5. SEE CIVIL DRAWINGS FOR BUILDING PAD PREPARATION, INCLUDING OVER EXCAVATION AND FILL REQUIREMENTS PER THE SOILS REPORT. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
6. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM BOTH ARCHITECT AND ENGINEER OF ANY CONFLICTING INFORMATION.
7. THE SIZE & LOCATION OF ALL FOOTING AND SLAB PENETRATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
8. 5" MIN THICK SLAB-ON-GRADE SECTION AS FOLLOWS:
   - 5" MIN THICK CONCRETE SLAB, SAD FOR SLAB ELEVATIONS
   - #5 @ 18" O.C. EACH WAY AT 2" BELOW TOP OF SLAB. BARS SHALL SLOPE WITH SLAB, S.A.D. FOR T.O. SLAB ELEVATIONS.
   - SLAB MEMBRANE
   - 6" OF 3/4" CRUSHED ROCK
9. CONTROL JOINTS ARE TO BE INSTALLED @ 12'-6" O.C. MAX @ 5" SLABS
10. CONCRETE CONTRACTOR IS RESPONSIBLE FOR THE PLACEMENT OF ALL EMBEDDED ITEMS.
11. ANCHOR BOLTS AND BASE PLATES SHALL NOT BE WET SET.
12. ALL DIMENSIONS ARE TO CENTERLINE OF COLUMNS OR FACE OF CONCRETE, TYPICAL UNLESS NOTED OTHERWISE.
13. INDICATES STEP/DEPRESSION (6 / S101)
14. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
15. [A] INDICATES FOUNDATION TAG. SEE SCHEDULE.
16. -[0'-2"] INDICATES DEPRESSED SLAB ELEVATION. VERIFY DEPRESSION W/ ARCH, SAD FOR LIMITS OF DEPRESSED AREAS.
17. -[1'-0"] INDICATES TOP OF FOOTING ELEVATION BELOW SLAB. TOP OF FOOTING SHALL BE 1'-0" BELOW SLAB, UNO.
18. INDICATES FOOTING.
19. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
20. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
21. INDICATES THERMAL LINER SYSTEM, S.A.D.
22. 1" INDICATES T.O.S. ELEVATION WITH RESPECT TO THE REFERENCE ELEVATION, S.A.D.
23. 'a' INDICATES (2) #6 BOUNDARY BAR (1 IN EACH CELL OF THE LAST BLOCK)
24. C1 INDICATES COLUMN, SEE SCHEDULE (1 / S102)

PAD FOOTING SCHEDULE

TYPE	SIZE	REINFORCING		REMARKS
		LONGITUDINAL	TRANSVERSE	
A	3'-0" x 3'-0" x 1'-6"	3 - #6	3 - #6	3
B	11'-6" x 11'-6" x 3'-0"	11 - #9	11 - #9	3
C	4'-0" x 4'-0" x 1'-6"	4 - #6	4 - #6	3
D	4'-6" x 2'-0" x 1'-6"	2 - #6	4 - #6	3

NOTES:
1. RUN CONTINUOUS STEEL THROUGH FOOTING.
2. REINFORCING INDICATES BOTTOM MAT ONLY.
3. REINFORCING INDICATES TOP AND BOTTOM MAT.

STRIP FOOTING SCHEDULE

WIDTH	REINFORCING	
	LONGITUDINAL	TIES
3'-0"	4 - #6 TOP & BOTTOM	#4 @ 16" OC
3'-6"	4 - #6 TOP & BOTTOM	#4 @ 16" OC
5'-0"	6 - #6 TOP & BOTTOM	#4 @ 16" OC
5'-6"	6 - #6 TOP & BOTTOM	#4 @ 16" OC
6'-0"	7 - #6 TOP & BOTTOM	#4 @ 16" OC
7'-0"	8 - #6 TOP & BOTTOM	#4 @ 16" OC
10'-0"	11 - #6 TOP & BOTTOM	#4 @ 16" OC
11'-0"	12 - #6 TOP & BOTTOM	#4 @ 16" OC

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEWIS
No. 58623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA | CHECKED BY DGL
CONSULTANT JOB NO 2018047 | DATE 08-21-23

PROJECT TITLE AND ADDRESS

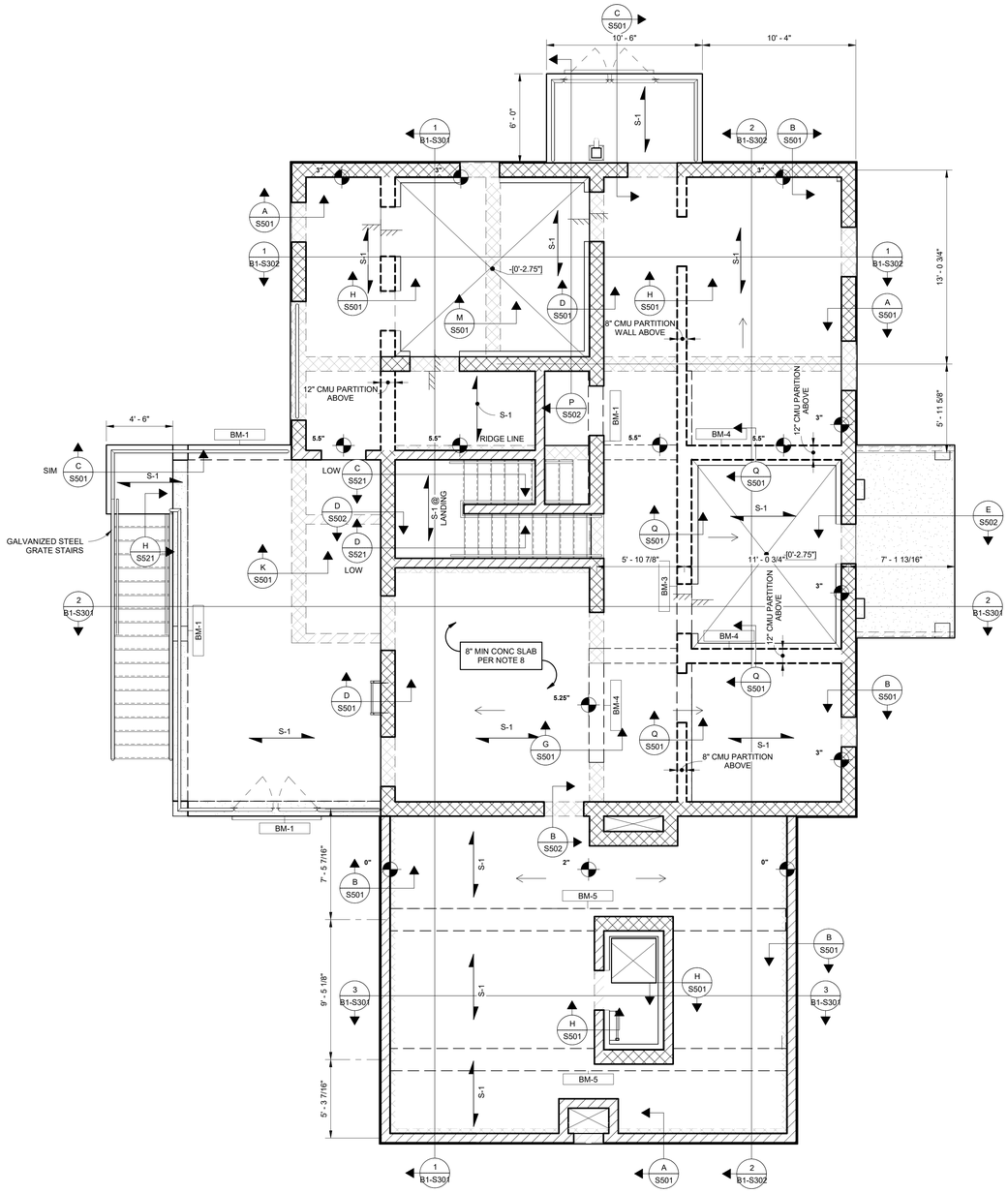
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 86 OF 123

SHEET TITLE
BURN BUILDING - FOUNDATION PLAN

SHEET NO B1-S201



SECOND FLOOR PLAN

1/4" = 1'-0"

FLOOR FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-S104 FOR TYPICAL FRAMING DETAILS.
3. TOP OF FLOOR SLAB ELEVATION = +10' - 0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE SECOND FLOOR SLAB SHALL BE 8" MIN THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE S102. TOP MAT OF REINF SHALL FOLLOW SLOPE OF SLAB. SEE ARCH DRAWINGS FOR T.O. SLAB ELEVATIONS.
9. INDICATES 12" CMU WALL BELOW
10. INDICATES 8" CMU WALL BELOW
11. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
12. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
13. INDICATES STEP IN TOP OF SLAB ELEVATION
14. FS-11 INDICATES CONCRETE BEAM. SEE SCHEDULE ON 2/S102, 3/S102
15. INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON
16. (8) #8 INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON 6/S102
17. INDICATES TRANSITION POINT OF COLLECTOR REINF.
18. [0'-2"] INDICATES DEPRESSES SLAB ELEVATION. VERIFY DEPRESSION W/ ARCHITECTURAL, SEE ARCHITECTURAL DRAWINGS FOR LIMITS OF DEPRESSED AREAS.
19. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
20. INDICATES FLOOR SLAB OPENING, SAD.
21. 5.5" INDICATES T.O.S. ELEVATION WITH RESPECT TO THE REFERENCE ELEVATION, S.A.D.

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER DUSTIN G. LEE No. 58623 EXP. 3/31/25 STRUCTURAL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

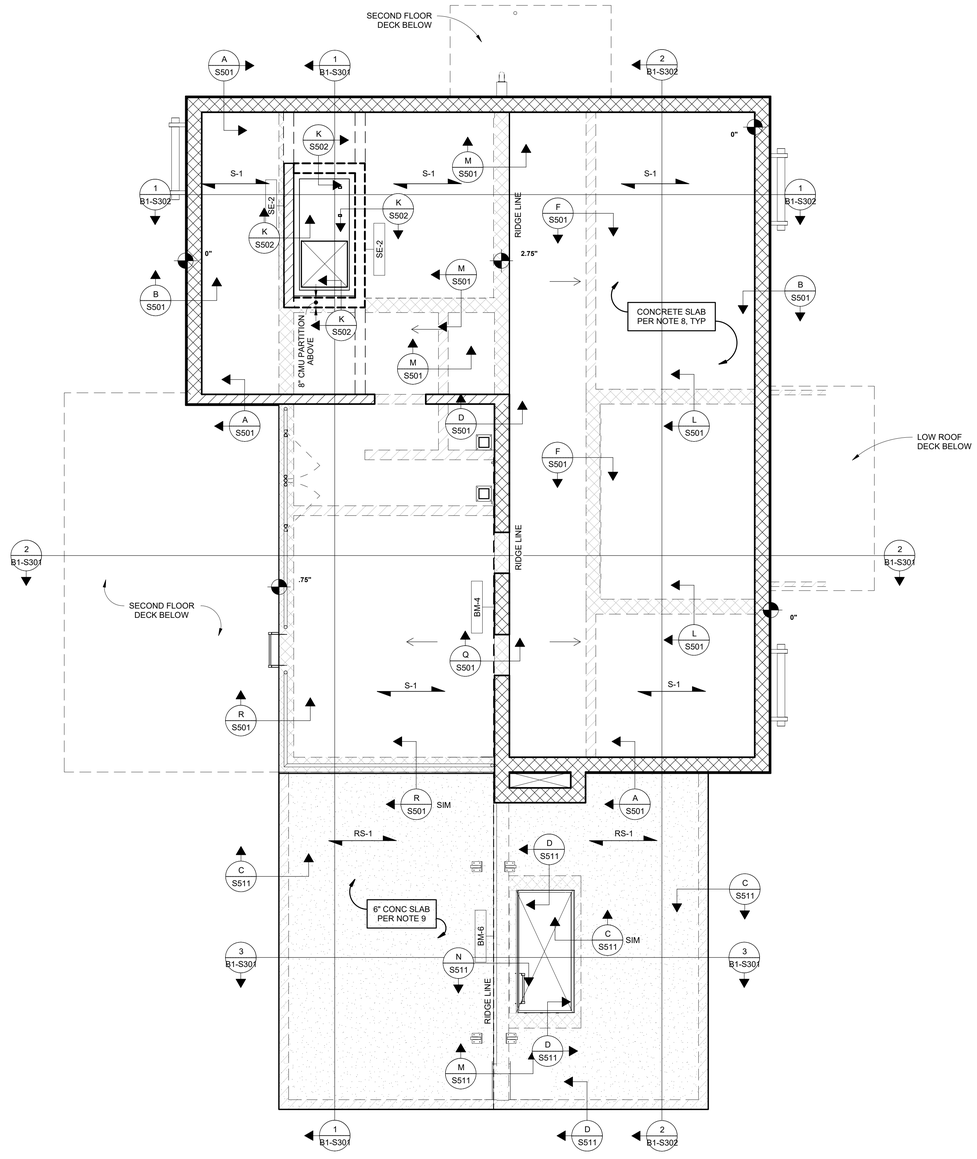
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 87 OF 123

SHEET TITLE
BURN BUILDING - SECOND FLOOR PLAN

SHEET NO
B1-S202



THIRD FLOOR & LOW ROOF PLAN

1/4" = 1'-0"

FLOOR & LOW ROOF FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-S103 FOR TYPICAL FRAMING DETAILS.
3. TOP OF FLOOR SLAB ELEVATION = +20' - 0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE THIRD FLOOR SLAB SHALL BE 8" MIN THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102 FOR REINFORCEMENT.TOP MAT OF REINF SHALL FOLLOW SLOPE OF SLAB. SEE ARCH DRAWINGS FOR T.O. SLAB ELEVATIONS.
9. ENTIRE ROOF SLAB SHALL BE 6" THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102 FOR REINFORCEMENT.
10. INDICATES 12" CMU WALL BELOW
11. INDICATES 8" CMU WALL BELOW
12. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
13. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
14. INDICATES STEP IN TOP OF SLAB ELEVATION
15. BM 1 — INDICATES CONCRETE BEAM. SEE SCHEDULE ON 2/S102
16. S-1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
17. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON 6/S102
18. INDICATES TRANSITION POINT OF COLLECTOR REINF.
19. -[0'-2"] — INDICATES DEPRESSES SLAB ELEVATION. VERIFY DEPRESSION W/ ARCHITECTURAL, SEE ARCHITECTURAL DRAWINGS FOR LIMITS OF DEPRESSED AREAS.
20. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
21. INDICATES FLOOR SLAB OPENING, S.A.D.
22. 0" — INDICATES T.O.S. ELEVATION WITH RESPECT TO THE REFERENCE ELEVATION, S.A.D.

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEGG — No. S8623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

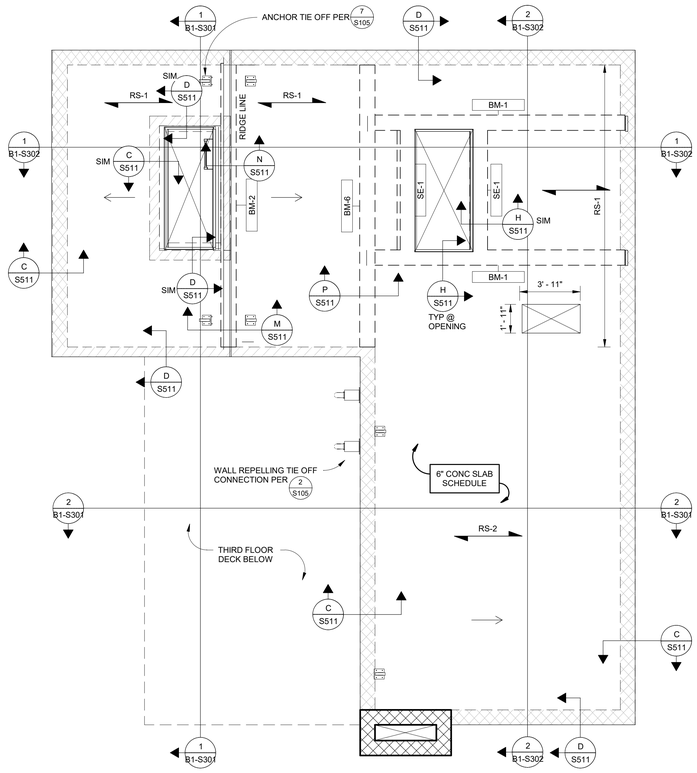
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 88 OF 123

SHEET TITLE
BURN BUILDING - THIRD FLOOR & LOW ROOF PLAN

SHEET NO B1-S203



ROOF PLAN

1/4" = 1'-0"

ROOF FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-S103 FOR TYPICAL FRAMING DETAILS.
3. TOP OF FLOOR SLAB ELEVATION = +30' - 0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE ROOF SLAB SHALL BE 6" THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102 FOR REINFORCMENT.
9. INDICATES 12" CMU WALL BELOW
10. INDICATES 8" CMU WALL BELOW
11. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
12. INDICATES STEP IN TOP OF SLAB ELEVATION
13. BM 1 — INDICATES CONCRETE BEAM. SEE SCHEDULE ON 2 S102
14. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3 S102
15. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON 6 S102
16. INDICATES TRANSITION POINT OF COLLECTOR REINF.
17. -[0'-2"] — INDICATES DEPRESSES SLAB ELEVATION. VERIFY DEPRESSION W/ ARCHITECTURAL, SEE ARCHITECTURAL DRAWINGS FOR LIMITS OF DEPRESSED AREAS.
18. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
19. INDICATES ROOF SLAB OPENING, SAD

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — AUSTIN G. LEE — No. S6623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

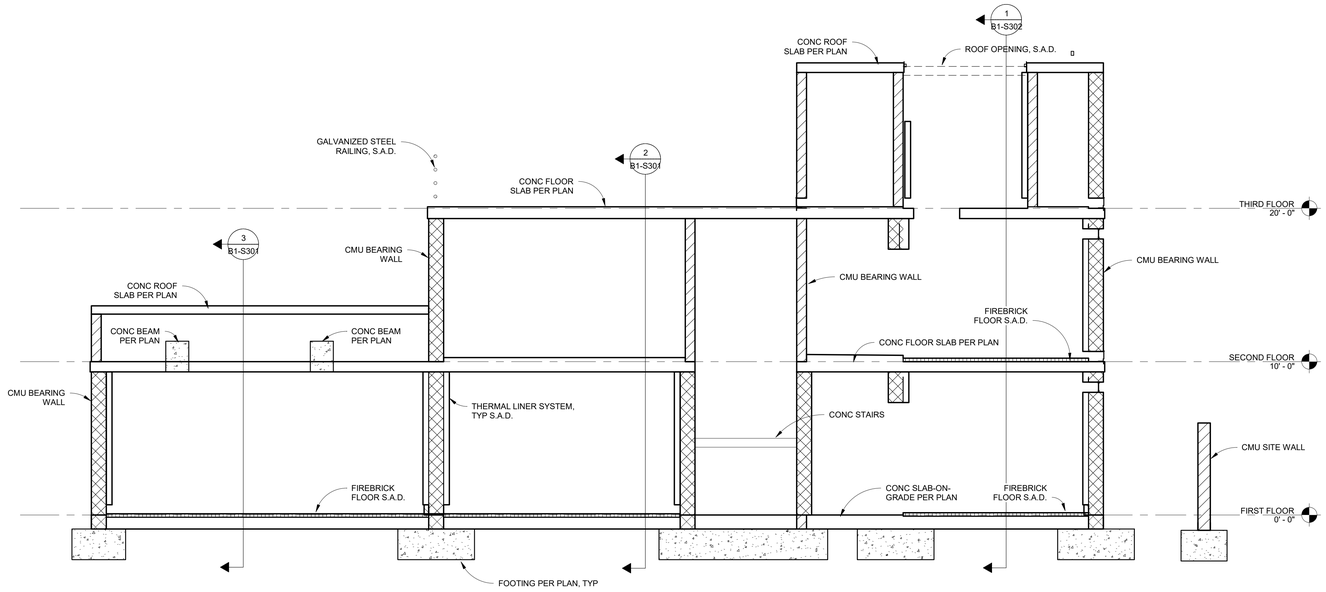
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 89 OF 123

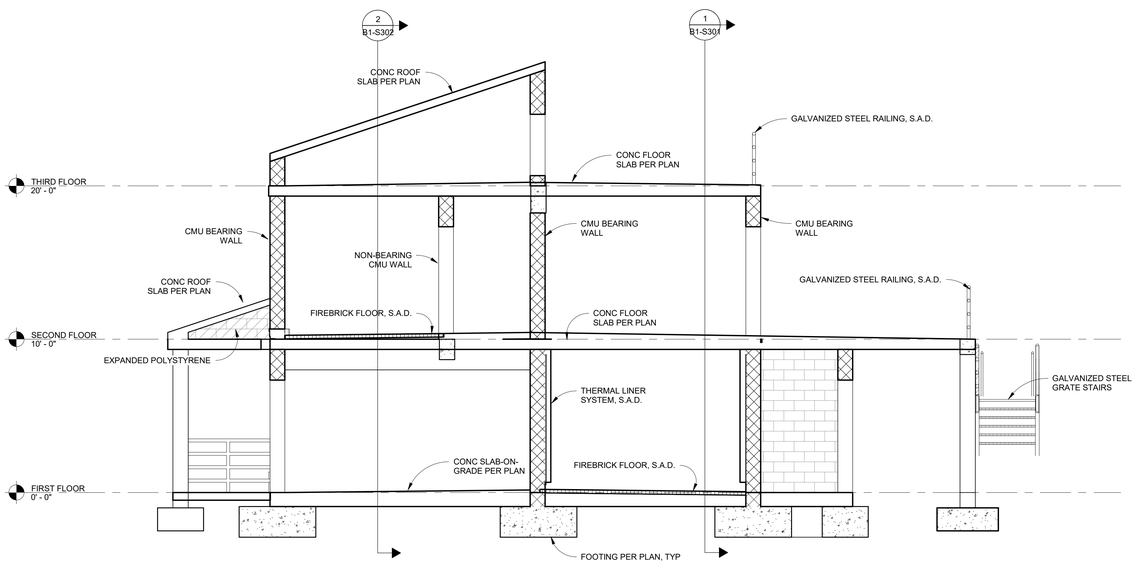
SHEET TITLE
BURN BUILDING - ROOF PLAN

SHEET NO B1-S204



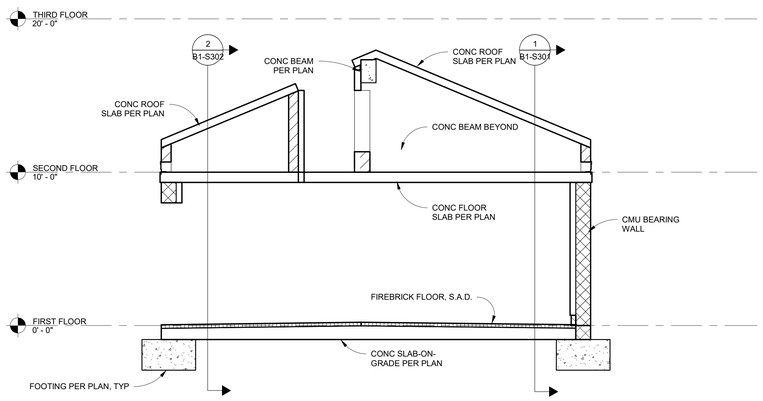
BUILDING SECTION 1 / B1-S301

1/4" = 1'-0"



BUILDING SECTION 2 / B1-S301

1/4" = 1'-0"



BUILDING SECTION 3 / B1-S301

1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	DAA	CHECKED BY	DGL
CONSULTANT JOB NO	2018047	DATE	08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

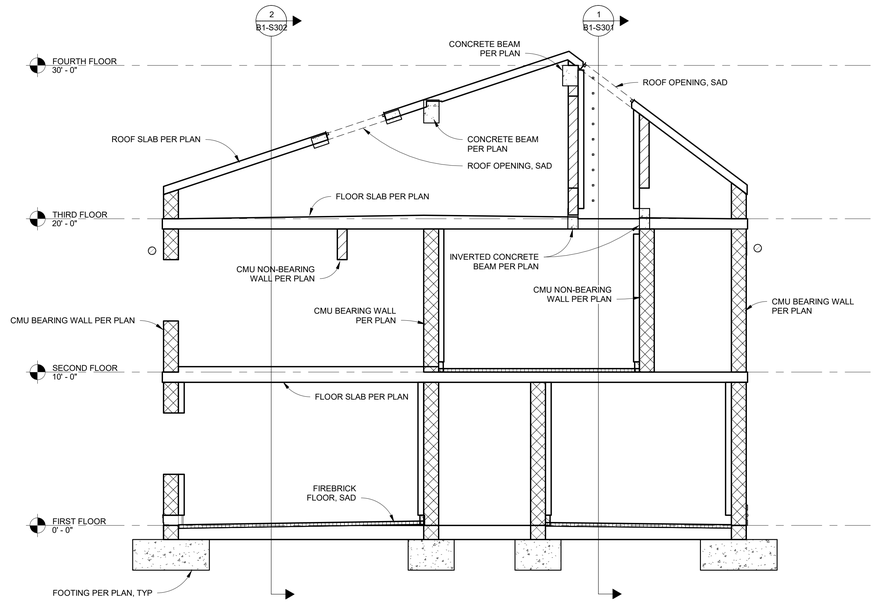
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO — SHEET 90 OF 123

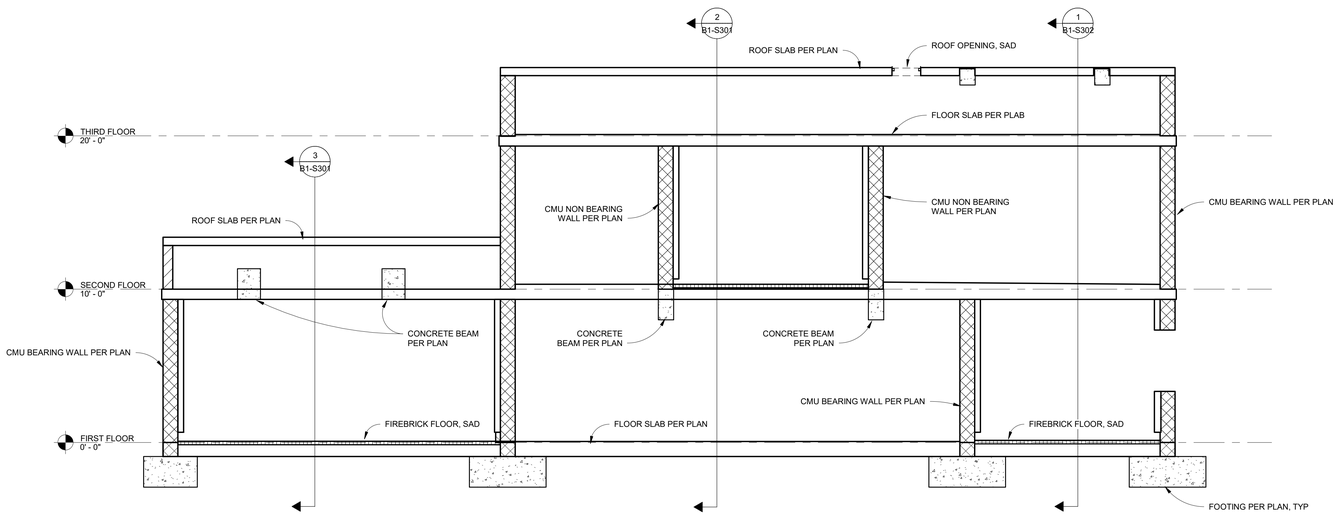
SHEET TITLE
BURN BUILDING - BUILDING SECTIONS No. 1

SHEET NO
B1-S301



BUILDING SECTION 1 / B1-S302

1/4" = 1'-0"



BUILDING SECTION 2 / B1-S302

1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEGG
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

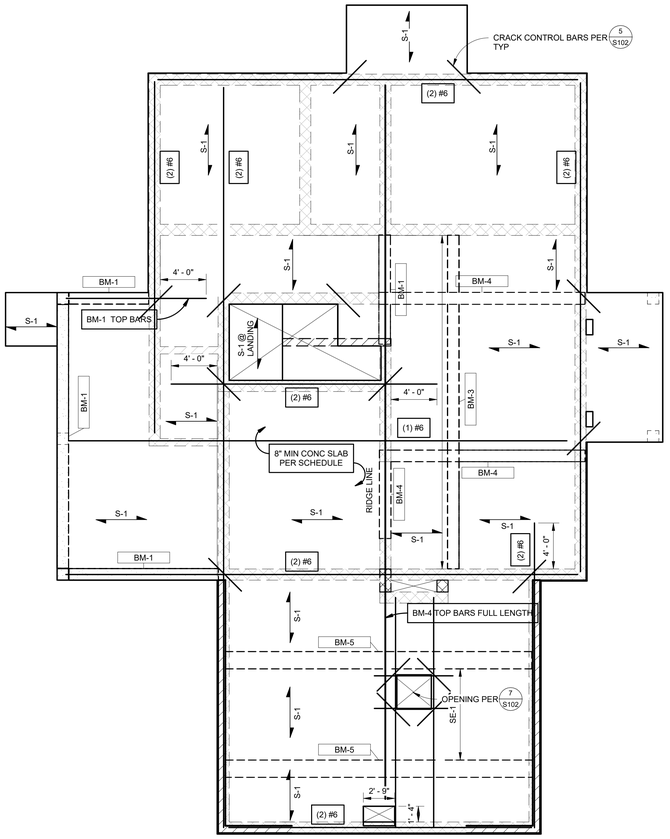
SHEET 91 OF 123

SHEET TITLE
BURN BUILDING - BUILDING SECTIONS No. 2

SHEET NO
B1-S302

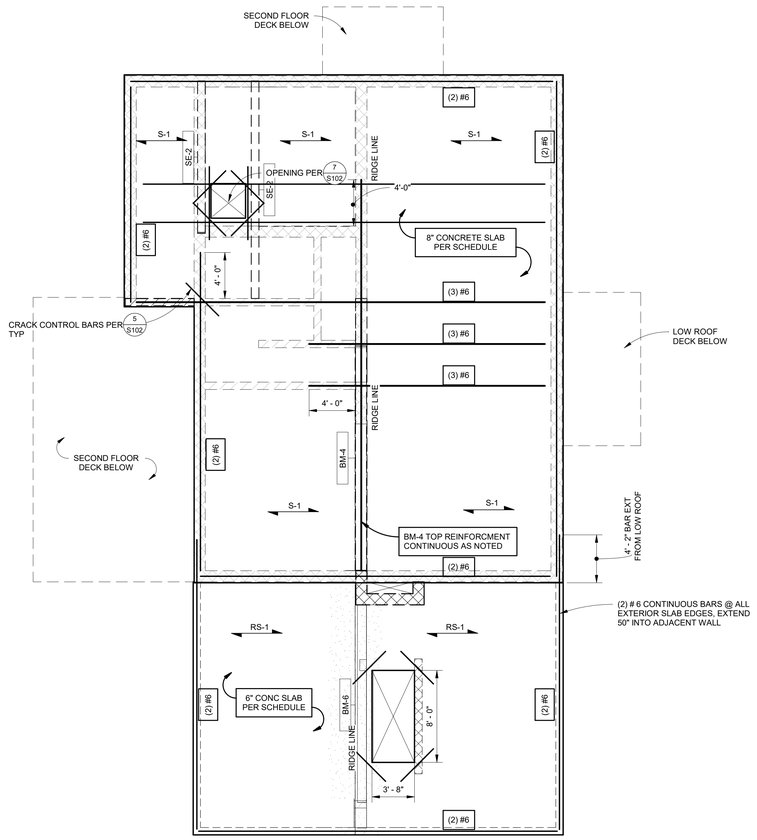
SLAB PLAN FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-103 FOR TYPICAL FRAMING DETAILS.
3. SEE SHEET B1-S202 - B1-S204 FOR T.O. SLAB ELEVATION
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. INDICATES CMU WALL BELOW
9. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE 6/S101
10. INDICATES STEP IN TOP OF SLAB ELEVATION
11. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
12. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON 6/S102
13. INDICATES TRANSITION POINT OF COLLECTOR REINF.
14. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.



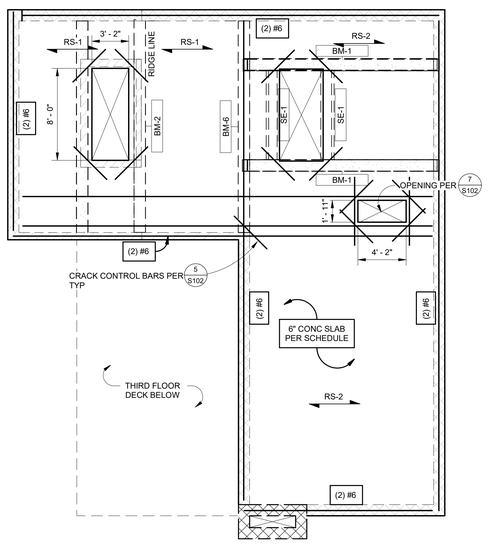
SECOND FLOOR SLAB PLAN

3/16" = 1'-0"



THIRD FLOOR & LOW ROOF SLAB PLAN

3/16" = 1'-0"



ROOF SLAB PLAN

3/16" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — JUSTIN G. LEE — No. 58623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA — Resource Management Agency

APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

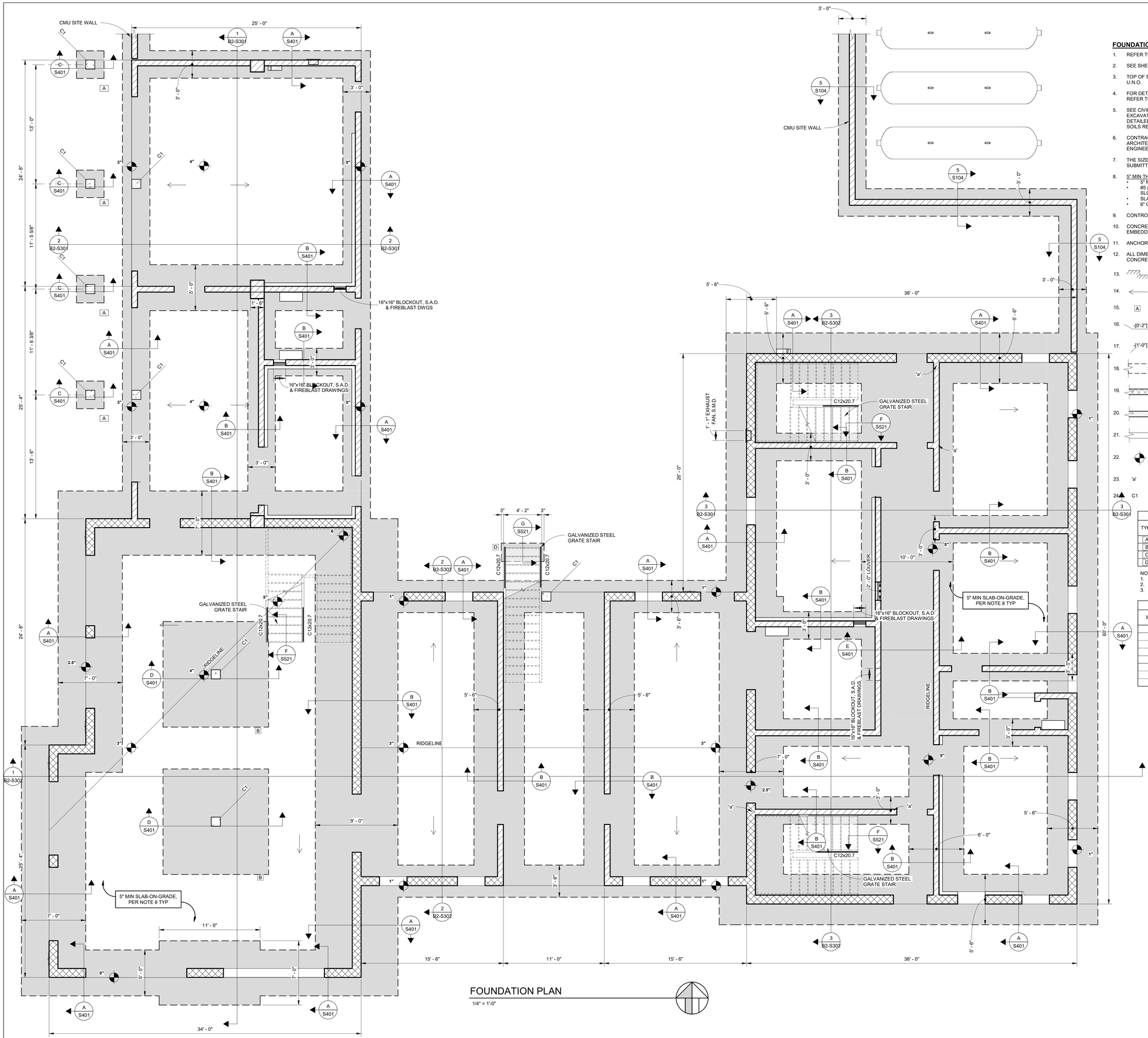
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 92 OF 123

SHEET TITLE: BURN BUILDING - SLAB PLAN

SHEET NO B1-S401



FOUNDATION PLAN

1/4" = 1'-0"

FOUNDATION PLAN NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001 & S002.
2. SEE SHEET S101-S105 FOR TYPICAL FOUNDATION DETAILS.
3. TOP OF SLAB & GROUND FLOOR REFERENCE ELEVATION = +[0' - 0"] TYP, U.N.O.
4. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
5. SEE CIVIL DRAWINGS FOR BUILDING PAD PREPARATION, INCLUDING OVER EXCAVATION AND FILL REQUIREMENTS PER THE SOILS REPORT. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
6. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM BOTH ARCHITECT AND ENGINEER OF ANY CONFLICTING INFORMATION.
7. THE SIZE & LOCATION OF ALL FOOTING AND SLAB PENETRATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
8. 5" MIN THICK SLAB-ON-GRADE SECTION AS FOLLOWS:
   - 5" MIN THICK CONCRETE SLAB, SAD FOR SLAB ELEVATIONS
   - #5 @ 18" O.C. EACH WAY AT 2" BELOW TOP OF SLAB. BARS SHALL SLOPE WITH SLAB, S.A.D. FOR T.O. SLAB ELEVATIONS.
   - SLAB MEMBRANE
   - 6" OF 3/4" CRUSHED ROCK
9. CONTROL JOINTS ARE TO BE INSTALLED @ 12'-6" O.C. MAX @ 5" SLABS
10. CONCRETE CONTRACTOR IS RESPONSIBLE FOR THE PLACEMENT OF ALL EMBEDDED ITEMS.
11. ANCHOR BOLTS AND BASE PLATES SHALL NOT BE WET SET.
12. ALL DIMENSIONS ARE TO CENTERLINE OF COLUMNS OR FACE OF CONCRETE, TYPICAL UNLESS NOTED OTHERWISE.
13. INDICATES STEP/DEPRESSION (6 / S101)
14. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
15. (A) INDICATES FOUNDATION TAG. SEE SCHEDULE.
16. [0'-2"] INDICATES DEPRESSED SLAB ELEVATION. VERIFY DEPRESSION W/ ARCH, SAD FOR LIMITS OF DEPRESSED AREAS.
17. [1'-0"] INDICATES TOP OF FOOTING ELEVATION BELOW SLAB. TOP OF FOOTING SHALL BE 1'-0" BELOW SLAB, UNO.
18. INDICATES FOOTING.
19. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
20. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
21. INDICATES THERMAL LINER SYSTEM, S.A.D.
22. 1" INDICATES T.O.S. ELEVATION WITH RESPECT TO THE REFERENCE ELEVATION, S.A.D.
23. 'a' INDICATES (2) #6 BOUNDARY BAR (1 IN EACH CELL OF THE LAST BLOCK)
24. C1 INDICATES COLUMN, SEE SCHEDULE (1 / S102)

PAD FOOTING SCHEDULE				
TYPE	SIZE	REINFORCING		REMARKS
		LONGITUDINAL	TRANSVERSE	
A	3'-0" x 3'-0" x 1'-6"	3 - #6	3 - #6	3
B	11'-6" x 11'-6" x 3'-0"	11 - #9	11 - #9	3
C	4'-0" x 4'-0" x 1'-6"	4 - #6	4 - #6	3
D	4'-6" x 2'-0" x 1'-6"	2 - #6	4 - #6	3

NOTES:
1. RUN CONTINUOUS STEEL THROUGH FOOTING.
2. REINFORCING INDICATES BOTTOM MAT ONLY.
3. REINFORCING INDICATES TOP AND BOTTOM MAT.

STRIP FOOTING SCHEDULE		
WIDTH	REINFORCING	
	LONGITUDINAL	TIES
3'-0"	4 - #6 TOP & BOTTOM	#4 @ 16" OC
3'-6"	4 - #6 TOP & BOTTOM	#4 @ 16" OC
5'-0"	6 - #6 TOP & BOTTOM	#4 @ 16" OC
5'-6"	6 - #6 TOP & BOTTOM	#4 @ 16" OC
6'-0"	7 - #6 TOP & BOTTOM	#4 @ 16" OC
7'-0"	8 - #6 TOP & BOTTOM	#4 @ 16" OC
10'-0"	11 - #6 TOP & BOTTOM	#4 @ 16" OC
11'-0"	12 - #6 TOP & BOTTOM	#4 @ 16" OC

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER AUSTIN G. LEE No. S6623 EXP. 3/31/25 STRUCTURAL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

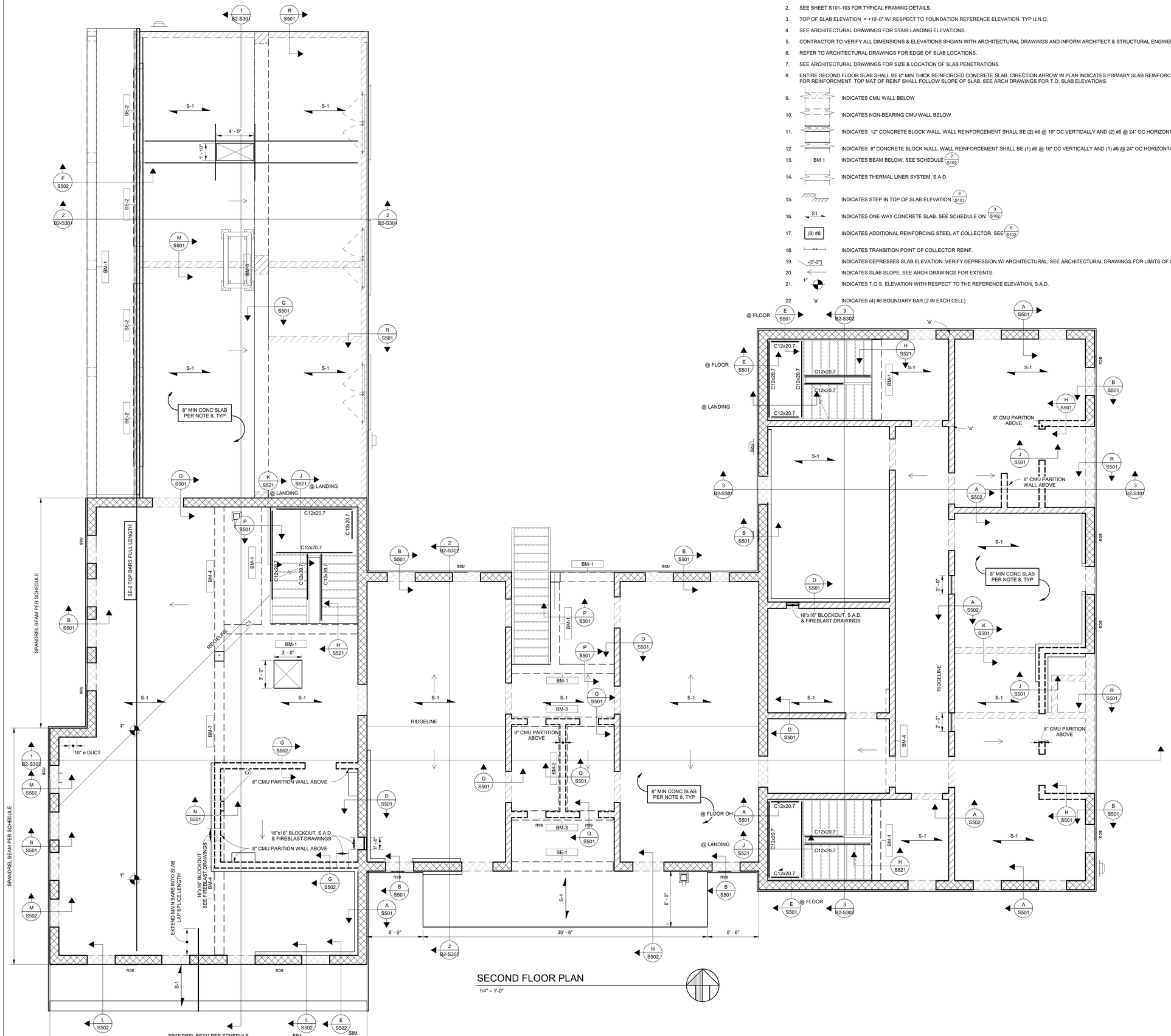
COUNTY DWG NO — SHEET 93 OF 123

SHEET TITLE
MULTI-PURPOSE BUILDING - FOUNDATION PLAN

SHEET NO
B2-S201

FLOOR FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-103 FOR TYPICAL FRAMING DETAILS.
3. TOP OF SLAB ELEVATION = +10'-0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE SECOND FLOOR SLAB SHALL BE 8" MIN THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102 FOR REINFORCMENT. TOP MAT OF REINF SHALL FOLLOW SLOPE OF SLAB. SEE ARCH DRAWINGS FOR T.O. SLAB ELEVATIONS.
9. INDICATES CMU WALL BELOW
10. INDICATES NON-BEARING CMU WALL BELOW
11. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S1.03 FOR ADD'L INFORMATION.
12. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S1.03 FOR ADD'L INFORMATION.
13. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE 2/S102
14. INDICATES THERMAL LINER SYSTEM, S.A.D.
15. INDICATES STEP IN TOP OF SLAB ELEVATION 6/S101
16. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
17. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE 6/S102
18. INDICATES TRANSITION POINT OF COLLECTOR REINF.
19. -[0'-2"] — INDICATES DEPRESSES SLAB ELEVATION. VERIFY DEPRESSION W/ ARCHITECTURAL, SEE ARCHITECTURAL DRAWINGS FOR LIMITS OF DEPRESSED AREAS.
20. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
21. 1" — INDICATES T.O.S. ELEVATION WITH RESPECT TO THE REFERENCE ELEVATION, S.A.D.
22. 'a' — INDICATES (4) #6 BOUNDARY BAR (2 IN EACH CELL)



SECOND FLOOR PLAN

1/4" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — AUSTIN G. LEE — No. S6623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02

COUNTY PROJECT NUMBER: P6T18021

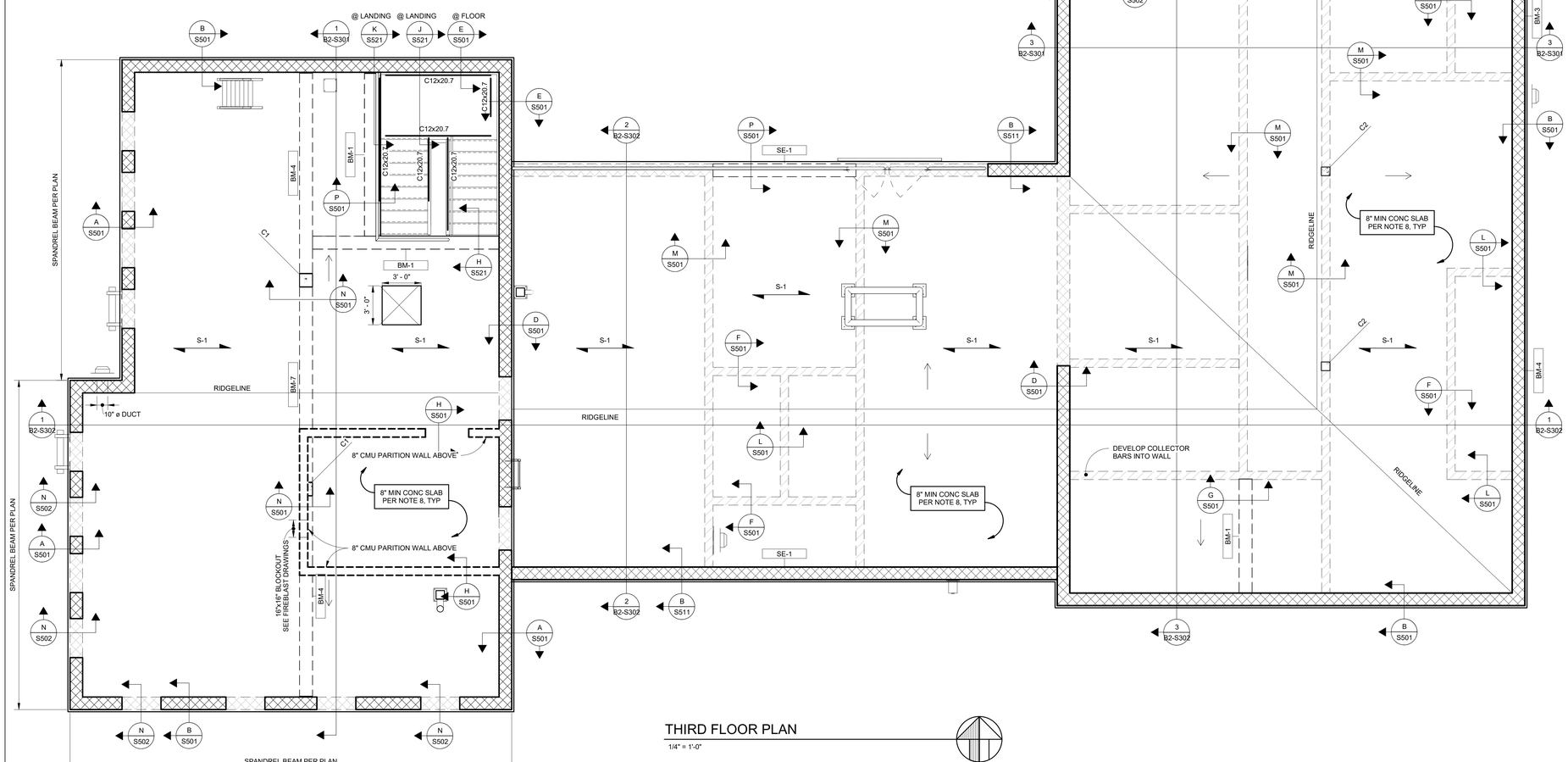
COUNTY DWG NO — SHEET 94 OF 123

SHEET TITLE: MULTI-PURPOSE BUILDING - SECOND FLOOR PLAN

SHEET NO: B2-S202

FLOOR FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-S103 FOR TYPICAL FRAMING DETAILS.
3. TOP OF SLAB ELEVATION = +20'-0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE THIRD FLOOR SLAB SHALL BE 8" MIN THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102 FOR REINFORCEMENT. TOP MAT OF REINF SHALL FOLLOW SLOPE OF SLAB. SEE ARCH DRAWINGS FOR T.O. SLAB ELEVATIONS.
9. INDICATES 12" CMU WALL BELOW
10. INDICATES 8" CMU WALL BELOW
11. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
12. INDICATES 8" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (1) #6 @ 16" OC VERTICALLY AND (1) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
13. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE
14. INDICATES STEP IN TOP OF SLAB ELEVATION
15. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
16. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE 6/S102
17. INDICATES TRANSITION POINT OF COLLECTOR REINF.
18. -[0'-2"] — INDICATES DEPRESSES SLAB ELEVATION. VERIFY DEPRESSION W/ ARCHITECTURAL, SEE ARCHITECTURAL DRAWINGS FOR LIMITS OF DEPRESSED AREAS.
19. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.
20. 'a' — INDICATES (4) #6 BOUNDARY BAR (2 IN EACH CELL OF THE LAST BLOCK)
21. C2 — INDICATES COLUMN, SEE SCHEDULE 1/S102



THIRD FLOOR PLAN

1/4" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEE — No. S6623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

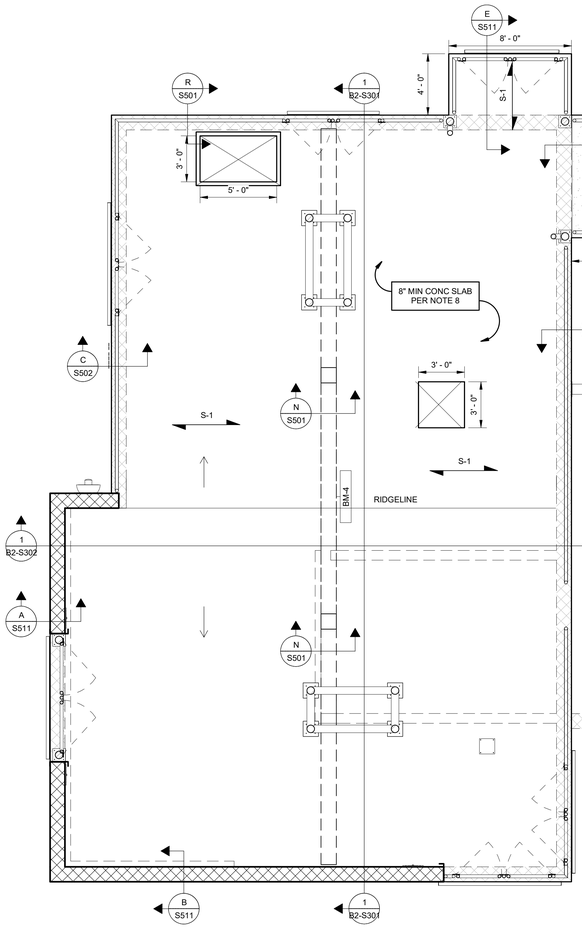
COUNTY DWG NO — SHEET 95 OF 123

SHEET TITLE
MULTI-PURPOSE BUILDING - THIRD FLOOR PLAN

SHEET NO
B2-S203

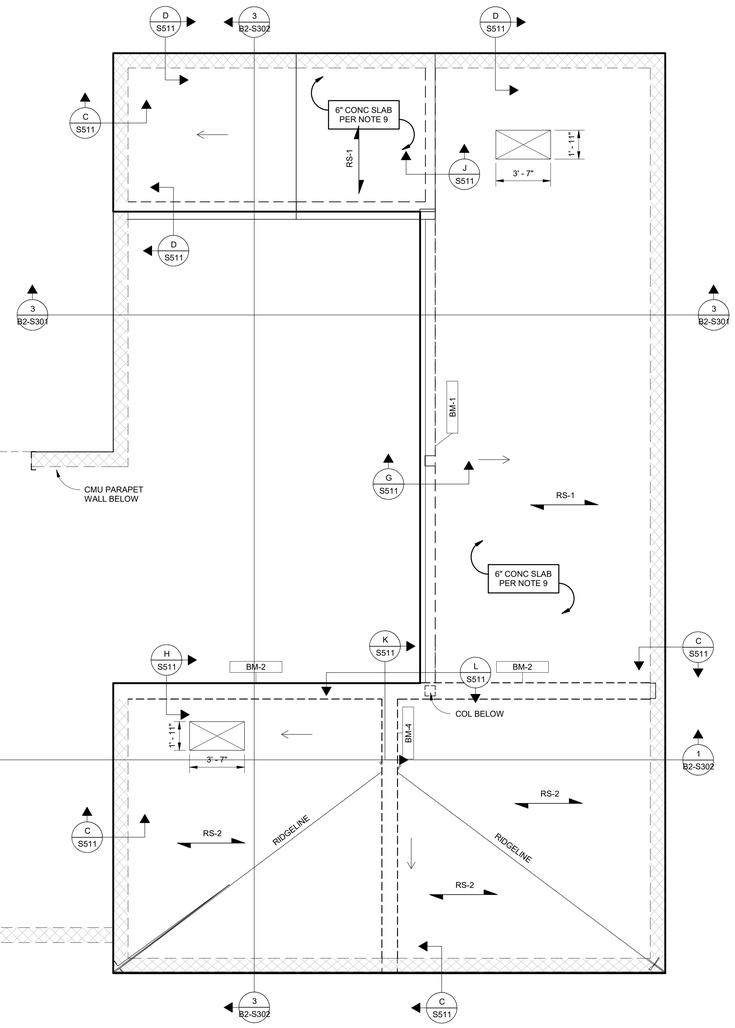
FLOOR FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-S103 FOR TYPICAL FRAMING DETAILS.
3. TOP OF SLAB ELEVATION = +30'-0" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O.
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. ENTIRE FOURTH FLOOR SLAB SHALL BE 8" MIN THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102.. TOP MAT OF REINF SHALL FOLLOW SLOPE OF SLAB. SEE ARCH DRAWINGS FOR T.O. SLAB ELEVATIONS.
9. ENTIRE ROOF SLAB SHALL BE 6" THICK REINFORCED CONCRETE SLAB. DIRECTION ARROW IN PLAN INDICATES PRIMARY SLAB REINFORCEMENT TO BE CONTINUOUS. SEE SCHEDULE ON S102.
10. INDICATES 12" CMU WALL BELOW
11. INDICATES 8" CMU WALL BELOW
12. INDICATES 12" CONCRETE BLOCK WALL. WALL REINFORCEMENT SHALL BE (2) #6 @ 16" OC VERTICALLY AND (2) #6 @ 24" OC HORIZONTALLY, UNO. SEE S103 FOR ADD'L INFORMATION.
13. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE 2/S102
14. INDICATES STEP IN TOP OF SLAB ELEVATION
15. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
16. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE 6/S102
17. INDICATES TRANSITION POINT OF COLLECTOR REINF.
18. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.



FOURTH FLOOR PLAN

1/4" = 1'-0"



LOW ROOF PLAN

1/4" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — AUSTIN G. LEE — No. S6623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

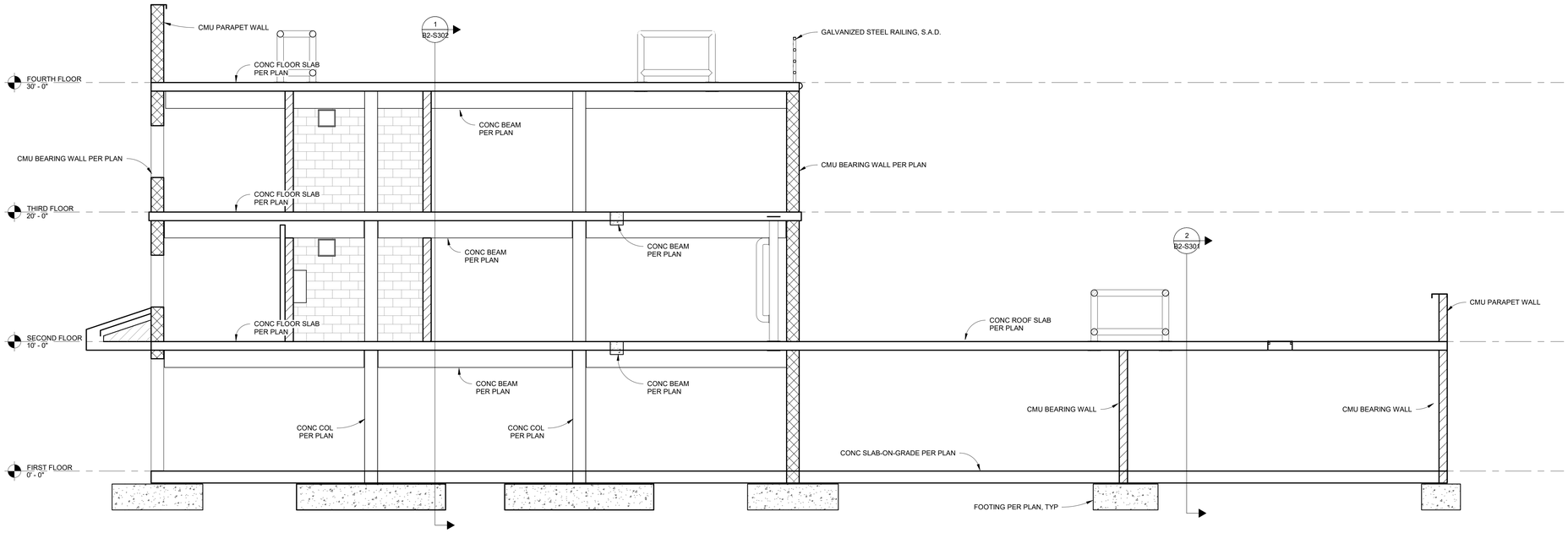
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 96 OF 123

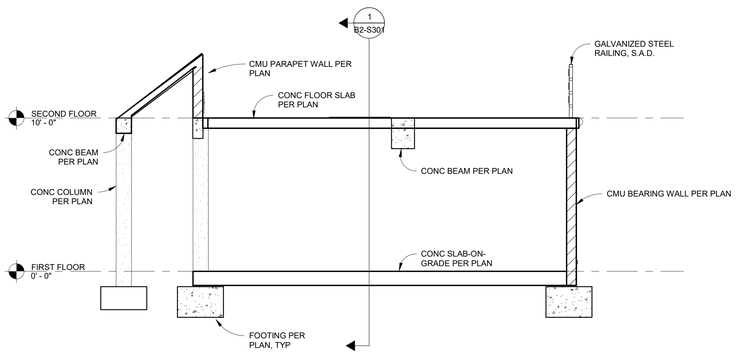
SHEET TITLE
MULTI-PURPOSE BUILDING - ROOF PLAN

SHEET NO B2-S204



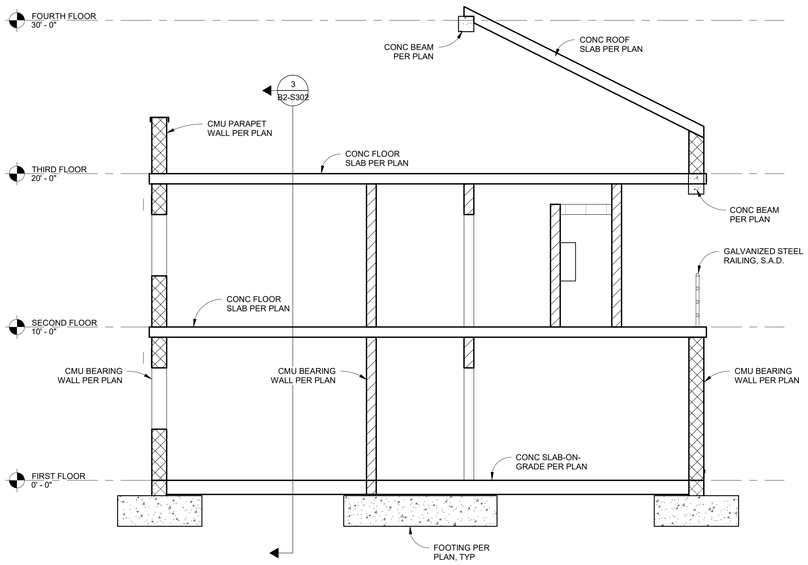
BUILDING SECTION 1 / B2-S301

1/4" = 1'-0"



BUILDING SECTION 2 / B2-S301

1/4" = 1'-0"



BUILDING SECTION 3 / B2-S301

1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

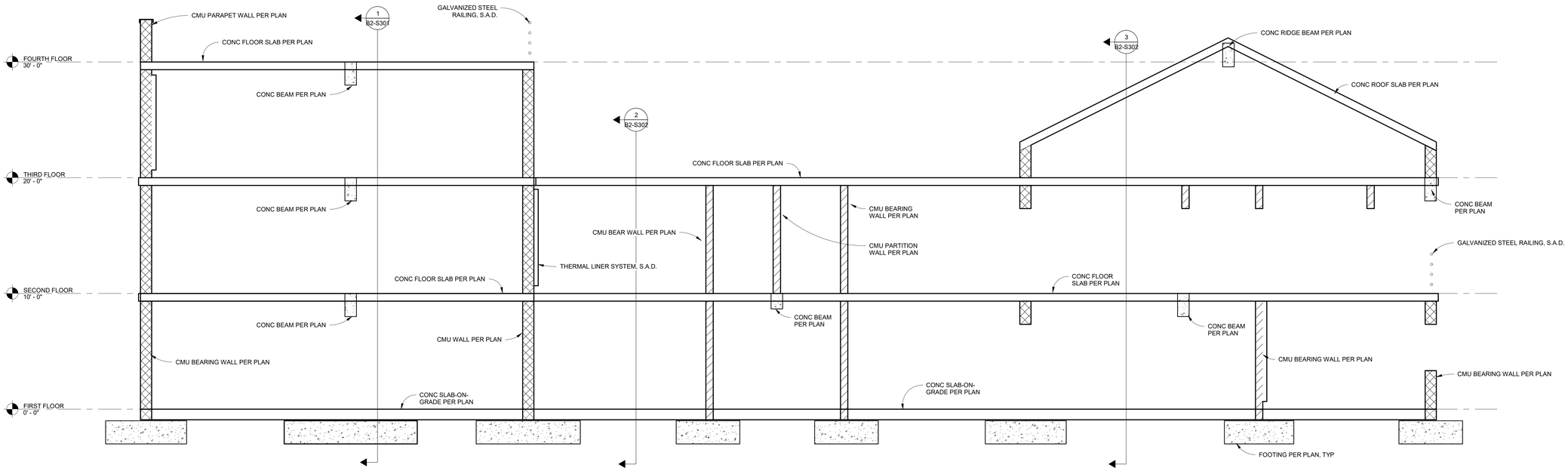
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 97 OF 123

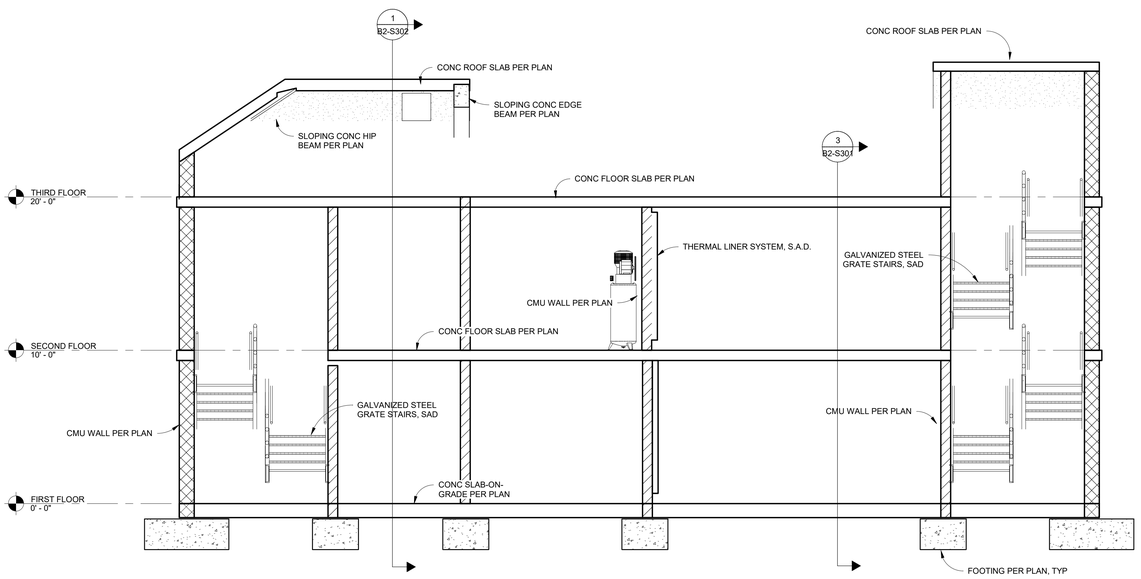
SHEET TITLE
MULTI-PURPOSE BUILDING - BUILDING SECTIONS No. 1

SHEET NO
B2-S301



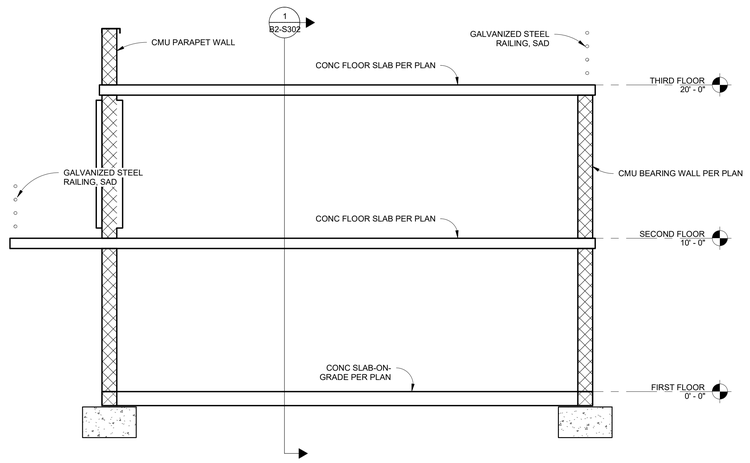
BUILDING SECTION 1 / B2-S302

1/4" = 1'-0"



BUILDING SECTION 3 / B2-S302

1/4" = 1'-0"



BUILDING SECTION 2 / B2-S302

1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

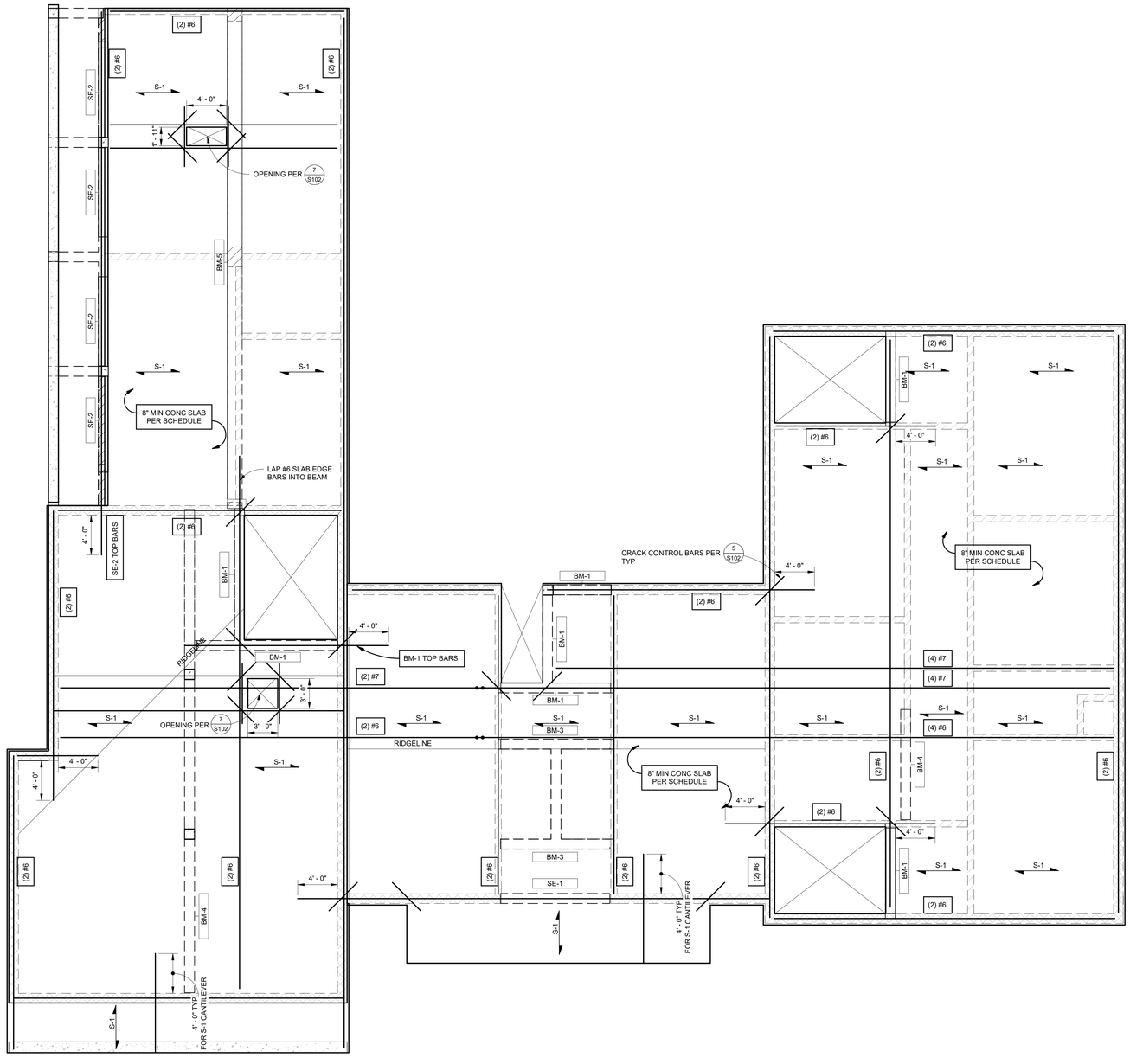
SHEET 98 OF 123

SHEET TITLE
MULTI-PURPOSE BUILDING - BUILDING SECTIONS No. 2

SHEET NO
B2-S302

SLAB PLAN FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-103 FOR TYPICAL FRAMING DETAILS.
3. SEE SHEET B2-S202 - B2-S204 FOR T.O. SLAB ELEVATION
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. INDICATES CMU WALL BELOW
9. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE 6/S101
10. INDICATES STEP IN TOP OF SLAB ELEVATION
11. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON 3/S102
12. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON 6/S102
13. INDICATES TRANSITION POINT OF COLLECTOR REINF.
14. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.



SECOND FLOOR SLAB PLAN

3/16" = 1'-0"

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER AUSTIN G. LEE No. S6923 EXP. 3/31/25 STRUCTURAL STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

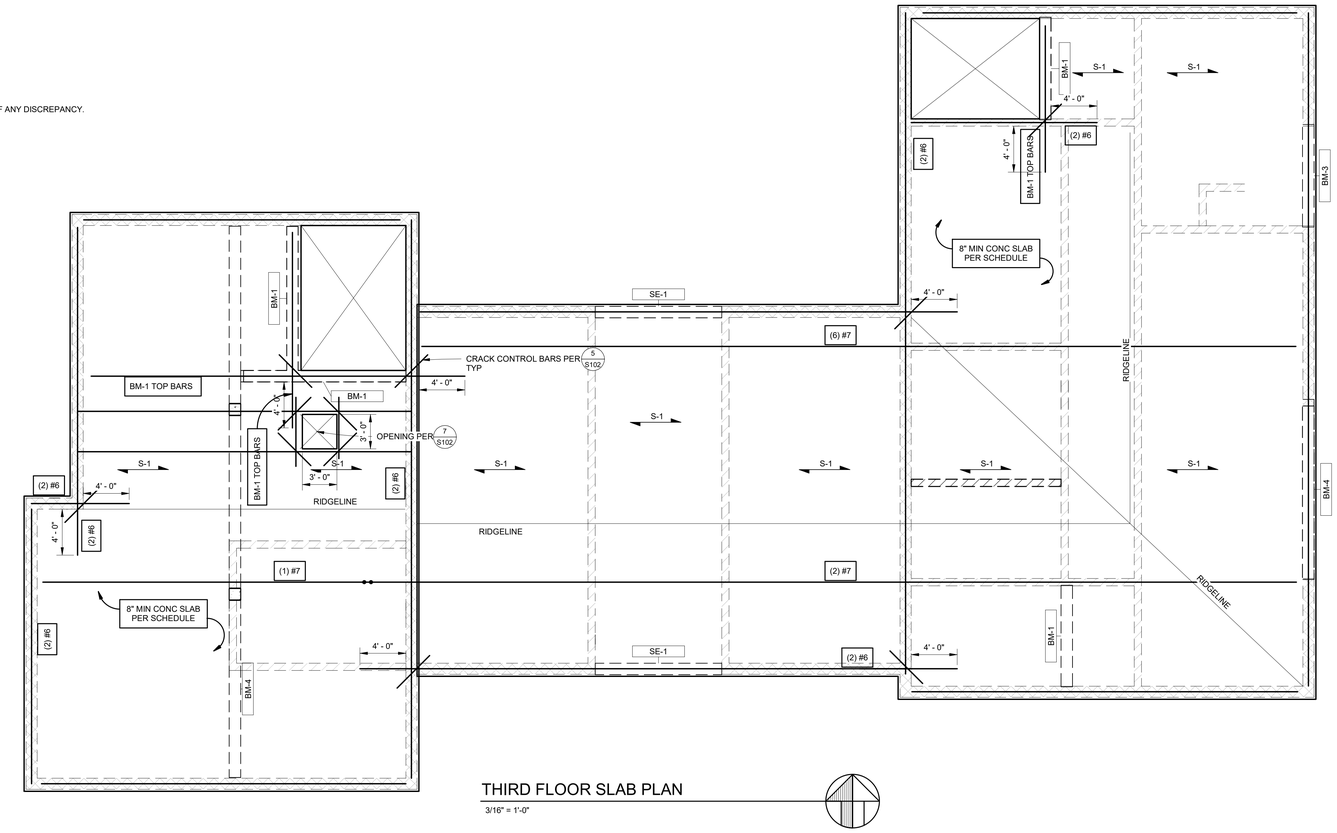
COUNTY DWG NO — SHEET 99 OF 123

SHEET TITLE
MULTI-PURPOSE BUILDING - SLAB PLAN No. 1

SHEET NO B2-S401

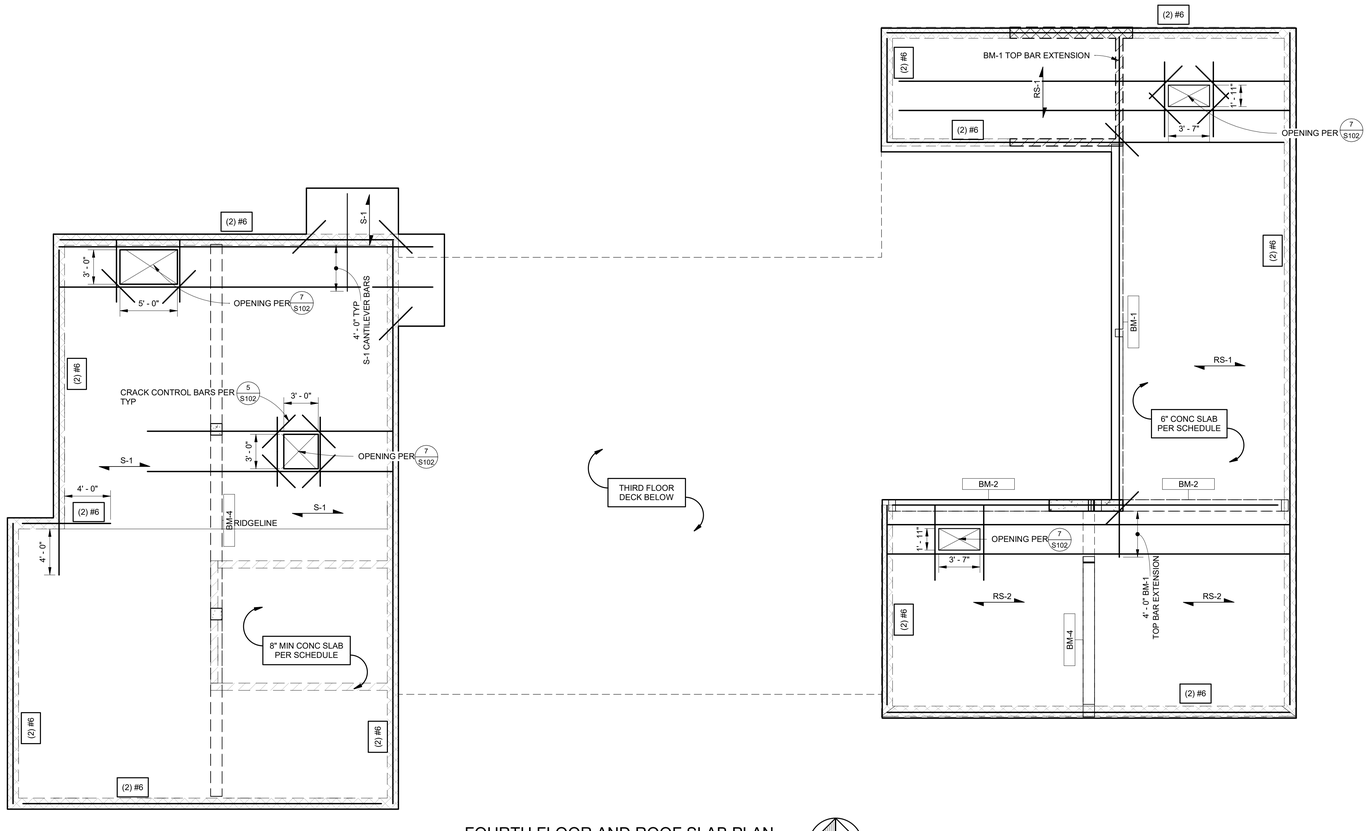
SLAB PLAN FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S001-S002.
2. SEE SHEET S101-103 FOR TYPICAL FRAMING DETAILS.
3. SEE SHEET B2-S202 - B2-S204 FOR T.O. SLAB ELEVATION
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR LANDING ELEVATIONS.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF SLAB LOCATIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF SLAB PENETRATIONS.
8. INDICATES CMU WALL BELOW
9. BM 1 — INDICATES BEAM BELOW, SEE SCHEDULE (6/S101)
10. INDICATES STEP IN TOP OF SLAB ELEVATION
11. S1 — INDICATES ONE WAY CONCRETE SLAB. SEE SCHEDULE ON (3/S102)
12. (8) #8 — INDICATES ADDITIONAL REINFORCING STEEL AT COLLECTOR. SEE SCHEDULE ON (6/S102)
13. INDICATES TRANSITION POINT OF COLLECTOR REINF.
14. INDICATES SLAB SLOPE. SEE ARCH DRAWINGS FOR EXTENTS.



THIRD FLOOR SLAB PLAN

3/16" = 1'-0"



FOURTH FLOOR AND ROOF SLAB PLAN

3/16" = 1'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS — MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEE — No. 56623 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA — CHECKED BY DGL

CONSULTANT JOB NO 2018047 — DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

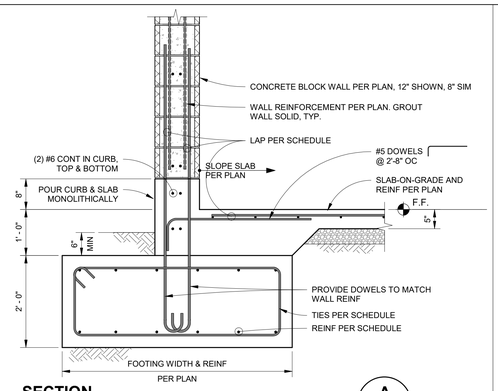
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

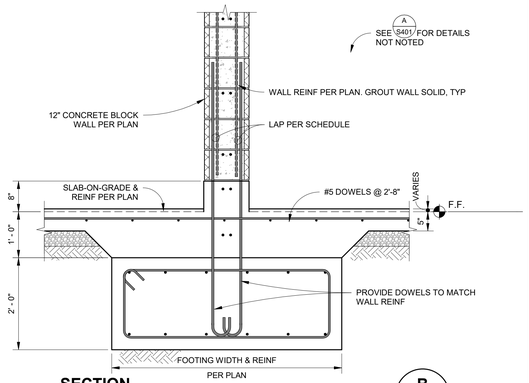
COUNTY DWG NO — SHEET 100 OF 123

SHEET TITLE
MULTI-PURPOSE BUILDING - SLAB PLAN No. 2

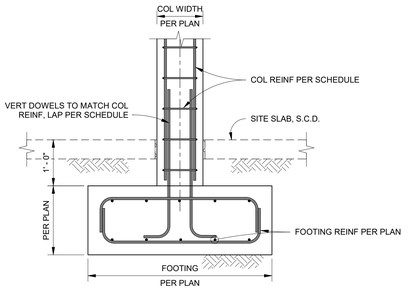
SHEET NO B2-S402



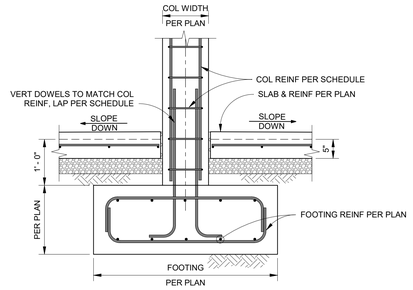
SECTION A / S401
3/4" = 1'-0"



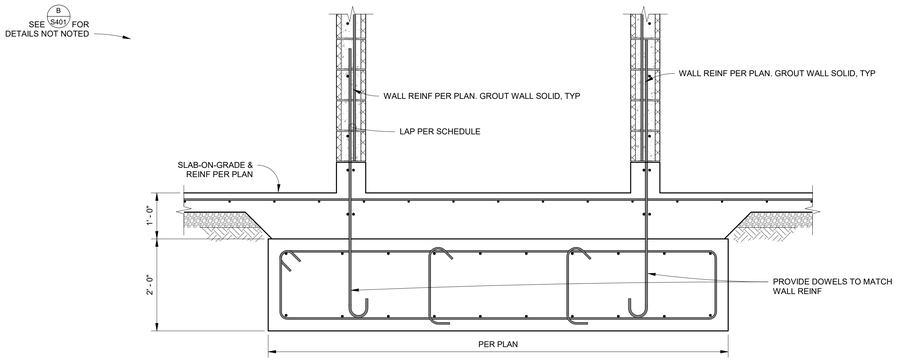
SECTION B / S401
3/4" = 1'-0"



SECTION C / S401
3/4" = 1'-0"



SECTION D / S401
3/4" = 1'-0"



SECTION E / S401
3/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

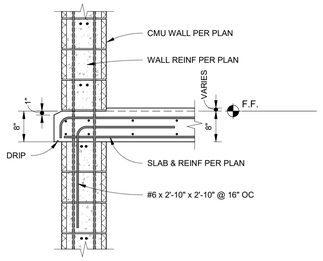
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

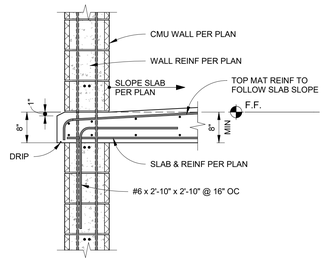
COUNTY DWG NO | SHEET 101 OF 123

SHEET TITLE
FOUNDATION DETAILS No. 1

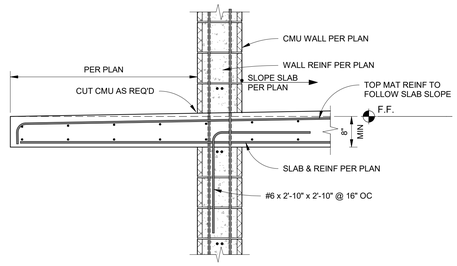
SHEET NO S401



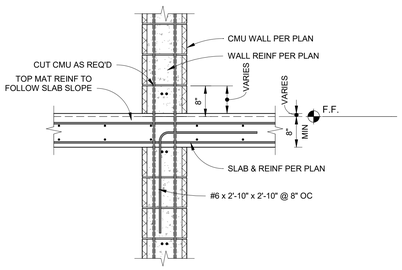
SECTION A / S501
3/4" = 1'-0"



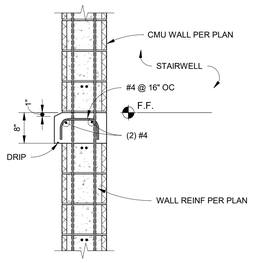
SECTION B / S501
3/4" = 1'-0"



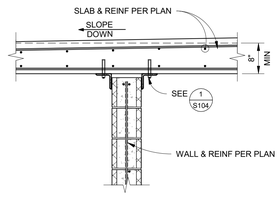
SECTION C / S501
3/4" = 1'-0"



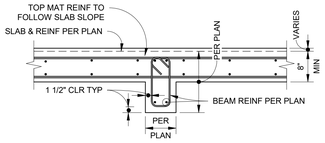
SECTION D / S501
3/4" = 1'-0"



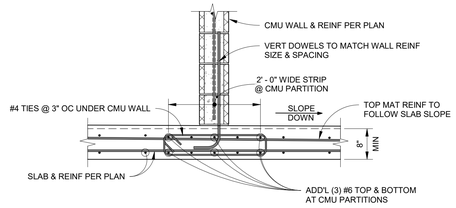
SECTION E / S501
3/4" = 1'-0"



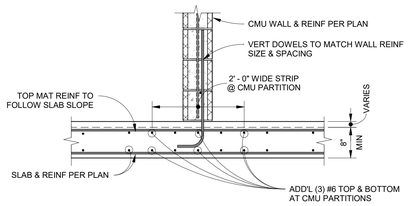
SECTION F / S501
3/4" = 1'-0"



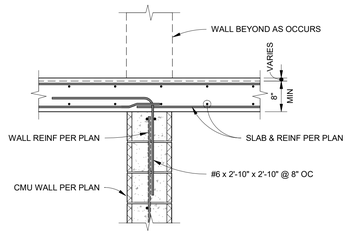
SECTION G / S501
3/4" = 1'-0"



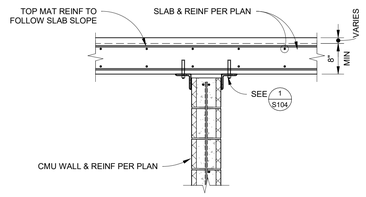
SECTION H / S501
3/4" = 1'-0"



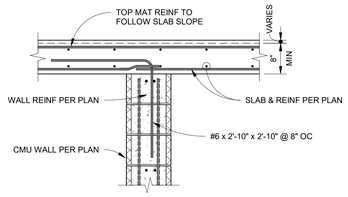
SECTION J / S501
3/4" = 1'-0"



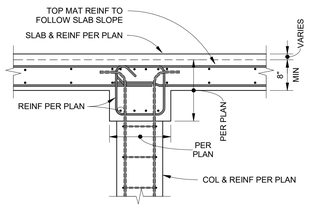
SECTION K / S501
3/4" = 1'-0"



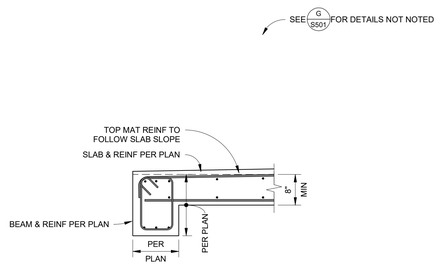
SECTION L / S501
3/4" = 1'-0"



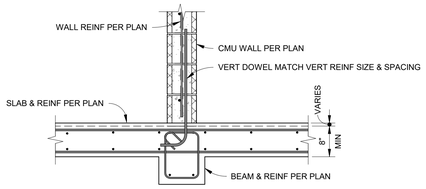
SECTION M / S501
3/4" = 1'-0"



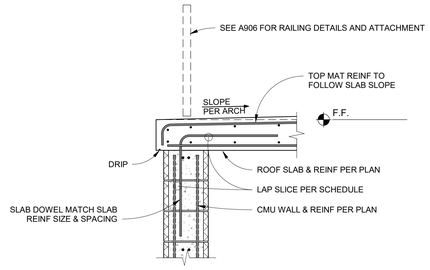
SECTION N / S501
3/4" = 1'-0"



SECTION P / S501
3/4" = 1'-0"



SECTION Q / S501
3/4" = 1'-0"



SECTION R / S501
3/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

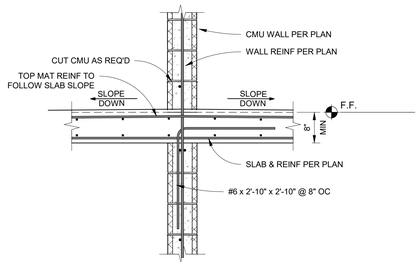
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

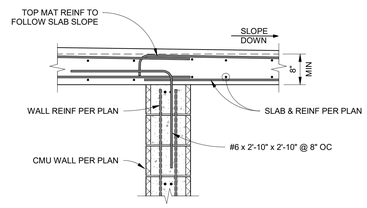
COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 102 OF 123

SHEET TITLE
FLOOR FRAMING DETAILS No. 1

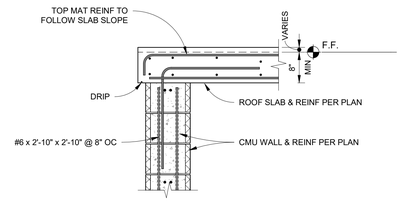
SHEET NO
S501



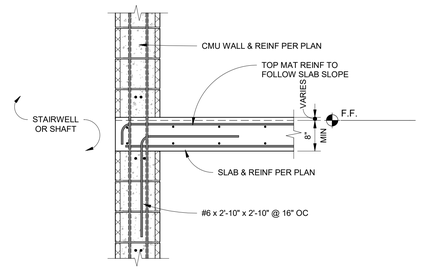
SECTION A / S502
3/4" = 1'-0"



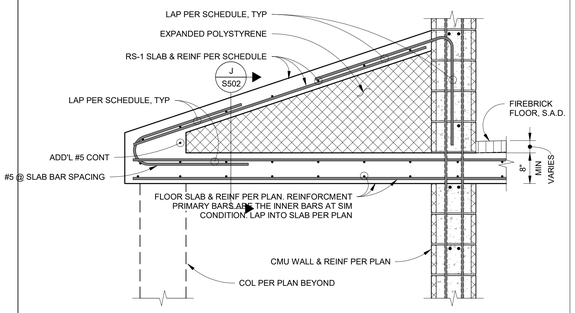
SECTION B / S502
3/4" = 1'-0"



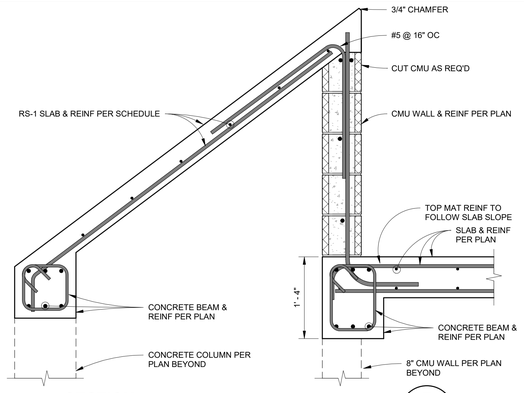
SECTION C / S502
3/4" = 1'-0"



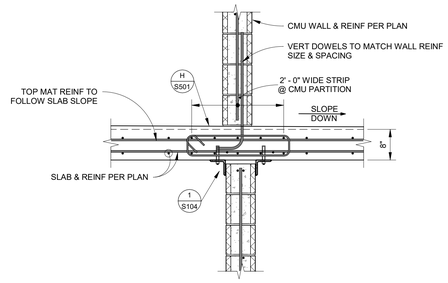
SECTION D / S502
3/4" = 1'-0"



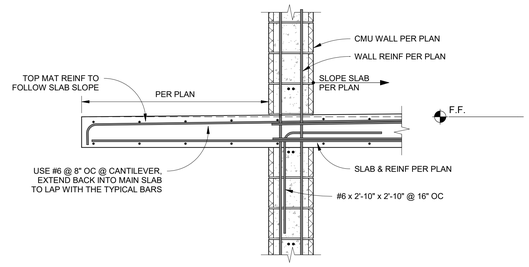
SECTION E / S502
3/4" = 1'-0"



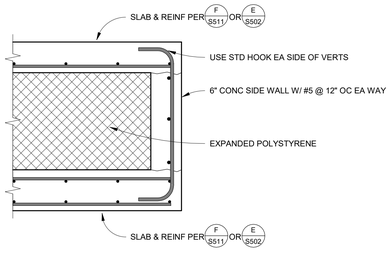
SECTION F / S502
1" = 1'-0"



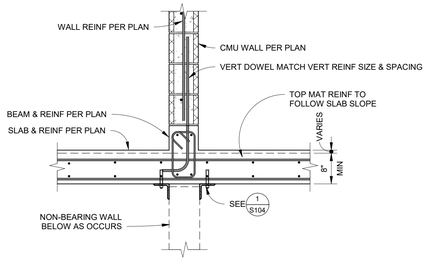
SECTION G / S502
3/4" = 1'-0"



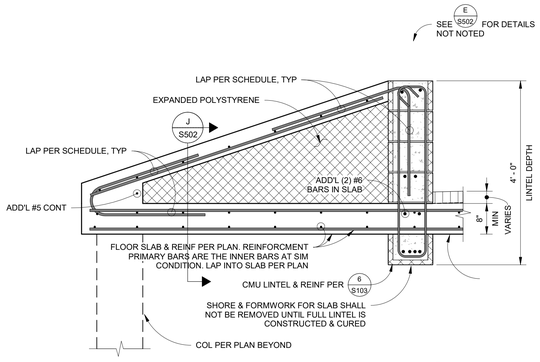
SECTION H / S502
3/4" = 1'-0"



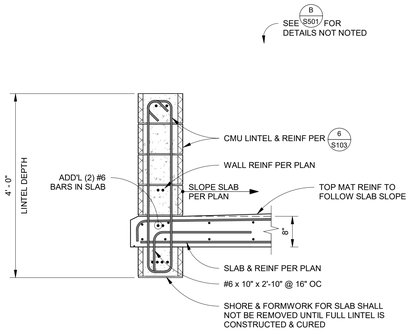
SECTION J / S502
1" = 1'-0"



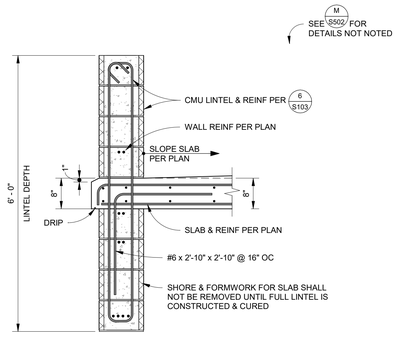
SECTION K / S502
3/4" = 1'-0"



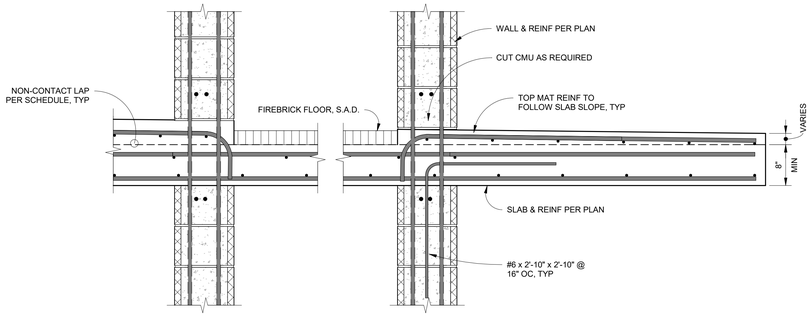
SECTION L / S502
3/4" = 1'-0"



SECTION M / S502
3/4" = 1'-0"



SECTION N / S502
3/4" = 1'-0"



SECTION P / S502
1" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. S8923
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA	CHECKED BY DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

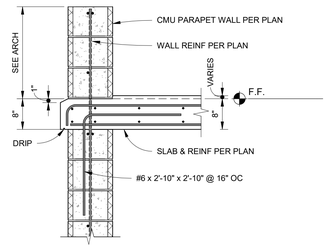
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

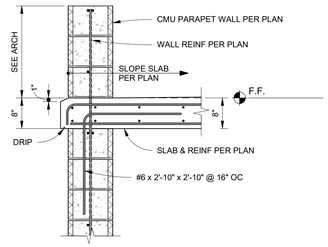
COUNTY DWG NO | SHEET 103 OF 123

SHEET TITLE
FLOOR FRAMING DETAILS No. 2

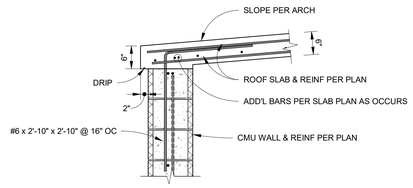
SHEET NO
S502



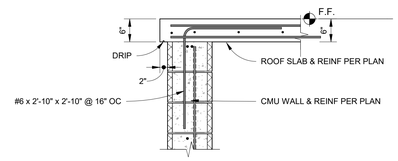
SECTION A / S511
3/4" = 1'-0"



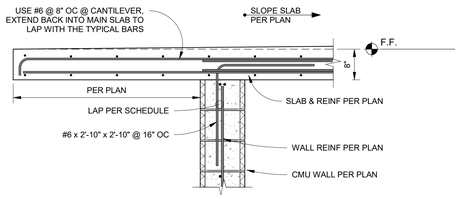
SECTION B / S511
3/4" = 1'-0"



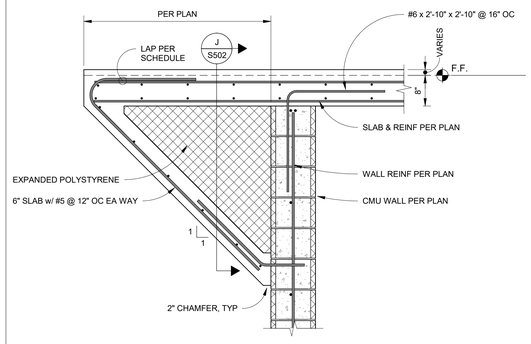
SECTION C / S511
3/4" = 1'-0"



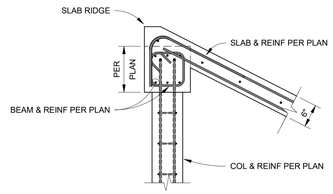
SECTION D / S511
3/4" = 1'-0"



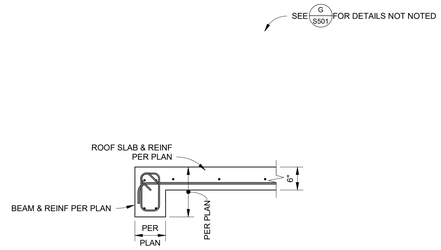
SECTION E / S511
3/4" = 1'-0"



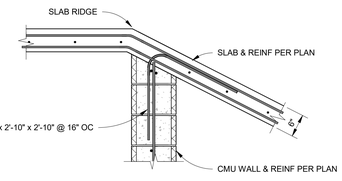
SECTION F / S511
3/4" = 1'-0"



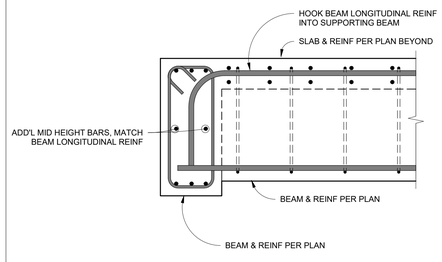
SECTION G / S511
3/4" = 1'-0"



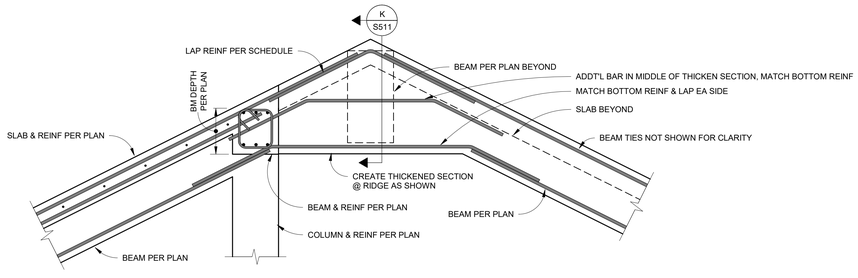
SECTION H / S511
3/4" = 1'-0"



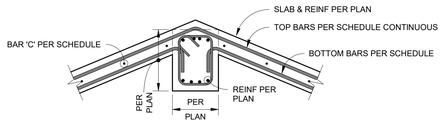
SECTION J / S511
3/4" = 1'-0"



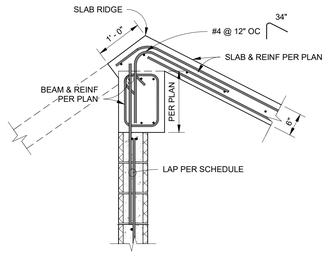
SECTION K / S511
1" = 1'-0"



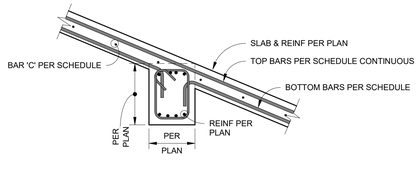
SECTION L / S511
3/4" = 1'-0"



SECTION M / S511
3/4" = 1'-0"



SECTION N / S511
3/4" = 1'-0"



SECTION P / S511
3/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
DAA	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

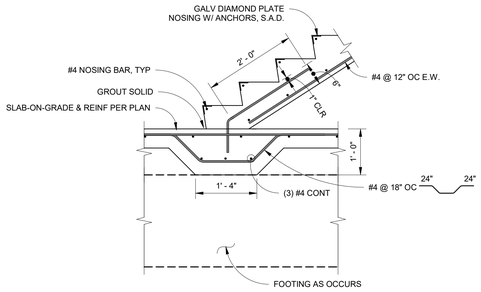
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 104 OF 123

SHEET TITLE
ROOF FRAMING DETAILS No. 1

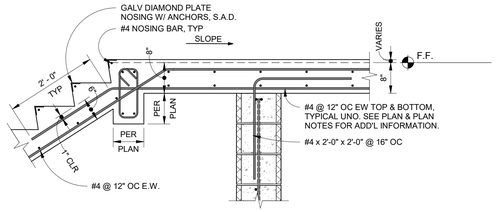
SHEET NO
S511



CONCRETE STAIR AT 1ST FLOOR

3/4" = 1'-0"

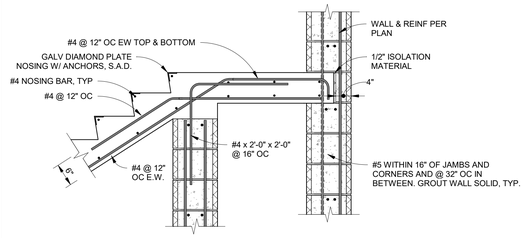
A / S521



CONCRETE STAIR AT SECOND FLOOR

3/4" = 1'-0"

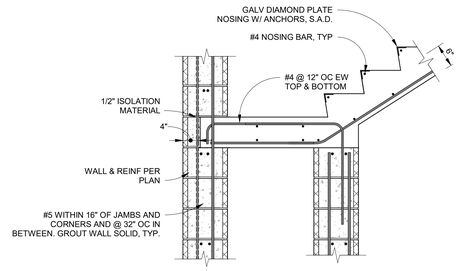
B / S521



TYPICAL CONCRETE STAIR LANDING GOING DOWN AT WALL

3/4" = 1'-0"

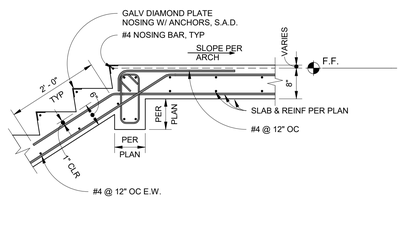
C / S521



TYPICAL CONCRETE STAIR LANDING GOING UP AT WALL

3/4" = 1'-0"

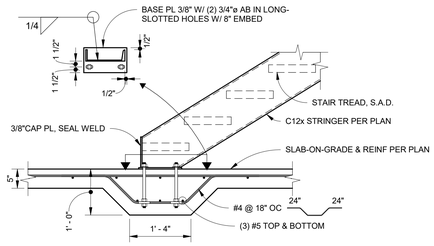
D / S521



CONCRETE STAIR AT SECOND FLOOR @ BEAM

3/4" = 1'-0"

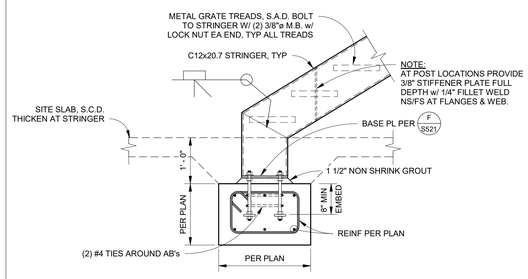
E / S521



TYPICAL STAIR FOOTING @ SLAB

3/4" = 1'-0"

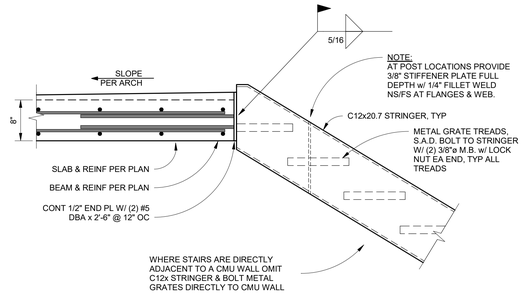
F / S521



TYPICAL STAIR FOOTING DETAIL @ SITE SLAB

3/4" = 1'-0"

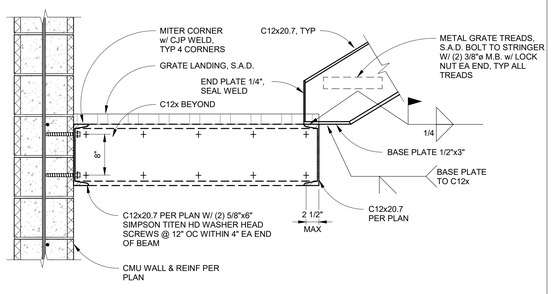
G / S521



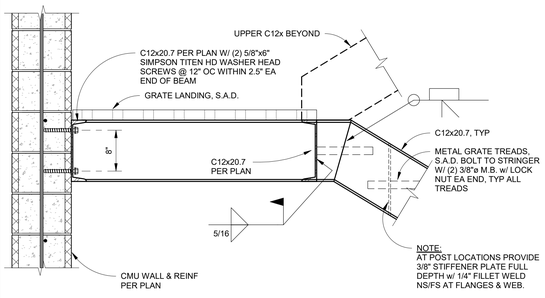
STEEL STAIR AT FLOOR SLAB

1" = 1'-0"

H / S521



UPPER STRINGER AT LANDING

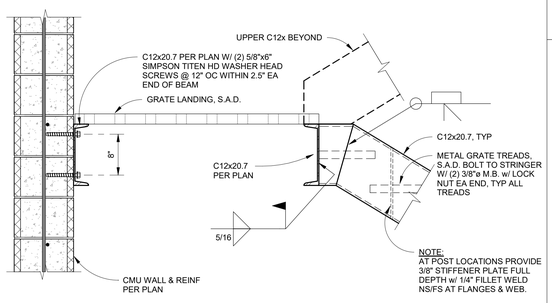


LOWER STRINGER AT LANDING

COMMERCIAL STEEL STAIR AT LANDING

1" = 1'-0"

K / S521



LOWER STRINGER AT LANDING

STEEL STAIR AT LANDING

1" = 1'-0"

J / S521

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. 56623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY DAA | CHECKED BY DGL
CONSULTANT JOB NO 2018047 | DATE 08-21-23

PROJECT TITLE AND ADDRESS

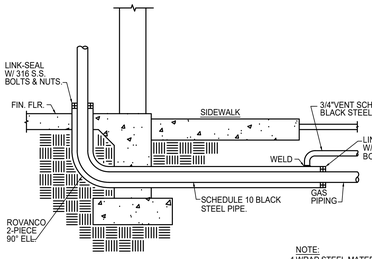
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO | SHEET 105 OF 123

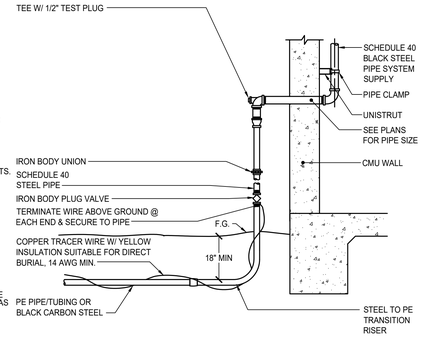
SHEET TITLE
STAIR FRAMING DETAILS
No. 1

SHEET NO
S521

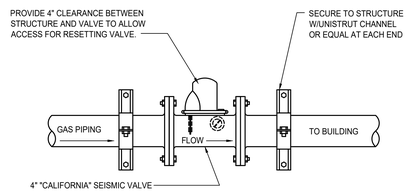


NOTE:
1 WRAP STEEL MATERIAL AS SPECIFIED.
2 PIPE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMODATE GAS PIPE AND LINK-SEAL.

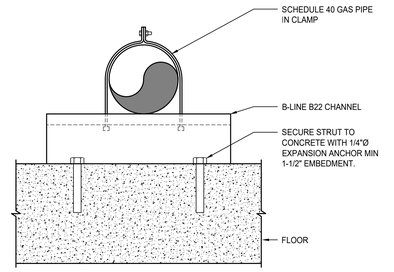
4 GAS PIPING SLEEVE
NTS



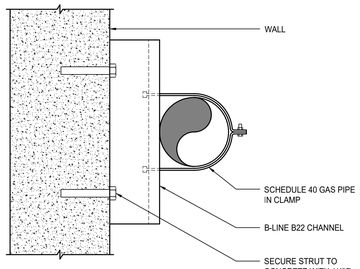
3 GAS SERVICE TO BUILDING
NTS



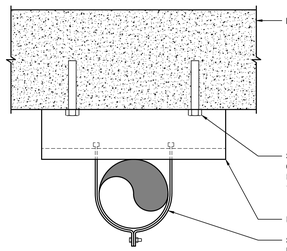
2 SEISMIC SHUT OFF VALVE
NTS



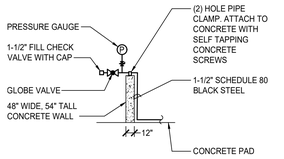
1 PIPE SUPPORT - FLOOR
NTS



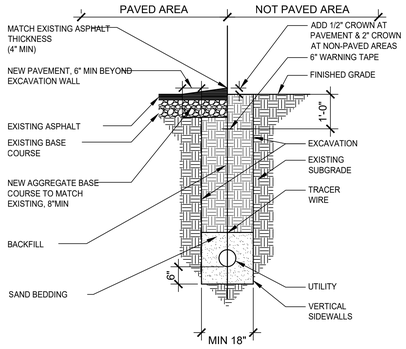
8 PIPE SUPPORT - WALL
NTS



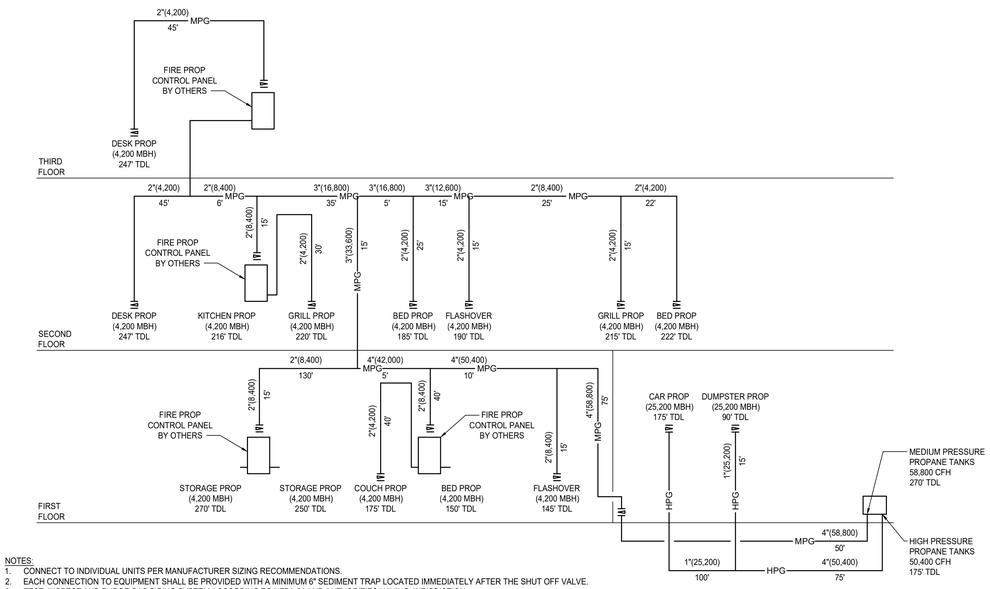
7 PIPE SUPPORT - CEILING
NTS



6 PROPANE GAS FILL STATION
NTS



5 PIPING IN TRENCH
NTS



NOTES:
1. CONNECT TO INDIVIDUAL UNITS PER MANUFACTURER SIZING RECOMMENDATIONS.
2. EACH CONNECTION TO EQUIPMENT SHALL BE PROVIDED WITH A MINIMUM 6" SEDIMENT TRAP LOCATED IMMEDIATELY AFTER THE SHUT OFF VALVE.
3. TEST, INSPECT AND PURGE GAS PIPING SYSTEM ACCORDING TO NFPA 54 AND AUTHORITIES HAVING JURISDICTION.

A GAS DIAGRAM

SCALE: NOT TO SCALE

MEDIUM PRESSURE PROPANE SIZING

SYSTEM	QUANTITY	MBTU'S	MBTU
FLASHOVER	2	4200	8400
COUCH PROP	1	4200	4200
BED PROP	3	4200	12600
STORAGE PROP	2	4200	8400
GRILL PROP	2	4200	8400
KITCHEN PROP	1	4200	4200
DESK PROP	2	4200	8400
TOTAL			54600
FUEL TYPE			PROPANE
DISTANCE FROM REGULATOR TO FURTHEST APPLIANCE (FT)			270
INLET PRESSURE (PSI)			15
PRESSURE DROP (IN. W.C.)			1
PIPE SIZE REQUIRED (INCHES)			4
PIPE SIZE PROVIDED (INCHES)			4
SIZED IN ACCORDANCE WITH 2019 CPC TABLE 1215.2(24)			

HIGH PRESSURE PROPANE SIZING

SYSTEM	QUANTITY	MBTU'S	MBTU
CAR PROP	1	25200	25200
DUMPSTER PROP	1	25200	25200
TOTAL			50400
FUEL TYPE			PROPANE
DISTANCE FROM REGULATOR TO FURTHEST APPLIANCE (FT)			175
INLET PRESSURE (PSI)			50
PRESSURE DROP (IN. W.C.)			1
PIPE SIZE REQUIRED (INCHES)			4
PIPE SIZE PROVIDED (INCHES)			4
SIZED IN ACCORDANCE WITH 2019 CPC TABLE 1215.2(24)			

PLUMBING GENERAL NOTES

1 COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING CODES:

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC): PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2019 CALIFORNIA BUILDING CODE (CBC): PART 2, TITLE 24 CCR
2019 CALIFORNIA ELECTRICAL CODE (CEC): PART 3, TITLE 24 CCR
2019 CALIFORNIA MECHANICAL CODE (CMC): PART 4, TITLE 24 CCR
2019 CALIFORNIA PLUMBING CODE (CPC): PART 5, TITLE 24 CCR
2019 CALIFORNIA ENERGY CODE (CENC): PART 6, TITLE 24 CCR
2019 CALIFORNIA FIRE CODE (CFC): PART 9, TITLE 24 CCR
2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN): PART 11, TITLE 24 CCR

REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.

2 NO PLUMBING SHALL BE INSTALLED UNTIL ALL REQUIRED PLUMBING PLAN CHECK PERMITS AND APPROVALS HAVE BEEN OBTAINED FROM ALL REQUIRED AGENCIES.

3 LAVATORY FAUCETS, SINK FAUCETS (NOT INCLUDING SERVICE SINK FAUCETS OR FAUCETS DESIGNATED AS INSTITUTIONAL) SHALL MEET THE FLOW REQUIREMENTS OUTLINED IN THE APPLIANCE EFFICIENCY STANDARDS.

4 COORDINATE WITH THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES AND DRAINS.

5 PROVIDE ALL TAILPIECES, TRAPS, STOPS, AND SUPPLY PIPES TO LAVATORIES DESIGNED AS ACCESSIBLE, WITH PREFORMED INSULATION JACKET.

6 COORDINATE AND SCHEDULE TIMING FOR ALL UTILITY SERVICE CONNECTIONS.

7 ALL LINES BELOW SLAB ON GRADE TO BE LOCATED AWAY FROM ALL LOAD BEARING FOOTINGS.

8 ALL VENTS THRU ROOF SHALL BE MINIMUM OF 36 INCHES ABOVE AND MECHANICAL VENTILATION AIR INTAKE WITHIN 10 FEET. PROVIDE VANDAL PROOF HOODS ON ALL VENTS THROUGH ROOF.

9 CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF WALLS, ROOFS, FOOTINGS, FLOORS, INCLUDING ALL SAW CUTTING AND CORE DRILLING. COORDINATE ALL SAW CUTTING AND CORE DRILLING WITH STRUCTURAL DRAWINGS. ANY CUTTING AND DRILLING REQUIRED OF STRUCTURAL ELEMENTS THAT IS NOT SPECIFICALLY SHOWN ON THE PLANS SHALL BE BROUGHT TO THE ARCHITECTS ATTENTION PRIOR TO CUTTING AND DRILLING. CONTRACTOR SHALL SUBMIT PROPOSED LOCATION AND SIZES OF SUCH CUTTING AND DRILLING FOR THE ARCHITECTS AND STRUCTURAL ENGINEERS APPROVAL.

10 COORDINATE ALL EQUIPMENT LOCATIONS, PIPE PENETRATIONS AND EQUIPMENT PAD LOCATIONS WITH STRUCTURAL DRAWING PRIOR TO WORK.

11 COORDINATE INSTALLATION OF ALL EQUIPMENT AND PIPING WITH OTHER TRADES PRIOR TO INSULATION. ENSURE THAT ALL CONTROL DEVICES, SHUT-OFF VALVES, ETC. ARE ACCESSIBLE FOR MAINTENANCE. WHERE ACCESS PANELS IN FINISHED SPACES, OTHER THAN THAT SHOWN, CONTRACTOR SHALL PROVIDE AND COORDINATE EXACT LOCATION OF PANELS WITH ARCHITECT PRIOR TO INSTALLATION.

12 ANY STRUCTURAL FIREPROOFING DAMAGED DURING INSTALLATION OF PLUMBING EQUIPMENT, PIPING, ETC. SHALL BE REPAIRED AT NO COST TO THE OWNER. REPAIRS SHALL BE AS DIRECTED BY THE ARCHITECT.

13 ALL PIPING PASSING THROUGH CONCRETE/MASONRY WALLS AND FLOORS ARE TO BE SLEEVED.

PLUMBING ABBREVIATIONS

ABV	ABOVE	HD	HEAD
ADA	AMERICANS WITH DISABILITIES ACT	HP	HORSE POWER
AFF	ABOVE FINISHED FLOOR	HZ	HERTZ
AG	ABOVE GRADE	IE	INVERT ELEVATION
AHJ	AUTHORITY HAVING JURISDICTION	IWC	INCHES OF WATER COLUMN
ALUM	ALUMINUM	KW	KILOWATTS
AMB	AMBIENT	LAV	LAVATORY
AMP	AMPERAGE	LBS	POUNDS
ARCH	ARCHITECT, ARCHITECTURAL	LWT	LEAVING WATER TEMPERATURE
BEL	BELOW	MAX	MAXIMUM
BF	BELOW FLOOR	MBH	1000 BRITISH THERMAL UNITS PER HOUR
BG	BELOW GRADE	MCA	MINIMUM CIRCUIT AMPS
BFP	BACKFLOW PREVENTOR	MECH	MECHANICAL
BLDG	BUILDING	MFGR	MANUFACTURE OR MANUFACTURER
BOD	BASIS OF DESIGN	MIN	MINIMUM
BTUH	BRITISH THERMAL UNIT PER HOUR	MU	MAKE-UP
CA	COMBUSTION AIR	(N)	NEW
CD	CONDENSATE DRAIN	NOM	NOMINAL
CFH	CUBIC FEET PER HOUR	NPS	NOMINAL PIPE SIZE
CONN	CONNECTION	NTS	NOT TO SCALE
CONT	CONTINUATION	OPT	OPERATING
CI	CAST IRON	OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
CP	CHROME PLATED	PD	PRESSURE DROP
DFU	DRAINAGE FIXTURE UNITS	PH	PHASE
DN	DOWN	PSI	POUNDS PER SQUARE INCH
DSA	DIVISION OF THE STATE ARCHITECT	PW	PROCESS WASTE
(E)	EXISTING	RM	ROOM
EC	EVAPORATIVE COOLER	RPM	REVOLUTIONS PER MINUTE
EFF	EFFICIENCY	SDL	STORM DRAIN LEADER
ELEC	ELECTRICAL	SDO	STORM DRAIN OVERFLOW
EQPT	EQUIPMENT	SHT	SHEET
EWT	ENTERING WATER TEMPERATURE	SOV	SHUT OFF VALVE
FA	FROM ABOVE	SS	STAINLESS STEEL
FC	FLEXIBLE CONNECTION	TEMP	TEMPORARY, TEMPERATURE
FLA	FULL LOAD AMPS	TYP	TYPICAL
FLR	FLOOR	UON	UNLESS OTHERWISE NOTED
FPS	FEET PER SECOND	UTR	UP TO OR UP THROUGH ROOF
FR	FROM	V	VENT
FT	FLUSH TANK	VAC	VACUUM
FV	FLUSH VALVE	VTR	VENT THROUGH ROOF
GA	GAGE OR GAUGE	WC	WATER CLOSET
GALV	GALVANIZED	W	WASTE
GPC	GALLONS PER CYCLE	W/	WITH
GPF	GALLONS PER FLUSH	W/O	WITHOUT
GPM	GALLONS PER MINUTE	WSFU	WATER SUPPLY FIXTURE UNIT
GYP	GYPSUM	WT	WEIGHT EXPRESSED IN POUNDS
GW	GREASE WASTE		

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
		BALL VALVE
		CAP
GM	GM	GAS METER
		GAS VALVE
	HB	HOSE BIBB
		SHUT OFF VALVE IN PIPE DROP OR PIPE RISER
		UNION
		PIPE DOWN
		PIPE UP
		PIPE TEE DOWN
		PLUG VALVE ELEVATION VIEW
	PV	PLUG VALVE PLAN VIEW
F	F	FIRE WATER
MPG	MPG	MEDIUM PRESSURE GAS (PROPANE)
HPG	HPG	HIGH PRESSURE GAS (PROPANE)

PROJECT TEAM LIST

TITLE	NAME	DESK NUMBER	EMAIL ADDRESS
PRINCIPAL IN CHARGE	BRIAN STARRETT	805.540.5358	BSTARRETT@3CENG.COM
PROJECT MANAGER	DENVER STANGER	805.540.5388	DSTANGER@3CENG.COM
PLUMBING DESIGNER	BRIAN STARRETT	805.540.5358	BSTARRETT@3CENG.COM

SHEET INDEX

Ventura County Fire Department
FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrartharchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

3C | ENGINEERING
SMARTER BUILDINGS BY DESIGN
805. 540. 5388 WWW.3CENG.COM
© 2020 3C-ENG.SF SAN LUIS OBISPO, CA 93401

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
EXP. 08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
BRIAN F. STARRETT
M 34068
EXP. 6/30/24
MECHANICAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for Keith Herpich

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER DENVER STANGER
DRAWN BY RANDY CARMINATI
CHECKED BY DENVER STANGER
CONSULTANT JOB NO 20-126
DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

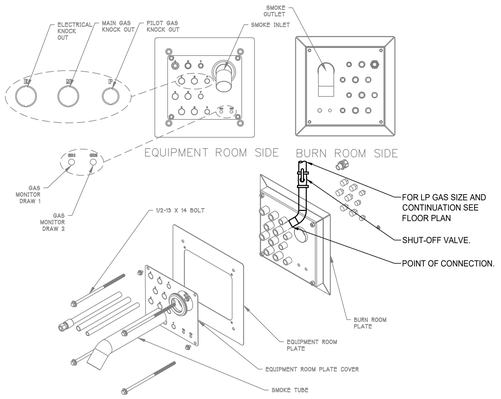
COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 106 OF 123

SHEET TITLE
PLUMBING GENERAL

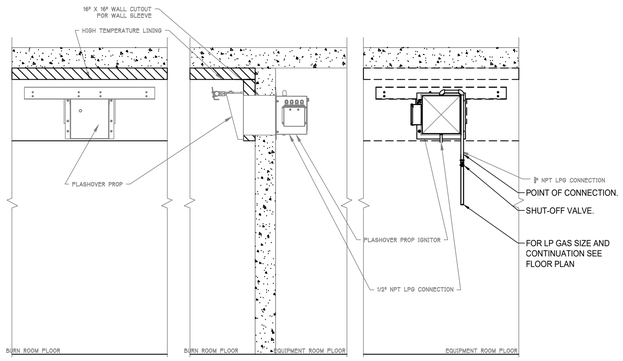
SHEET NO B2-P000

C:\Users\randyc\appdata\local\temp\AcPublish_56916\Ventura Fire HQ & Training Plumbing Plan.dwg randyc Aug 23,2023-2:39pm

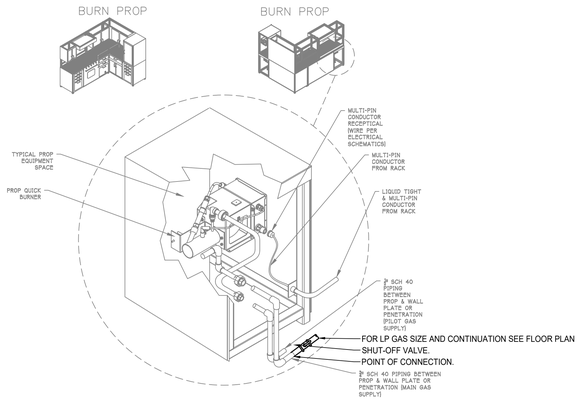
PLAN CHECK RE-SUBMITTAL



3 HAWK-EAGLE WALL PLATE LP CONNECTION
NTS



2 HAWK/EAGLE INTERIOR FLASHOVER PROP LP CONNECTION
NTS



1 TYPICAL HAWK-EAGLE PROP LP CONNECTION
NTS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

3C | ENGINEERING
SMARTER BUSINESS BY DESIGN
t. 805.545.3161 ■ www.3cengi.com
1020 Ventura St. Santa Barbara, CA 93101

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN. 08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. STANGER
M 34068
EXP. 6/30/24
MECHANICAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for Keith Herpich

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
DENVER STANGER

DRAWN BY	CHECKED BY
RANDY CARMINATI	DENVER STANGER
CONSULTANT JOB NO 20-126	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

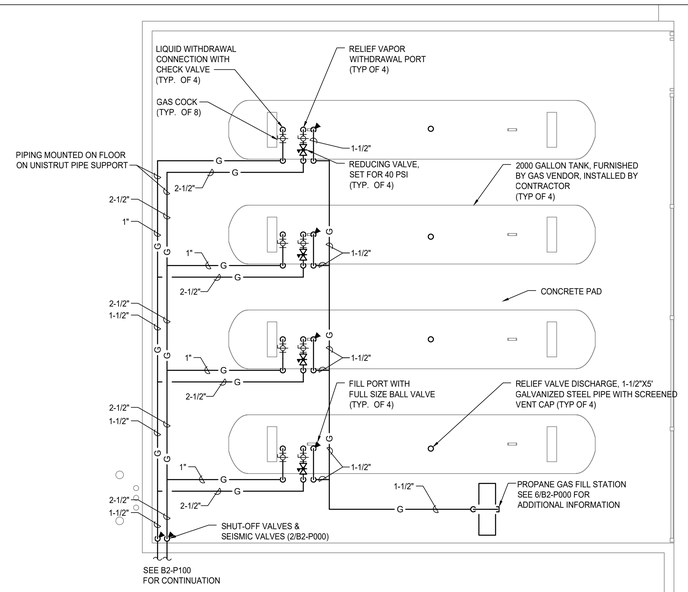
SHEET 107 OF 123

SHEET TITLE
PLUMBING DETAILS

SHEET NO
B2-P001

C:\Users\randyc\appdata\local\temp\AcPublish_56916\Ventura Fire HQ & Training Plumbing Plan.dwg randyc Aug 23,2023-2:39pm

PLAN CHECK RE-SUBMITTAL



ENLARGED PROPANE TANK FARM

SCALE:1/4"=1'-0"

PLUMBING GENERAL NOTES

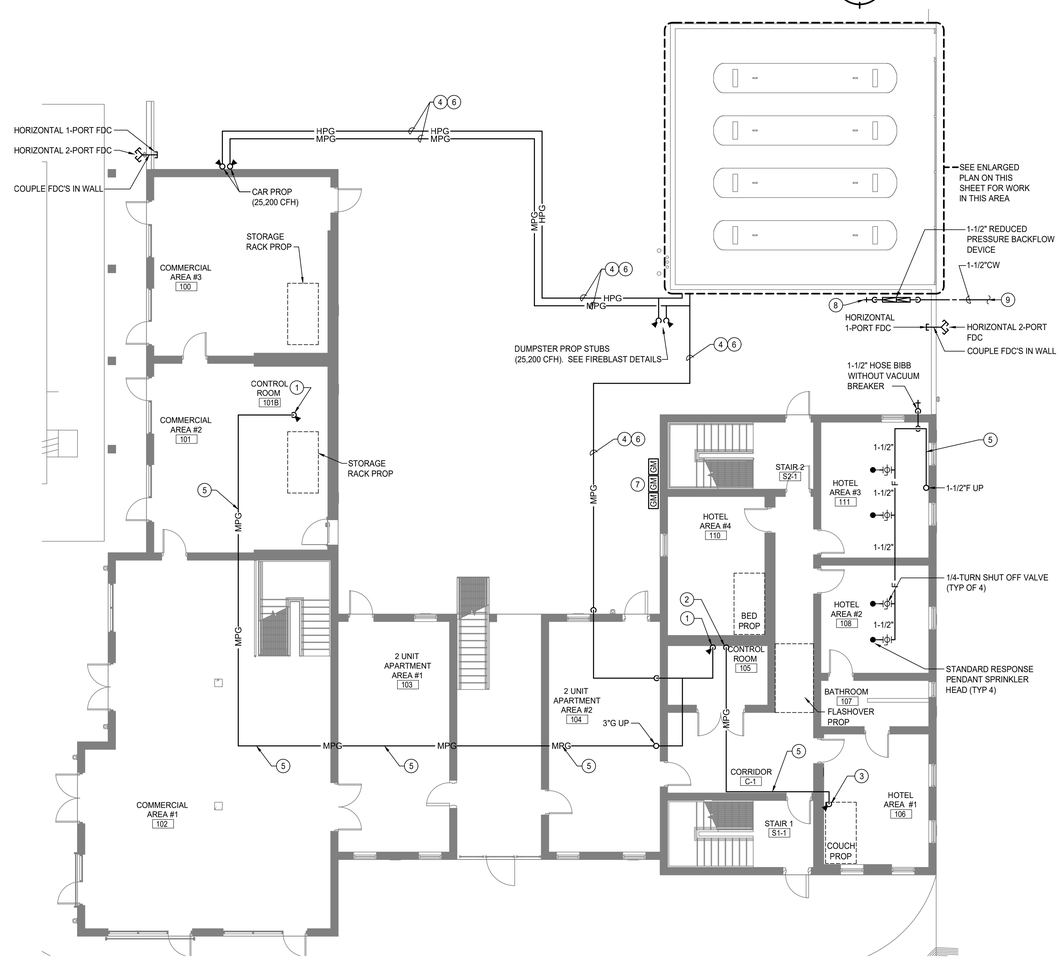
APPLICABLE TO THIS SHEET ONLY

1	SEE GAS RISER DIAGRAM ON SHEET B2-P000 FOR SIZING, CALCULATIONS AND EQUIPMENT LOADS.

KEY NOTES

APPLICABLE TO THIS SHEET ONLY

1	PROPANE DROP TO FIRE PROP CONTROL PANEL. SEE B2-P000 GAS DIAGRAM FOR PIPE SIZES.
2	PROPANE FROM FIRE PROP CONTROL PANEL AND RISE TO UNDERSIDE OF DECK.
3	PROPANE DROP EXPOSED ON WALL AND CONNECT TO FIRE PROP. REFER TO FIRE PROP VENDOR DRAWINGS FOR EXACT POINT OF CONNECT.
4	UNDERGROUND PROPANE PIPING WITH GAS SLEEVE. SEE DETAIL 04/B2-P000 FOR MORE INFORMATION.
5	PIPING TO BE PROTECTED WITH COVER PLATE. REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION.
6	UNDERGROUND PIPING IN TRENCH. SEE 05/B2-P000 FOR MORE INFORMATION.
7	GAS METER BANK PROVIDED AND INSTALLED PLUMBING CONTRACTOR PER LOCAL GAS COMPANY CURRENT STANDARDS.
8	POTTER ROEMER 1-1/2" FIRE HOSE ANGLE VALVE. PROVIDE WITH VACUUM BREAKER.
9	PROVIDE 1" WATER METER NEAR STREET IN VAULT. COORDINATE EXACT LOCATION WITH OWNER AND ARCHITECT. CONNECT 1-1/2" COLD WATER TO (E) SERVICE LINE ACROSS STREET.



PLUMBING FIRST FLOOR PLAN

SCALE:1/8" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrartharchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

3C | ENGINEERING
SMARTER BUILDINGS BY DESIGN

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
BRIAN P. STANGER
M 34068
EXP. 6/30/24
MECHANICAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for Keith Herpich

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
DENVER STANGER

DRAWN BY	CHECKED BY
RANDY CARMINATI	DENVER STANGER
CONSULTANT JOB NO 20-126	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 108 OF 123

SHEET TITLE
PLUMBING FIRST FLOOR PLAN

SHEET NO
B2-P100

PLAN CHECK RE-SUBMITTAL

C:\Users\randyc\appdata\local\temp\AcPublish_56916\Ventura Fire HQ & Training Plumbing Plan.dwg randyc Aug 23,2023-2:39pm

PLUMBING GENERAL NOTES

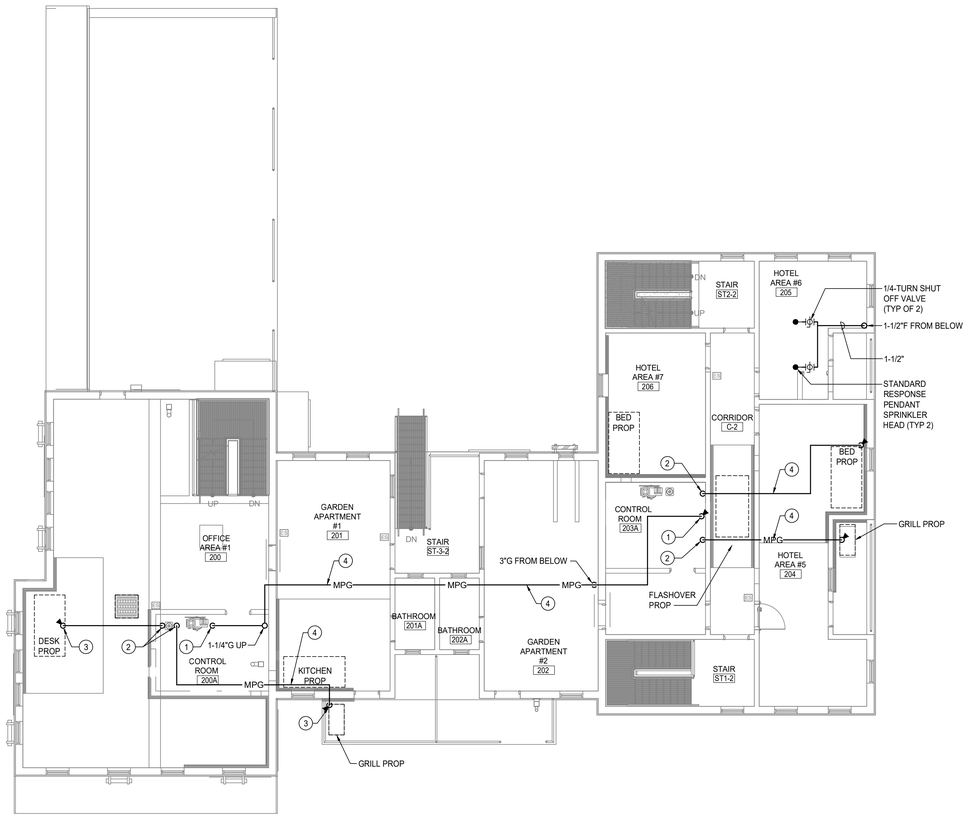
APPLICABLE TO THIS SHEET ONLY

1	SEE GAS RISER DIAGRAM ON SHEET B2-P000 FOR SIZING, CALCULATIONS AND EQUIPMENT LOADS.

KEY NOTES

APPLICABLE TO THIS SHEET ONLY

1	PROPANE DROP TO FIRE PROP CONTROL PANEL. SEE B2-P000 GAS DIAGRAM FOR PIPE SIZES.
2	PROPANE FROM FIRE PROP CONTROL PANEL AND RISE TO UNDERSIDE OF DECK.
3	PROPANE DROP EXPOSED ON WALL AND CONNECT TO FIRE PROP. REFER TO FIRE PROP VENDOR DRAWINGS FOR EXACT POINT OF CONNECT.
4	PIPING TO BE PROTECTED WITH COVER PLATE. REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION.



PLUMBING SECOND FLOOR PLAN

SCALE:1/8" = 1'-0"

PLAN CHECK RE-SUBMITTAL

C:\Users\randyc\appdata\local\temp\AcPublish_56916\Ventura Fire HQ & Training Plumbing Plan.dwg randyc Aug 23,2023-2:39pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

3C | ENGINEERING
SMARTER BUILDINGS BY DESIGN
t. 805.540.3363 ■ www.3cengi.com
8 1265 PALM ST. SAN LUIS OBISPO, CA 93401

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. STANGER
M 34068
EXP. 6/30/24
MECHANICAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for Keith Herpich

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
DENVER STANGER

DRAWN BY	CHECKED BY
RANDY CARMINATI	DENVER STANGER
CONSULTANT JOB NO 20-126	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 109 OF 123

SHEET TITLE
PLUMBING SECOND FLOOR PLAN

SHEET NO
B2-P101

PLUMBING GENERAL NOTES

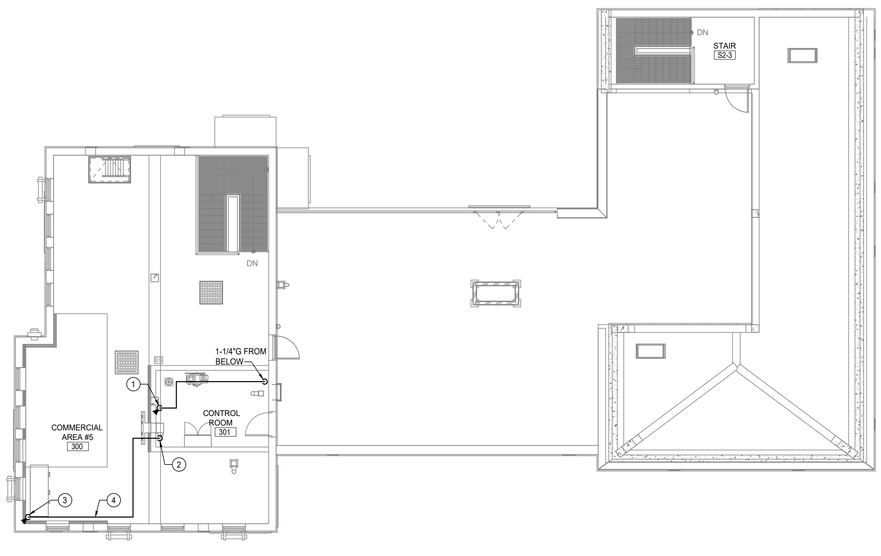
APPLICABLE TO THIS SHEET ONLY

1	SEE GAS RISER DIAGRAM ON SHEET B2-P000 FOR SIZING, CALCULATIONS AND EQUIPMENT LOADS.

KEY NOTES

APPLICABLE TO THIS SHEET ONLY

1	PROPANE DROP TO FIRE PROP CONTROL PANEL. SEE B2-P000 GAS DIAGRAM FOR PIPE SIZES.
2	PROPANE FROM FIRE PROP CONTROL PANEL AND RISE TO UNDERSIDE OF DECK.
3	PROPANE DROP EXPOSED ON WALL AND CONNECT TO FIRE PROP. REFER TO FIRE PROP VENDOR DRAWINGS FOR EXACT POINT OF CONNECT.
4	PIPING TO BE PROTECTED WITH COVER PLATE. REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION.



1 PLUMBING THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"

N

PLAN CHECK RE-SUBMITTAL

C:\Users\randyc\appdata\local\temp\AcPublish_56916\Ventura Fire HQ & Training Plumbing Plan.dwg randyc Aug 23,2023-2:39pm

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

3C | ENGINEERING
SMARTER BUILDINGS BY DESIGN
P. 805.545.3363 ■ WWW.3CENG.COM
E 1000 RIVER ST. SANTA BARBARA, CA 93101

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN: 08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
BRIAN P. STANGER
M 34068
EXP. 6/30/24
MECHANICAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for Keith Herpich

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
DENVER STANGER

DRAWN BY	CHECKED BY
RANDY CARMINATI	DENVER STANGER
CONSULTANT JOB NO 20-126	DATE 04/22/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 110 OF 123

SHEET TITLE
PLUMBING THIRD & FOURTH FLOOR PLANS

SHEET NO
B2-P102

GENERAL NOTES

1. CODE COMPLIANCE: ALL WORK SHALL CONFORM TO AND BE PERFORMED IN ACCORDANCE WITH CODES, STANDARDS, AND ORDINANCES AS SET FORTH BY THE AUTHORITIES HAVING JURISDICTION AND THEIR LATEST ADOPTED EDITIONS (IN EFFECT AT TIME OF BUILDING PERMIT APPLICATION) OF THE FOLLOWING PUBLICATIONS:
    A. CALIFORNIA CODE OF REGULATIONS TITLE 24; INCLUDES 2019 CALIFORNIA ELECTRICAL CODE, 2019 CALIFORNIA FIRE CODE, 2019 CALIFORNIA BUILDING CODE, ETC. WITH LOCAL AMENDMENTS AS APPLICABLE.
    B. AMERICANS WITH DISABILITIES ACT (ADA).

2. SAFETY: THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL EQUIPMENT IN A SAFE AND RESPONSIBLE MANNER. KEEP DEAD FRONT EQUIPMENT IN PLACE WHILE EQUIPMENT IS ENERGIZED. CONDUCT ALL CONSTRUCTION OPERATIONS IN A SAFE MANNER FOR EMPLOYEES AS WELL AS OTHER WORKPERSONS OR ANYONE VISITING THE JOB SITE. PROVIDE BARRIERS, FLAGS, TAPE, ETC. AS REQUIRED FOR SAFETY. THE CONTRACTOR SHALL HOLD ALL PARTIES HARMLESS OF NEGLIGENT SAFETY PRACTICES, WHICH MAY CAUSE INJURY TO OTHERS ON OR NEAR THE JOB SITE.

3. FIRE RATED ASSEMBLIES SHALL MAINTAIN RATINGS AS SPECIFIED IN THE CALIFORNIA BUILDING CODE CHAPTER 7. CONTRACTOR SHALL PROVIDE AND INSTALL PHYSICAL ENCLOSURE AROUND FIXTURES, PANELS, ETC. AS REQUIRED. ALL ASSEMBLIES TO BE PENETRATED SHALL BE INSTALLED WITH APPLICABLE THROUGH-PENETRATION FIRESTOP SYSTEM AS DETERMINED BY UL CLASSIFICATION. BEFORE CONSTRUCTION, VERIFY AND COMPLY WITH REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION.

4. MOUNTING HEIGHTS SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:

    +15" AFF: RECEPTACLES, TELEPHONE, TV & DATA OUTLETS. (MEASURED BOTTOM OF OUTLET BOX)
    +46" AFF: OUTLET ABOVE COUNTER (MEAUSRED TOP OF OUTLET BOX)
    +48" AFF: LIGHT SWITCHES. (MEASURED TOP OF OUTLET BOX)
    +48" AFF: FIRE ALARM MANUAL PULL STATIONS, T-STATS. (MEASURED TOP OF OUTLET BOX)
    THE LOWER OF +80" AFF TO BOTTOM OF LENS, OR 6" BELOW CEILING: FIRE ALARM VISUALS.

    ELECTRICAL SWITCHES: CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHT AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE OUTLET BOX NOR LESS THAN 15 INCHES MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM. [CBC 11B-308.1.1]

    ELECTRICAL RECEPTACLE OUTLETS: ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM [CBC 11B-308.1.2]

    CONTROLS AND OPERATING MECHANISMS SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 11B-309.

    BEFORE ROUGH-IN, VERIFY ALL MOUNTING HEIGHTS AND EXACT LOCATIONS FOR ALL EQUIPMENT ELECTRICAL CONNECTIONS, STUB-UPS, RECEPTACLES, OUTLETS, ETC. WITH ARCHITECT OR OWNER. PLACE DEVICES LOCATED ABOVE COUNTERS, SHELVING, ETC. AND IN BATHROOMS SO AS NOT TO CONFLICT WITH EDGES OF WAINSCOTING, COUNTER SPLASH, SHELVING, ETC. ARCHITECTURAL SHEETS SHALL GOVERN.

5. LABEL PANELS, CABINETS, BACKBOARDS, MAIN DEVICES, SAFETY SWITCHES, CONTACTORS AND OTHER SPECIFICALLY DESIGNATED EQUIPMENT SHOWN ON PLANS. USE ENGRAVED LAMINATED PLASTIC NAMEPLATES ATTACHED BY SCREWS OR RIVETS. FOR FEEDERS, NEATLY AND INDELIBLY LABEL CONDUIT DESTINATIONS ON BOTH VISIBLE ENDS OF CONDUIT RUNS WHERE CONDUITS TERMINATE AT DESIGNATED ENCLOSURES, STRUCTURES OR EQUIPMENT (INCLUDING PULL AND SPLICE BOXES).

6. EQUIPMENT ANCHORAGE NOTE
    ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES PRESCRIBED IN THE 2019 CBC, SECTION 1614A.1.13 AND ASCE 7-05 SECTIONS 13.3, 13.4 & 13.6.

    THE ATTACHMENT OF THE FOLLOWING ITEMS SHALL BE DESIGNED TO RESIST THE FORCES PRESCRIBED ABOVE, BUT NEED NOT BE DETAILED ON THE PLANS:

    A. EQUIPMENT WEIGHING LESS THAN 400 POUNDS SUPPORTED DIRECTLY ON THE FLOOR OR ROOF.
    B. FURNITURE REQUIRED TO BE ATTACHED IN ACCORDANCE WITH PART 2, TITLE 24, C.C.R..
    C. TEMPORARY OR MOVABLE EQUIPMENT.
    D. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUPPORTED BY VIBRATION ISOLATORS.
    E. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

    FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL/ELECTRICAL ENGINEER.

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO RESIST THE FORCES PRESCRIBED IN ASCE 7-05 SECTION 13.3 AS DEFINED IN ASCE 7-05 SECTION 13.6.8, 13.6.7, AND 13.6.5.5, ITEM 6, RESPECTIVELY.

    COPIES OF THE MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING HANGING AND BRACING OF THE PIPE, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS.

    THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

CONDUIT SYSTEMS NOTES

CONDUIT SYSTEMS USED ON THIS PROJECT SHALL BE AS FOLLOWS

1. PVC SCHEDULE 40 OR 80 - underground/below slab with GRS elbows and risers tape wrapped).
2. GALVANIZED RIGID STEEL (GRS) - where exposed below 8'-0" aff. and/or where subject to physical damage.
3. FLEXIBLE STEEL CONDUIT - above ceilings and/or concealed in building construction (seal tight flex rquired in exterior locations).

REFER TO SECTION 260533 & 260500 OF SPECIFICATIONS FOR ADDITIONAL INFORMATION. CONDUITS SHALL BE MINIMUM 3/4" EXCEPT IF PLAN SHOWS OR CODE REQUIRES LARGER SIZE, SHALL BE SIZED FOR MAXIMUM 40% FILL PER CEC 310-6.

BURN BUILDINGS: (ALSO REFER TO BURN PROP GENERAL NOTES ON THIS SHEET)

ALL WIRING WITHIN OR ON BUILDING SHALL BE IN RIGID GALVANIZED STEEL. NO CONDUITS OR PIPING SHALL BE EXPOSED AT BURN ROOMS. EXPOSED CONDUIT ONLY ALLOWED IN CONTROL ROOMS.

OUTLETS AND CONDUITS SHALL BE RECESSED IN CMU WALLS. COORDINATE WITH STRUCTURAL ENGINEER.

RUN CONDUITS UNDERGROUND AT GROUND LEVEL AND WITHIN WALLS AT UPPER LEVELS.

IF ANY INSTANCES OCCUR WHERE CONDUITS ARE TECHNICALLY INFEASIBLE TO BE RUN CONCEALED WITHIN WALLS, PROVIDE ADDITIONAL CONDUIT PROTECTION FOR ENTIRE LENGTH OF EXPOSED SURFACE MOUNT CONDUIT. (SEE CONDUIT PROTECTION DETAIL ON ARCHITECTURAL DRAWINGS).

LIGHTING FLOOR PLAN

A. LIGHTING FIXTURE LOCATIONS SHOWN ARE SCHEMATIC. REFER TO ARCHITECTURAL PLANS (REFLECTED CEILING, ELEVATIONS, ETC.) FOR EXACT LOCATIONS AND MOUNTING HEIGHTS PRIOR TO ROUGH-IN.

B. REFER TO ARCHITECT'S REFLECTED CEILING PLAN(S) FOR CEILING HEIGHTS, TYPES, FINISHES, ETC. IN EACH AREA. VERIFY FLANGE TYPES, TRIM KITS, STEM LENGTHS, ETC. FOR ALL FIXTURES PRIOR TO SUBMITTALS.

C. CONFIRM LOCATION OF ALL DOORS SWINGS WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN OF SWITCHES.

D. PROVIDE UNSWITCHED HOT LEG OF ROOM LIGHTING BRANCH CIRCUIT TO EACH BATTERY POWERED EMERGENCY LIGHT AND EXIT SIGN FOR CONTINUOUS CHARGING.

POWER PLAN

A. FUSING: ALL FUSIBLE SAFETY DISCONNECT SWITCHES SHALL BE PROVIDED WITH DUAL-ELEMENT TIME DELAY TYPE FUSES SIZED AND RATED PER EQUIPMENT MANUFACTURERS' RECOMMENDATIONS. VERIFY WITH EQUIPMENT NAMEPLATE BEFORE INSTALLATION.

B. INSTALL SEPARATE NEUTRALS FOR EACH 120V BRANCH CIRCUIT.

C. MOTOR OVERLOAD PROTECTION: WHERE REQUIRED BY CEC ARTICLE 430 PART C AND NOT SHOWN ON PLAN OR PROVIDED INTEGRAL WITH EQUIPMENT, PROVIDE AND INSTALL THERMAL OVERLOAD PROTECTION FOR ALL MOTORS.

D. DEVICE LOCATIONS SHOWN ARE SCHEMATIC AND APPROXIMATE. EXACT LOCATIONS SHALL BE FIELD VERIFIED DURING ROUGH-IN WITH ARCHITECTURAL ELEVATIONS, CASEWORK SHOP DRAWINGS, FURNITURE, ETC. AND SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT WITH OTHER EQUIPMENT.

RECEPTACLES AT DAMP AND WET LOCATIONS

A. ALL 15 AND 20AMPERE RECEPTACLES FOR BOTH DAMP AND WET LOCATIONS REQUIRED TO BE LISTED WEATHER-RESISTANT (WR) TYPE PER CEC 406.9 (A) AND (B)

B. CEC 406.9(A) RECEPTACLES IN DAMP LOCATIONS: RECEPTACLES INSTALLED OUTDOORS IN A LOCATION PROTECTED FROM THE WEATHER OR IN OTHER DAMP LOCATIONS SHALL BE AN ENCLOSURE FOR THE RECEPTACLE THAT IS WEATHERPROOF WHEN THE RECEPTACLE IS COVERED (ATTACHMENT PLUG CAP NOT INSERTED AND RECEPTACLE COVERS CLOSE)

C. CEC 406.9(B) RECEPTACLES OF 15 AND 20AMP, 125 AND 250 VOLTS INSTALLED IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHETHER OR NOT THE ATTACHMENT PLUG CAP IS INSERTED. AN OUTLET BOX HOOD INSTALLED FOR THIS PURPOSE SHALL BE LISTED AND SHALL BE IDENTIFIED AS 'EXTRA-DUTY" OTHER LISTED PRODUCTS, ENCLOSURES, OR ASSEMBLIES PROVIDING WEATHERPROOF PROTECTION THAT DO NOT UTILIZE AN OUTLET BOX HOOD NEED TO BE MARKED "EXTRA DUTY"

    EXCEPTION: 15 AND 20AMP, 125 THROUGH 250 VOLT RECEPTACLES INSTALLED IN A WET LOCATION AND SUBJECT TO ROUTINE HIGH-PRESSURE SPRAY WASHING SHALL BE PERMITTED TO HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHEN THE ATTACHMENT PLUG IS REMOVED.

BURN PROP GENERAL NOTES

A. COORDINATE INSTALLATION OF BURN PROP EQUIPMENT WITH VENDOR PRIOR TO ROUGH-IN.

B. FINAL E-STOP AND TEMPERATURE SENSOR LOCATIONS TO BE DETERMINED BY FIELD CONDITIONS. COORDINATE WITH VENDOR PRIOR TO ROUGH-IN.

C. COORDINATE ALL STUB UP LOCATIONS WITH VENDOR PRIOR TO ROUGH-IN.

D. ALL CONDUIT SHALL BE ISNTALLED AS HIGH AS POSSIBLE UNLESS OTHERWISE SPECIFIED.

E. SHIELDING/PROTECTION OF CONDUIT FROM DAMAGE BY ELECTRICAL CONTRACTOR.

F. ALL WIRING SHALL BE CONTINOUS RUNS BETWEN JUNCTION BOXES AND CONTROL PANELS WITHOUT SPLICES.

G. ALL GAS DETECTION, PRI, AND FLI BOXES REQUIRED A SEAL OFF ON BOTH THE HIGH VOLTAGE AND THE LOW VOLTAGE CONDUITS.

H. CONDUIT INSIDE BURN ROOM AREAS IS TO BE RIGID WITH WATER TIGHT FITTINGS.

I. CONDUIT OUTSIDE OF BURN ROOM AREAS IS TO BE RIGID OR EMT WITH WATER TIGHT FITTINGS.

J. MAIN POWER SUPPLY WIRE FROM PANELBOARD TO DESIGNATED EQUIPMENT SHALL BE PROVIDED WITH 10FT OF EXCESS COILED AT EACH EQUIPMENT TERMINATION AREA (BY ELECTRICAL CONTRACTOR)

K. CONDUIT TO BE INSTALLED BEHIND HIGH TEMPERATURE LINING WHERE POSSIBLE IN BURN ROOMS (COORDINATE WITH VENDOR PRIOR TO ROUGH-IN).

L. CONDUITS SHALL BE UTILIZED FOR FIRE TRAINING EQUIPMENT ONLY.

M. DO NOT USE TOP OF ENCLOSURES FOR CONDUIT PENETRATIONS.

N. HIGH AND LOW VOLTAGE PULL BOXES (BY ELECTRICAL CONTRACTOR) TO BE A MINIMUM OF NEMA TYPE 4.

O. WALL WIRING DEVICES WITHIN BUILDINGS SHALL BE PROVIDED WITH WEATHER PROOF FACE PLATES. ALL OUTLET/PULL/SPLICE BOXES SHALL BE WEATHERPROOF WITH GASKETED FACE PLATES.

CONDUCTORS AND CABLES

REFER TO SPECIFICATIONS 26 0519 FOR ADDITIONAL INFORMATION.

1. WIRE CONNECTORS SHALL BE MINIMUM 75 DEGREE CENTIGRADE RATED AND PROPERLY SIZED FOR THE NUMBER OF CONDUCTORS BEING CONNECTED, TERMINATED, SPLICED, ETC. ALL ABOVE GRADE CONNECTORS SHALL BE SOLDERLESS LUG OR PLASTIC WIRE NUT TYPE, SCREW ON, PRESSURE CABLE TYPE (WIRE UT OR SPRING NUT TYPE) 600 VOLT, 105 DEGREE C, WITH SKIRT TO COVER ALL PORTIONS OF STRIPPED WIRES. CONNECTOR SHALL BE U.L. RATED FOR NUMBER AND SIZE OF CONDUCTORS BEING JOINED TOGETHER AS SPLICED.

2. WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE COPPER, 600 VOLT RATED THROUGH OUT. CONDUCTORS 12AWG TO 10AWG, SOLID OR STRANDED. CONDUCTORS 8 AWG AND LARGER, STRANDED

3. ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED. MINIMUM SIZE FOR INDIVIDUAL CONDUCTORS SHALL BE #12 AWG UNLESS OTHERWISE NOTED ON PANEL SCHEDULE OR PLANS. SIZE #8 AWG AND LARGER SHALL BE STRANDED CONDUCTOR. INDIVIDUAL CONDUCTORS SHALL BE INSULATED WITH TYPE, XHHW, THW, THHN/THWN 600 VOLT INSULATION UNLESS OTHERWISE NOTED.

4. PROPER INSULATION TYPE SHALL BE USED FOR THE PROPER ENVIRONMENTAL APPLICATION (I.E. WATERPROOF, WET LOCATION, PLENUM TEMPERATURE RATED). ALL CONDUCTORS, WIRING CABLE WHERE INSTALLED BELOW FLOOR, SLAB OR UNDERGROUND SHALL BE CONSIDERED WET LOCATIONS, AND SHALL BE RATED ACCORDINGLY. NON WATERPROOF CABLING IS NOT ALLOWED IN ANY BELOW GRADE OR WET APPLICATION.

LEGEND

BURN PROP EQUIPMENT

⩘⩘⩘□	TEMPERATURE SENSOR PROBE
⩘⩘⩘□ ⩘⩘⩘□	TEMPERATURE SENSOR PROBE. WALL MOUNTED PROBE AT 24" ABOVE FINISHED FLOOR. WALL MOUNTED PROBE AT 6'-0" ABOVE FINISHED FLOOR.
SP	SPEAKER
CP	CONTROL RACK CONTROL PANEL. ELECTRICAL CONTRACTOR TO PROVIDE 50AMP FEEDER PER SINGLE LINE DIAGRAM
ES	EMERGENCY STOP
▯	HIGH VOLTAGE OR LOW VOLTAGE PULL BOX (12"X12"X8") ENCLOSURE TYPE 4.

LIGHTS/POWER

■-●	20' OVERALL LED POLE LIGHT WITH MOTION SENSOR WITH 24" CONCRETE BASE (LITHONIA DSX0 SERIES) (SINGLE HEAD)
■-●-■	20' OVERALL LED POLE LIGHT WITH MOTION SENSOR WITH 24" CONCRETE BASE (LITHONIA DSX0 SERIES) (TWIN HEADS)
○◁	FLOOD LIGHT MOUNTED ON POLE. LITHONIA DSXF2 SERIES MOUNTED ON BULL HORN (SMACBT SERIES)
├─○─┤	4FT STRIP LED LIGHT (LITHONIA #VAP SERIES)
¤	WALL MOUNTED LED VAPOR-TIGHT CANLET #68 SERIES
¤	CEILING MOUNTED LED VAPOR-TIGHT CANLET #68 SERIES
Φ WP	GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.

CONVENTIONS

X	NUMBERED SHEET NOTES: REFERS TO NOTES ON SAME SHEET AS REFERENCE
Z/X	DETAIL REFERENCE: Z = DETAIL DESIGNATION X = SHEET NUMBER REFERENCE
Y/X	MECHANICAL SYSTEMS TAG (REFER TO MECHANICAL SHEETS) Y = UNIT TYPE X = UNIT NUMBER

CONDUIT/WIRE

- - - - - -	DEMOLITION UNDERGROUND CONDUIT(S)
— — —	EXISTING UNDERGROUND CONDUIT(S)
— — —	EXISTING UNDERGROUND CONDUIT(S)

DEMOLITION SITE PLAN NOTES

A. UTILITY COMPANY CONTACTS: BEFORE CONSTRUCTION, COORDINATE & VERIFY ALL UTILITY COMPANY REQUIREMENTS:

B. TRENCHING AND BACKFILLING FOR ALL CONDUIT SYSTEMS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL CONDUITS SHALL HAVE MINIMUM COVER REQUIREMENTS AS SPECIFIED IN CEC 300-5. MORE STRINGENT DEPTH REQUIREMENTS MAY BE IMPOSED BY UTILITY COMPANY AND / OR THIS SPECIFICATION. JOINT TRENCHING MAY BE UTILIZED WHERE PRACTICABLE AND WERE PERMITTED BY THIS SPECIFICATION.

C. LOCATIONS OF EXISTING UNDERGROUND (UG) UTILITY SYSTEMS SHALL BE DETERMINED BY CALLING UNDERGROUND SERVICE ALERT (USA). WHEN PLANNING UNDERGROUND WORK, AND BEFORE YOU DIG, CONTACT UNDERGROUND SERVICE ALERT (USA) AT LEAST 48 HOURS PRIOR TO EXCAVATION (WEEKENDS EXCLUDED) FOR THE LOCATION OF UNDERGROUND GAS AND ELECTRIC LINES OR EQUIPMENT.

D. MAINTAIN REQUIRED CLEARANCES FROM ALL SANITARY SEWER, WATER AND STORM DRAIN PIPING. REFER TO CIVIL PLANS FOR EXACT LOCATIONS AND DEPTHS OF PIPING.

E. REFER TO CIVIL DEMOLITION SHEETS FOR ADDITIONAL INFORMATION.

F. EQUIPMENT SHOWN TO BE REMOVED IS SHOWN FOR REFERENCE ONLY. INFORMATION WAS OBTAINED FROM ORIGINAL BUILDING DRAWINGS AND LIMITED FIELD INVESTIGATION AND MAY NOT REPRESENT ALL ELECTRICAL DEMOLITION. FIELD VERIFY CONDITIONS AND DISCONNECT/REMOVE ALL EQUIPMENT AS REQUIRED TO MEET THE INTENT OF THAT SHOWN ON THE LIGHTING AND POWER/SIGNAL DRAWINGS.

G. ALL ELECTRICAL EQUIPMENT SHOWN ON DRAWING (OR REQUIRED) TO BE DEMOLISHED SHALL BE DISCONNECTED, REMOVED AND DISPOSED OF BY ELECTRICAL CONTRACTOR. NO EQUIPMENT (RACEWAYS, BOXES, CABLING, ETC.) SHALL BE ABANDONED IN PLACE AND COVERED BY NEW CONSTRUCTION.

E. SCHEDULE ANY OUTAGES WITH OWNER PRIOR TO DE-ENERGIZATION OF ANY BRANCH CIRCUITS OR FEEDERS.

F. DISCONNECTION/REMOVAL OF EXISTING COMMUNICATIONS SYSTEMS COMPONENTS SHALL BE SCHEDULED WITH OWNER AND COORDINATED WITH THEIR VENDORS.

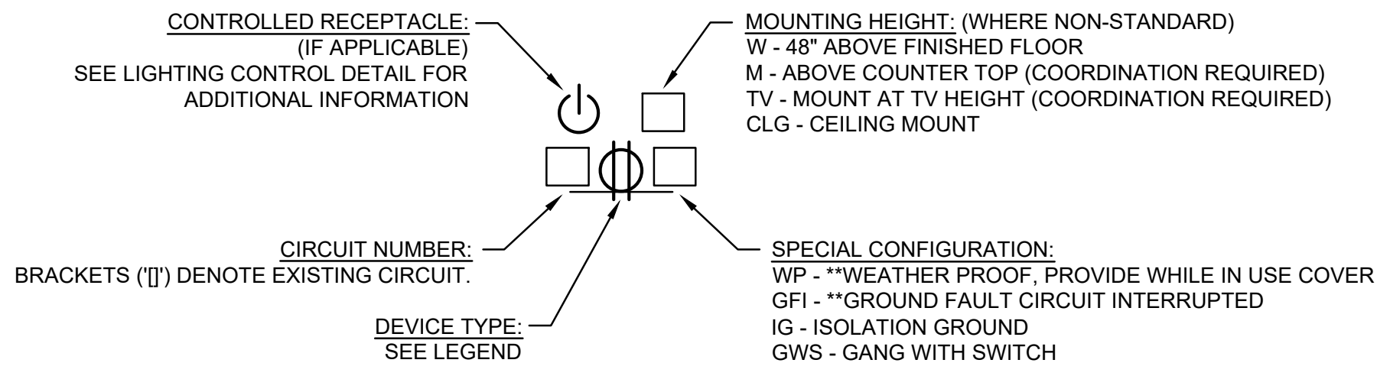
I. INFORMATION SHOWN FOR LOAD DESCRIPTIONS ON EXISTING PANELS WAS GAINED FROM ORIGINAL BUILDING ELECTRICAL PLANS AND SHALL BE FIELD VERIFIED. CONFIRM LOAD ON EACH CIRCUIT OF ALL EXISTING PANELS AND PROVIDE UPDATED TYPEWRITTEN CIRCUIT DIRECTORY (IN PLASTIC SLEEVE) FOR EACH EXISTING PANELBOARD.

J. ANY LOADS REMOVED DURING DEMOLITION SHALL HAVE CONDUCTORS REMOVED BACK TO NEXT REMAINING DEVICE OR TO EXISTING PANELS. ABANDONED BREAKERS SHALL BE LABELED "SPARE".

K. PROVIDE BLANK FILLER PLATES IN DEADFRONTS OF EXISTING PANELBOARDS UPON COMPLETION OF PROJECT WHERE BREAKERS HAVE BEEN REMOVED.

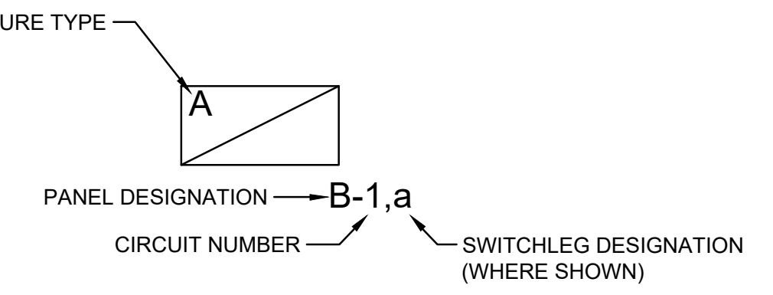
CIRCUITING LEGEND

POWER PLAN



- PROVIDE ALL BRANCH CIRCUIT WIRING FROM DEVICES TO PANEL(S) PER DESIGNATIONS/CIRCUIT NUMBERS.
- EACH BRANCH CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AS INDICATED ON PANEL SCHEDULES.
- HOME RUN CONDUITS SHALL BE 3/4"C, MAX OF (3) BRANCH CIRCUITS PER CONDUIT.
- INCREASE HOME RUN CONDUIT SIZE TO 1"C FOR (4) BRANCH CIRCUITS OR MORE.
- (**) DENOTES SPECIAL DEVICE/NAMEPLATE REQUIREMENTS.

LIGHTING PLAN



- PROVIDE ALL BRANCH CIRCUIT WIRING FROM FIXTURES TO PANEL(S) AS DESCRIBED BY CIRCUIT NUMBERS SHOWN.
- PROVIDE ALL WIRING BETWEEN FIXTURES AND CONTROL DEVICES AS DESCRIBED IN REFERENCE NOTES AND/OR SHOWN BY SWITCHLEG DESIGNATIONS.
- EXIT AND EMERGENCY LIGHT FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED BRANCH CIRCUIT CONDUCTOR.
- HOME RUN CONDUITS SHALL BE 3/4"C., MAX OF (3) BRANCH CIRCUITS PER CONDUIT.
- PROVIDE ALL BRANCH CIRCUIT WIRING FROM MECH. EQUIPMENT TO PANELS.

NOTE: THE INTENT OF THE DRAWINGS IS TO SHOW FIXTURE / DEVICE LOCATIONS AND PANEL DESIGNATIONS. ALL BRANCH CIRCUIT WIRING, MEETING THE CRITERIA NOTED ABOVE, WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. LIGHTING AND POWER PLANS SHOW AN ABOVE CEILING JUNCTION BOX / HOME RUN WITH CIRCUIT NUMBERS BY FIXTURES / DEVICES. PROVIDE ALL BRANCH CIRCUITING AS REQUIRED FOR A COMPLETE INSTALLATION. DOCUMENT ALL BRANCH CIRCUITING ON AS-BUILT DRAWINGS ACCURATELY REFLECTING THE INSTALLATION.

ABBREVIATIONS

A	AMPERE
AB	AMP BREAKER
ABAND	ABANDONED
ABV	ABOVE
AC	ALTERNATING CURRENT
AC-#	AIR CONDITIONER
ADJ	ADJACENT
AF	AMP FUSE, AMP FRAME
AFF	ABOVE FINISH FLOOR
AFG	BOVE FINISH GRADE
AIC	AMPERES INTERRUPTING CAPACITY
Al	ALUMINUM
AS	AMP SWITCH RATING
ATS	AUTOMATIC TIME SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIBLE/AUDIO VISUAL
AWG	AMERICAN WIRE GAGE
BFG	BELOW FINISH GRADE
BIL	BASIC IMPULSE LEVEL
BLDG	BUILDING
C	CONDUIT
-C-	CATV CONDUIT
CAB'T	CABINET
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER, CODE BLUE
CBC	CA. BUILDING CODE
CEC	CA. ELECTRICAL CODE
	CA. ENERGY COMMISSION
CF	COMPACT FLUORESCENT
CFC	CALIFORNIA FIRE CODE
CLG	CEILING
CL	CENTER LINE
CKT	CIRCUIT
CNT'R	CONTRACTOR
C.O.	CONDUIT ONLY (W/PULLROPE)
COND	CONDUIT, CONDUCTOR
CR	CRITICAL BRANCH
CSFM	CALIFORNIA SFM
CT	CURRENT TRANSFORMER
Cu	COPPER
CU-#	CONDENSING UNIT
D	DEPTH
DC	DIRECT CURRENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DPST	DOUBLE POLE SINGLE THROW
DW	DISHWASHER
EM	EMERGENCY
(E)	EXISTING
EA	EACH
EB	ELECTRONIC BALLAST
EC	ELECTRICAL CONTRACTOR
EC-#	EVAPORATIVE COOLER
EF-#	EXHAUST FAN
EL	EVENING LIGHT
ELEC	ELECTRICAL
EM	EMERG BATTERY BACKUP EMERGENCY BALLAST
EMERG	EMERGENCY
EOL	END OF LINE
EQUIP'T	EQUIPMENT
ES	ENERGY SAVING
(EXN)	(E) IN (N) LOCATION
(EXR)	(E) TO BE (R)
EXT	EXTERIOR
F	FLUORESCENT
(F)	FUTURE
F-#	FURNACE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAT	FIRE ALARM TERMINAL
FAU	FORCED AIR UNIT
FBO	FURNISHED BY OTHERS
FC-#	FAN COIL
FLA	FULL LOAD AMPS
FLR	FLOOR
FLUOR	FLUORESCENT
FS	FUSIBLE SWITCH
FSAS	FIRE STATION ALERTING SYSTEM
FVNR	FULL VOLTAGE NON-REVERSING
G	GROUNDING CONDUCTOR
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
GWS	GANG WITH SWITCH
H	HEIGHT, HIGH
HACR	HEATING, AC & REFRIG
HID	HIGH INTENSITY DISCHARGE
HO	HIGH OUTPUT
HOA	HAND-OFF-AUTO
hp	HORSEPOWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
IC	INTERCOM
ID	IDENTIFICATION
IF	INSIDE FROST
IG	ISOLATED GROUND
J-BOX	JUNCTION BOX
k	QUANTITY 1000
kVA	KILOVOLTAMPS
kW	KILOWATT
LC	LIGHTING CONTACTOR
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LS	LIFE SAFETY BRANCH
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CKT AMPS
MCB	MAIN CIRCUIT BREAKER
MCTB	MAIN CATV TERMINAL BOARD
MCTC	MAIN CATV TERMINAL CABINET
MECH	MECHANICAL
MFR	MANUFACTURER
MFS	MAIN FUSIBLE SWITCH
MH	METAL HALIDE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OCP
MSB	MAIN SWITCHBOARD
MT	MOUNT
MT HT	MOUNTING HEIGHT
MTS	MANUAL TRANSFER SWITCH
MTTB	MAIN TELEPHONE TERMINAL BOARD
MTTC	MAIN TELEPHONE TERMINAL CABINET
MW	MICROWAVE
N	NEUTRAL (GROUNDED CONDUCTOR)
(N)	NEW
N3R	NEMA 3R
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NAT'L ELEC MANUFACTURER'S ASSOC
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NPF	NORMAL POWER FACTOR
NTS	NOT TO SCALE
OC	ON CENTER
OCP	OVERCURRENT PROTECTION
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OSA	OFFICE of the STATE ARCHITECT
OSHPD	OFFICE of STATEWIDE HEALTH PLANNING & DEVELOPMENT
OVLD	OVERLOAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULLBOX
PC	PULL CHAIN
PC	PHOTOCELL
PC	PLUMBING CONTRACTOR
ph	PHASE
PNL	PANEL
POC	POINT OF CONNECTION
-PP-	POWER PRIMARY
-PS-	POWER SECONDARY
PV	PHOTOVOLTAIC
(R)	RELOCATE(D)
RECEPT	RECEPTACLE
REF	REFRIGERATOR
REQ'D	REQUIRED
RLA	RATED LOAD AMPS
RM	ROOM
RMC	RIGID METAL CONDUIT
RMV	REMOVE
RPLC	REPLACE
RS	RAPID START
SC	SIGNAL CABINET
SCC	SHORT CKT CURRENT
SFM	STATE FIRE MARSHAL
SHT	SHEET
SL	SLIMLINE, SWITCH LEG
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
STR'G	STORAGE
SURF	SURFACE
SVC	SERVICE
SW	SWITCH
T	TRANSFORMER, TERMINAL
-T-	TELEPHONE CONDUIT
(TBR)	TO BE REMOVED
TC	TIME CLOCK
TEL	TELEPHONE
TELCO	TELEPHONE COMPANY
TS	TIME SWITCH
TSO	TIME SWITCH OVERRIDE
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
TX	TRANSFORMER
TYP	TYPICAL
TYP SIM	TYPICAL SIMILAR
UC	UNDERCABINET, UNDERCOUNTER
UG	UNDERGROUND
UGPS	UNDERGROUND PULL SECTION
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
USA	UG SVC ALERT 800-642-2444
V	VOLT
VA	VOLT AMPERES
VAC	VOLT ALTERNATING CURRENT
VHO	VERY HIGH OUTPUT
VOLT	VOLTAGE
VR	VANDAL-RESISTANT
W	WIDTH, WATT, WIRE
WH-#	WATER HEATER
WP	WEATHERPROOF (NEMA 3R)
XFMR	TRANSFORMER
+48	INDICATES MOUNTING HEIGHT AFF

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET DESCRIPTION
E-001	ELECTRICAL GENERAL NOTES, AND ABBREVIATIONS
E-002	SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E-003	BUILDING ENERGY FORMS - OUTDOOR LIGHTING
E-004	ELECTRICAL DETAILS
ES-101	DEMOLITION SITE PLAN
ES-102	ELECTRICAL SITE PLAN
ES-103	LIGHTING SITE PLAN
B1-E101	BURN PROP BUILDING FIRST FLOOR ELECTRICAL PLAN
B1-E102	BURN PROP BUILDING SECOND AND THIRD FLOOR ELECTRICAL PLANS
B2-E101	MULTI-PURPOSE PROP BLDG - 1ST FLOOR ELECTRICAL PLAN
B2-E102	MULTI-PURPOSE PROP BLDG - 2ND FLOOR ELECTRICAL PLAN
B2-E103	MULTI-PURPOSE PROP BLDG - 3RD/4TH FLOOR ELECTRICAL PLANS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

WILLIAM A. THOMA
NO. 10757
ELECTRICAL
EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division
Stamped Approved for James Hansmeier

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER Christopher M. Jose

DRAWN BY TR/CJ	**CHECKED BY** CJ/JT
CONSULTANT JOB NO 20-8119	**DATE** 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 111 OF 123

SHEET TITLE
NOTES, LEGEND, AND ABBREVIATIONS

SHEET NO
E-001

PANEL SCHEDULES FOR BURN BUILDING PROP

BUS RATING: 100 120/208V, 3PH, 4W
MAIN: 100 MAIN BREAKER
SPACES: 36 FULL SIZE PLUG-IN CB SPACES
AIC RATING: 10 KAIC PANEL

(N) LOADCENTER
PB1

SURFACE MOUNT, NEMA 3R
LOCATION: CONTROL ROOM 106
WITH EQUIPMENT GND BUS

CONNECTED VA

CKT NVD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT NVD
			M	1	TEMPERATURE MONITORING PANEL	20	1	12	1920 100			12	1	20	BUILDING LIGHTING	2	L			
				3	SPARE	20	1			500		8	1	20	POLE OUTLET	4	R			
			R	5	FIRST FLOOR OUTLETS	20	1	12			1080 500	8	1	20	POLE OUTLET	6	R			
			R	7	SECOND FLOOR OUTLETS	20	1	12	1440 500			8	1	20	POLE OUTLET	8	R			
			R	9	THIRD FLOOR OUTLETS	20	1	12		720 500		8	1	20	POLE OUTLET	10	R			
				11	SPARE	20	1						1	20	SPARE	12				
				13	SPARE	20	1						1	20	SPARE	14				
				15	SPARE	20	1						1	20	SPARE	16				
				17	SPACE										SPACE	18				
				19	SPACE										SPACE	20				
				21	SPACE										SPACE	22				
				23	SPACE										SPACE	24				
				25	SPACE										SPACE	26				
				27	SPACE										SPACE	28				
				29	SPACE										SPACE	30				

	PHASE A	PHASE B	PHASE C
CON:	3960	1720	1580
25%:	20	0	0
SUB:	0	0	0
TOT:	3980	1720	1580
AMP'S	33	14	13

LOAD (VA)	LOAD TYPE	LEGEND
5240	R	RECEPTACLE
180	L	LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
1920	M	MECHANICAL
0	K	KITCHEN APPLIANCE
0	N	NON-CONTINUOUS MISC.
0	C	CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

BUS RATING: 400 120/208V, 3PH, 4W
MAIN: 400 MAIN BREAKER
SPACES: 42 FULL SIZE PLUG-IN CB SPACES
AIC RATING: 10 KAIC PANEL

(N) LOADCENTER
PB2

SURFACE MOUNT, NEMA 3R
LOCATION: CONTROL ROOM 105
WITH EQUIPMENT GND BUS

CONNECTED VA

CKT NVD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT NVD
			N	1	CONTROL RACK CONTROL PANEL "CP-101"	50	3	6	4000 4000			6	3	50	CONTROL RACK CONTROL PANEL "CP-102"	2	N			
			N	3	"			6		4000 4000		6			"	4	N			
			N	5	"			6			4000 4000	6			"	6	N			
			N	7	CONTROL RACK CONTROL PANEL "CP-102"	50	3	6	4000 4000			6	3	50	CONTROL RACK CONTROL PANEL "CP-103"	8	N			
			N	9	"			6		4000 4000		6			"	10	N			
			N	11	"			6			4000 4000	6			"	12	N			
			M	13	SPACE				4000			6	3	50	CONTROL RACK CONTROL PANEL "CP-104"	14	N			
			M	15	"					4000		6			"	16	N			
			M	17	"						4000	6			"	18	N			
			N	19	SPEAKER CONTROL PANEL "SCP"	20	1	12	1500 540			12	1	20	FOURTH FLOOR ROOF	20	R			
			L	21	BUILDING LIGHTING	20	1	12		700 900		12	1	20	RM 300 ROOF	22	R			
			R	23	3RD FLOOR: STAIRS S2-3, S2-2, ST1-2, CORRIDOR C-2	20	1	12			1080 1080	12	1	20	OFFICE 200	24	R			
			R	25	RM 203, 204, 205, 206	20	1	12	900 720			12	1	20	RM 201, 201A, STAIR ST3-2	26	R			
			R	27	RM 202, 202A	20	1	12		1080 1080		12	1	20	RM 100, 101, EXTERIOR	28	R			
			R	29	STAIRS S1-1, S2-1, CORRIDOR C-1, CONTROL ROOM 105	20	1	12			1080 1440	12	1	20	RM 102, EXTERIOR	30	R			
			R	31	RM 106, 107, 108, 110, 111, EXTERIOR	20	1	12	1260				1	20	SPARE	32				
			R	33	RM 103, EXTEIOR	20	1	12		900			1	20	SPARE	34				
			R	35	RM 104 EXTERIOR	20	1	12			1080		1	20	SPARE	36				
			N	37	OUTDOOR PROP OUTLET	20	1	10	1500 9585			1	3	125	PANEL PB2A	38				
			N	39	OUTDOOR PROP OUTLET	20	1	10		1100 7740		1			"	40				
			N	41	OUTDOOR PROP OUTLET	20	1	10			1100 7447	1			"	42				

	PHASE A	PHASE B	PHASE C
CON:	36002	33900	34767
25%:	0	175	0
SUB:	0	0	0
TOT:	36002	34075	34767
AMP'S	250	284	289

LOAD (VA)	LOAD TYPE	LEGEND
13140	R	RECEPTACLE
700	L	LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
0	M	MECHANICAL
0	K	KITCHEN APPLIANCE
66000	N	NON-CONTINUOUS MISC.
0	C	CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

BUS RATING: 125 120/208V, 3PH, 4W
MAIN: 125 MAIN LUG ONLY
SPACES: 36 FULL SIZE PLUG-IN CB SPACES
AIC RATING: 10 KAIC PANEL

(N) LOAD CENTER
PB2A

SURFACE MOUNT, NEMA3R
LOCATION:
WITH EQUIPMENT GND BUS

CONNECTED VA

CKT NVD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT NVD
			N	1	LIGHTING CONTROL PANEL	20	1	12	360 938			10	1	20	SITE POLE, AROUND BUILDING B1 (RELAY B1)	2	L			
			R	3	POLE OUTLET	20	1	8		600 1014		10	1	20	FLOODS ZONES 1 AND 2	4	L			
			R	5	POLE OUTLET	20	1	8			600 780	10	1	20	FLOODS ZONES 3 AND 4	6	L			
			R	7	POLE OUTLET	20	1	8	600 781			10	1	20	SITE POLE: AROUND BUILDING B2 (RELAY B2)	8	L			
			R	9	POLE OUTLET	20	1	8		600 336		12	1	15	AIR DRYER, "D-101"	10	M			
			R	11	POLE OUTLET	20	1	8			600 336	12	1	15	AIR DRYER, "D-102"	12	M			
			R	13	POLE OUTLET	20	1	8	600 336			12	1	15	AIR DRYER, "D-103"	14	M			
				15	SPACE					336		12	1	15	AIR DRYER, "D-105"	16	M			
				17	SPACE						336	12	1	15	AIR DRYER, "D-106"	18	M			
			M	19	AIR COMPRESSOR 'C-101"	15	3	12	960 960			12	3	15	AIR COMPRESSOR 'C-103"	20	M			
			M	21	"			12		960 960		12			"	22	M			
			M	23	"			12			960 960	12			"	24	M			
			M	25	AIR COMPRESSOR 'C-102"	15	3	12	960 960			12	3	15	AIR COMPRESSOR 'C-105"	26	M			
			M	27	"			12		960 960		12			"	28	M			
			M	29	"			12			960 960	12			"	30	M			
				31	SPACE				960			12	3	15	AIR COMPRESSOR 'C-106"	32	M			
				33	SPACE					960		12			"	34	M			
				35	SPACE						960	12			"	36	M			
				37	SPACE										SPACE	38				
				39	SPACE										SPACE	40				
				41	SPACE										SPACE	42				

	PHASE A	PHASE B	PHASE C
CON:	8160	7486	7252
25%:	430	204	195
SUB:	0	0	0
TOT:	8590	7740	7447
AMP'S	72	64	62

LOAD (VA)	LOAD TYPE	LEGEND
3000	R	RECEPTACLE
3513	L	LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
16080	M	MECHANICAL
0	K	KITCHEN APPLIANCE
300	N	NON-CONTINUOUS MISC.
0	C	CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

PANEL SCHEDULE FOR SOUTH BUNKER PANEL

BUS RATING: 100 120/208V, 3PH, 4W
MAIN: 100 MAIN BREAKER
SPACES: 30 FULL SIZE BOLT-ON CB SPACES
AIC RATING: 10 KAIC PANEL

(N) LOAD CENTER
SB

SURFACE MOUNT, NEMA 3R
LOCATION: SOUTH BUNKER BUILDING
WITH EQUIPMENT GND BUS

CONNECTED VA

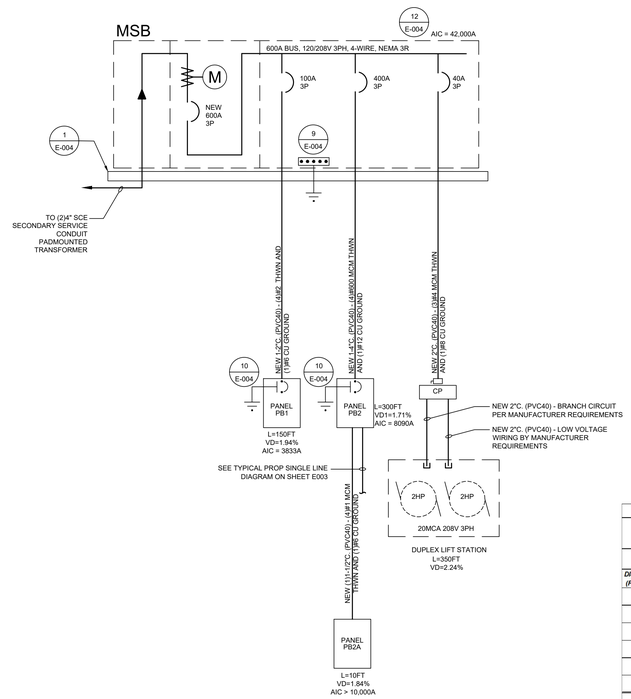
CKT NVD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT NVD
				1	EXISTING LOAD	20	1	E				E	1	20	EXISTING LOAD	2				
				3	EXISTING LOAD	20	1	E				E	1	20	EXISTING LOAD	4				
				5	EXISTING LOAD	20	1	E				E	1	20	EXISTING LOAD	6				
				7	EXISTING LOAD	20	1	E				E	1	20	EXISTING LOAD	8				
				9	EXISTING LOAD	20	1	E				E	1	20	EXISTING LOAD	10				
				11	SPARE	20	1					E	1	30	EXISTING LOAD	12				
				13	EXISTING LOAD	20	2	E				E	1	30	EXISTING LOAD	14				
				15	"			E				E	1	30	EXISTING LOAD	16				
				17	SPARE	20	1					E	2	50	EXISTING LOAD	18				
				19	SPARE	20	1					E			"	20				
				21	SPACE										SPACE	22				
				23	SPACE										SPACE	24				
				25	SPACE										SPACE	26				
				27	SPACE										SPACE	28				
				29	SPACE										SPACE	30				

	PHASE A	PHASE B	PHASE C
CON:	0	0	0
25%:	0	0	0
SUB:	0	0	0
TOT:	0	0	0
AMP'S	0	0	0

LOAD (VA)	LOAD TYPE	LEGEND
0	R	RECEPTACLE
0	L	LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
0	M	MECHANICAL
0	K	KITCHEN APPLIANCE
0	N	NON-CONTINUOUS MISC.
0	C	CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

NOTE: CONTRACTOR TO REMOVE EXISTING PANEL AND REPLACE WITH NEW PANELBOARD AND BREAKER AS SHOWN ABOVE. CONTRACTOR TO PROVIDE NEW FEEDER AND RECONNECT EXISTING BRANCH CIRCUIT TO NEW PANEL

MSB SINGLE LINE DIAGRAM FOR BURN BUILDING PROP



SINGLE LINE DIAGRAM NOTES

A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT AND COORDINATE WITH THE SERVING UTILITY TO ENSURE ALL SERVING UTILITY REQUIREMENTS ARE MET.

B. SERVICE ENTRANCE EQUIPMENT SHALL BE IN ACCORDANCE WITH THE SERVING ELECTRIC UTILITY COMPANY'S REQUIREMENTS.

C. ALL CONDUCTORS SHALL BE COPPER WITH TYPE [THHN/THWN] INSULATION UNLESS OTHERWISE NOTED.

D. ALL SWITCHES, CIRCUIT BREAKERS AND OTHER EQUIPMENT, AS SPECIFIED, SHALL HAVE TERMINATION PROVISIONS LISTED AND IDENTIFIED FOR USE WITH 75 DEG. CONDUCTORS, AND ALL FEEDER CONDUCTORS, AND CONDUITS, ARE SIZE BASED ON USE OF 75 DEG. C COPPER WIRES TYPE THWN/THHN.

E. ALL EQUIPMENT SHALL HAVE AN APPROVED TESTING LABORATORY LABEL ATTACHED [UL, CSA, ETC.] (CEC 110-2).

F. ALL BOXES AND ENCLOSURES (INCLUDING TRANSFER SWITCHES, GENERATORS, AND POWER PANELS) FOR EMERGENCY CIRCUITS SHALL BE PERMANENTLY MARKED SO THEY WILL BE READILY IDENTIFIED AS A COMPONENT OF AN EMERGENCY CIRCUIT OR SYSTEM, PER NEC 700-9(A).

G. PROVIDE TEMPORARY CONSTRUCTION POWER TO CONSTRUCTION SIITE.

H. DESIGN SHOWN IS BASED ON SQUARD D. ENGINEER-APPROVED EQUAL ALTERNATE PRODUCT WILL BE ACCEPTABLE.

I. IN ACCORDANCE WITH CEC 110.16, PROVIDE ARC FLASH PROTECTION WARNING LABELS ON EACH SWITCHBOARD, PANELBOARD, AND TRANSFORMER. LABELS SHALL BE PER ANSI Z535.4 GUIDLINES. (SEE DETAIL 5 ON THIS E-004).

J. SERIES RATED PANELBOARDS ARE NOT PERMITTED. ALL PANELS ARE BOLT-ON BREAKERS. LOAD CENTERS ARE NOT PERMITTED.

K. PER CALIFORNIA TITLE 24 SECTION 130.5, WIRIING PROVISIONS HAVE BEEN MADE FOR DISAGGREGATION OF THE ELECTRICAL CIRCUITS, THE OPTIONAL METERING HAS NOT BEEN PROVIDED FOR THIS PROJECT.

L. REFER TO PANEL SCHEDULES FOR INDIVIDUAL BRANCH CIRCUIT VOLTAGE DROP AND SINGLE LINE DIAGRAM FOR FEEDER VOLTAGE DROP CALCULATIONS.

M. BRANCH CIRCUIT/FEEDER DISTANCE IS SHOWN FOR REFERENCE ONLY AS THE BASIS OF VOLTAGE DROP CALCULATIONS. CONDUCTOR DISTANCE AS INDICATED SHALL NOT BE USED FOR BIDDING/CONSTRUCTION PURPOSES. SHOULD THE FEEDER DISTANCE EXCEED THE LENGTH NOTED PER INSTALLATION CONDITIONS, NOTIFY THE ENGINEER OF RECORD. TYPICAL.

N. PROVIDE COMPLETE SHORT CIRCUIT AND COORDINATION STUDY AND ARC FLASH HAZARD ANAYLSIS PER SPECIFICATION 26 05 73. MARKING SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED PER CEC 110.24.

MSB

BUS RATING: 600A, 120/208V, 3PH, 4W
NEMA 3R
AIC RATING: 65K

DISTRIBUTION				CONNECTED VA (AMPS) %VD			CALC TYPE
DIST (FT)	PANEL/LOAD	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	
	PANEL PB1	100			3985 (33.2A)	1720 (14.3A)	1580 (13.2A)	
	PANEL PB2	400			35005 (291.7A)	34075 (284.0A)	34707 (289.2A)	
	SUMP PUMP	40			2400 (20.0A)	2400 (20.0A)	2400 (20.0A)	
	SPACE				0	0	0	
	SPACE				0	0	0	
	SPACE				0	0	0	
				KVA (AMPS):	41.39 (344.9A)	38.19 (318.3A)	38.69 (322.4A)	

Total KVA 118.27
Total Amps 328

VD CALCULATION TYPE
CON CONNECTED LOAD
CB 80% OF BREAKER RATING

PANEL SCHEDULE AT CLASSROOM BUILDING 5,6,7

BUS RATING: 400 120/208V, 3PH, 4W
MAIN: 400 MAIN LUG ONLY
SPACES: 42 FULL SIZE BOLT-ON CB SPACES
AIC RATING: 42 KAIC PANEL

(N) PANEL
ACOP

SURFACEMOUNT, NEMA 1
LOCATION: CLASSROOM BLDG 5,6,7
WITH EQUIPMENT GND BUS

CONNECTED VA

CKT NVD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT NVD
				1	CONSTANT CURRENT TRANSFORMER	100	3	E				E	3	100	TRAILER	2				
				3	"			E				E			"	4				
				5				E				E			"	6				
				7	CONSTANT CURRENT TRANSFORMER	100	3	E				E	3	30	WATER HEATER	8				
				9	"			E				E			"	10				
				11	"			E				E			"	12				
				13	SUBPANEL	100	3	E				E	3	30	WASHING MACHINE	14				
				15	"			E				E			"	16				
				17	"			E				E			"	18				
				19	SOUTH BUNKER PANEL	100	3	N				E	3	200	15KVA TRANSFROMER	20				
				21	"			N				E			"	22				
				23	"			N				E			"	24				
				25	LIGHTS	20	1	E				E	1	20	RECEPTACLE AND EMERGENCY LIGHTING	26				
				27	LIGHTS	20	1	E				E	1	20	BOILER CONTROLS	28				
				29	LIGHTS	20	1	E				E	1	20	STAIRMASTER DROP	30				
				31	HOT WATER CIRC PUMPS	20	1	E				E	1	20	TRICKLE CHARGE AND HEATER	32				
				33	ICE MACHINE	20	1	E				E	1	20	EXISTING LOAD	34				
				35	EXISTING LOAD	20	1	E				E	1	20	CC CONTROLS	36				
				37	SPACE										SPACE	38				
				39	SPACE										SPACE	40				
				41	SPACE										SPACE	42				

	PHASE A	PHASE B	PHASE C
CON:	0	0	0
25%:	0	0	0
SUB:	0	0	0
TOT:	0	0	0
AMP'S	0	0	0

SQUARE D - I-LINE

LOAD (VA)	LOAD TYPE	LEGEND
0	R	RECEPTACLE
0	L	LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
0	M	MECHANICAL
0	K	KITCHEN APPLIANCE
0	N	NON-CONTINUOUS MISC.
0	C	CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

NOTE: CONTRACTOR TO REMOVE EXISTING PANEL AND REPLACE WITH NEW PANELBOARD AND BREAKERS AS SHOWN ABOVE. CONTRACTOR TO INTERCEPT EXISTING FEEDERS, OVERHEAD AND UNDERGROUND BRANCH CIRCUITS, AND EXTEND TO NEW PANEL.

ELECTRICAL LOAD SUMMARY

SERVICE LOAD VERIFICATION

EXISTING SWITCHBOARD 'ACOP' RATING: 400A, 120/208V, 3Ø, 4W

MAX DEMAND LOAD PER CEC 220.87 — 32.8 kVA
(21.000 KW MAX DEMAND PER PG&E)
(21.000 KW * 125% = 26.25 kVA)

WORSE CASE LOAD AT PANEL SB — 28.8 kVA

TOTAL LOAD: 61,600 kVA = 171.11 AMPS

* THE NEW CALCULATED LOADS ARE SHOWN NOT TO EXCEED THE RATING OF THE PANELS, FEEDER, AND OVERCURRENT PROTECTION DEVICES. THEREFORE, EXISTING SERVICE LOAD CAPACITY IS SUITABLE FOR THE NEW LOADS.

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cas@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. THOMA — ELECTRICAL — STATE OF CALIFORNIA
EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY TR/CJ — CHECKED BY CJJ/JT

CONSULTANT JOB NO 20-8119 — DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 112 OF 123

SHEET TITLE

SINGLE LINE DIAGRAM AND PANEL SCHEDULES

SHEET NO E-002

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 7 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: William Thoma	Documentation Author Signature:
Company: Thoma Electric, Inc	Signature Date: 2021-06-25
Address: 3852 Empleo, Suite C	CEA/ HERS Certification Identification (if applicable): E10757
City/State/Zip: San Luis Obispo CA 93401	Phone: 805-543-3852

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: William Thoma	Responsible Designer Signature:
Company: Thoma Electric, Inc.	Date Signed: 2021-06-25
Address: 3562 Empleo Street	License: E10757
City/State/Zip: San Luis Obispo CA 93401	Phone: 805-543-3850

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 4 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

G. CUTOFF REQUIREMENTS (BUG)
This section does not apply to this project.

H. OUTDOOR LIGHTING CONTROLS
This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
*When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Mandatory Controls

01	02	03	04	05	
Area Description	Shut-Off §130.2(c)1	Auto-Schedule §130.2(c)2	Motion Sensor §130.2(c)3	Field Inspector	
				Pass	Fail
AUTOMOTIVE HARDSCAPE	Photocontrol	Yes	Yes	☐	☐
PEDESTRIAN HARDSCAPE	Photocontrol	Yes	Yes	☐	☐

** NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to §130.2(c)

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 1 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

A. GENERAL INFORMATION

01	Project Location (city)	CAMARILLO	04	Total Illuminated Hardscape Area (ft^2)	88936
02	Climate Zone	6			
03	Outdoor Lighting Zone per Title 24 Part 1 §10.114 or as designated by Authority Having Jurisdiction (AHJ):				
☐	LZ-0: Very Low - Undeveloped Parkland	☐	LZ-2: Moderate - Rural Areas	☐	LZ-4: High - Must be reviewed by CA Energy Commission for Approval
☐	LZ-1: Low - Developed Parkland	☒	LZ-3: Moderately High - Urban Areas		

B. PROJECT SCOPE
This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.7 or §141.0(b)2L for alterations.

My Project Consists of:

01		02	
☒	New Lighting System	Must Comply with Allowances from §140.7	
☐	Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)?	◯ Yes ◯ No
03		04	05
% of Existing Luminaires Being Altered[1]		Sum Total of Luminaires Being Added or Altered	Calculation Method
☐ < 10%	☐ >= 10% and < 50%	☐ >= 50%	

Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.

[1] FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 5 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

I. LIGHTING POWER ALLOWANCE (per §140.7)
This table includes areas using allowance calculations per §140.7. General Hardscape Allowance is per Table 140.7-A while "Use it or lose it" Allowances are per Table 140.7-B - indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.

01				
☒ General Hardscape Allowance Table I (below)	"Use it or lose it" Allowance (select all that apply) (select all that apply)			
	☐ Per Application Table J	☐ Sales Frontage Table K	☐ Ornamental Table L	☐ Per Specific Area Table M

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 0, 1 & 4)
This section does not apply to this project.
Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 2 & 3)

02	03	04	05	06	07	08	9	10
Area Description	Surface Type	Area Wattage Allowance (AWA)			Area Wattage Allowance (AWA)			Total General AWA + LWA ($Watts_i$)
		Illuminated Area (ft^2)	Allowed Density (W/ft^2)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
AUTOMOTIVE HARDSCAPE	Asphalt	74175	0.03	1854.375	3463	0.4	865.75	2720.125
PEDESTRIAN HARDSCAPE	Asphalt	14761	0.03	369.025	594	0.4	148.5	517.525
							Initial Wattage Allowance for Entire Site (Watts):	350
							Total General Hardscape Allowance (Watts):	3587.65

J. LIGHTING ALLOWANCE: PER APPLICATION
This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE
This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL
This section does not apply to this project.

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA
This section does not apply to this project.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 2 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

C. COMPLIANCE RESULTS
Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) §140.7 or §141.0(b)2L																Compliance Results			
01		02		03		04		05		06		07		08	09				
General Hardscape Allowance §140.7(d)1 (See Table I)	+	Per Application §140.7(d)2 (See Table J)	+	Sales Frontage §140.7(d)2 (See Table K)	+	Ornamental §140.7(d)2 (See Table L)	+	Per Specific Area §140.7(d)2 (See Table M)	OR	Existing Power Allowance §141.0(b)2L (See Table N)	=	**Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 must be >= 08**				
3,587.65	+	—	+	—	+	—	+	—	OR	—	=	3,587.65	≥	1,679	COMPLIES				
Cutoff Compliance (See Table G for Details)															N/A				
Controls Compliance (See Table H for Details)															COMPLIES				

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 6 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)
This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Yes	No	Form/Title	Field Inspector Pass	Field Inspector Fail
●	◯	NRCI-LTO-01-E - Must be submitted for all buildings	☐	☐
●	◯	NRCI-LTO-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Yes	No	Form/Title	Field Inspector Pass	Field Inspector Fail
●	◯	NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.	☐	☐

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			**NRCC-LTO-E**
Project Name:	VENTURA COUNTY FIRE TRAINING CENTER	**Report Page:**	**(Page 3 of 7)**
Project Address:	165 DURLEY AVE	**Date Prepared:**	6/25/2021

F. OUTDOOR LIGHTING FIXTURE SCHEDULE
For new or altered lighting systems demonstrating compliance with §140.7 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per §141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included).

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1,2]	How is Wattage determined	Total number luminaires[3]	Luminaire Status[3]	Excluded per §140.7(a)	Design Watts	Cutoff Req. > 6,200 initial lumen output §130.2(b)[4]	Field Inspector Pass	Field Inspector Fail
SA1	SA1	☐ Linear	134	Mfr. Spec	2	New	☐	268	NA: < 6200 lumens	☐	☐
SA2	SA2	☐ Linear	134	Mfr. Spec	1	New	☐	134	NA: < 6200 lumens	☐	☐
SB1	SB1	☐ Linear	134	Mfr. Spec	2	New	☐	268	NA: < 6200 lumens	☐	☐
SB2	SB2	☐ Linear	134	Mfr. Spec	2	New	☐	268	NA: < 6200 lumens	☐	☐
SC	SC	☐ Linear	134	Mfr. Spec	5	New	☐	670	NA: < 6200 lumens	☐	☐
SD	SD	☐ Linear	71	Mfr. Spec	1	New	☐	71	NA: < 6200 lumens	☐	☐
							Total Design Watts:	1679			

** NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.*
EX: Luminaire is lighting a statue; EXCEPTION 2 to §130.0(b)

[1] FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c)
[2] For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.
[3] Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope.
[4] Compliance with mandatory cutoff requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by §130.2(b)

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601
Registration Provider: Energysoft Report Generated: 2021-06-25 13:40:57

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY WORKS — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS
REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. THOMA — NO. 10757 — ELECTRICAL — STATE OF CALIFORNIA — EXP: 06/30/26

PERMIT APPROVAL STAMP
COUNTY of VENTURA — Resource Management Agency — APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

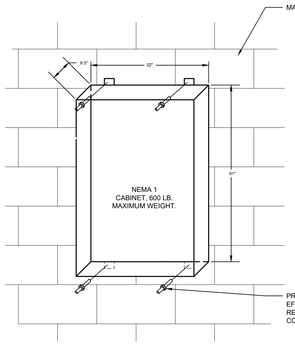
PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

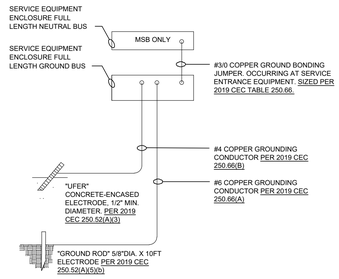
PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER Christopher M. Jose
DRAWN BY TR/CJ — **CHECKED BY** CJ/JT
CONSULTANT JOB NO 20-8119 — **DATE** 3/04/2022

PROJECT TITLE AND ADDRESS
VENTURA COUNTY FIRE TRAINING CENTER
165 DURLEY AVE
CAMARILLO, CA 93010

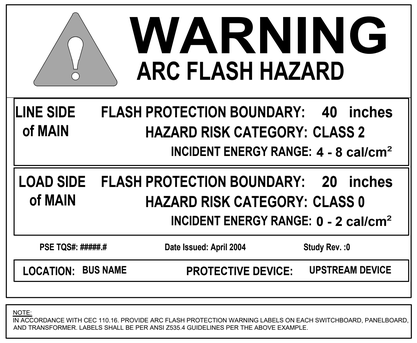
COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO — **SHEET** 113 OF 123
SHEET TITLE OUTDOOR LIGHTING ENERGY COMPLIANCE FORMS
SHEET NO E-003



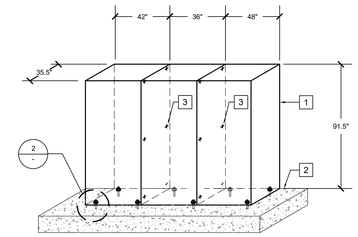
13 TYP. PANELBOARD MOUNTING DETAIL AT CMU WALL
E-004



9 GROUND/BOND DETAIL AT "MSB"
E-004



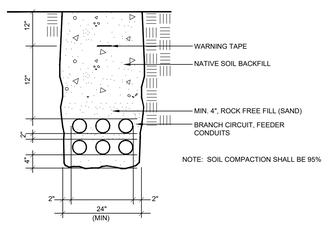
5 TYPICAL ARC FLASH SIGNAGE
E-004



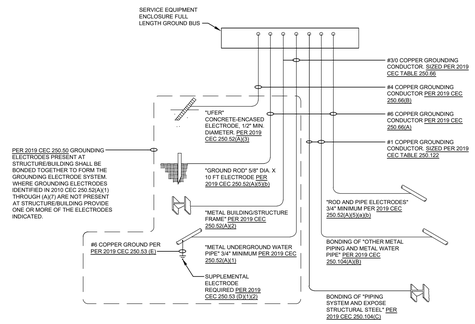
☐ REFERENCE NOTES

1. ELECTRICAL DISTRIBUTION EQUIPMENT OR CABINET.
2. 12" THICK 3000 PSI CONCRETE PAD WITH #4 REBARS AT 16" O.C. EACH WAY TOP AND BOTTOM.
3. MINIMUM 3/8" THRU-BOLT SECTION TO SECTION. (TYPICAL)

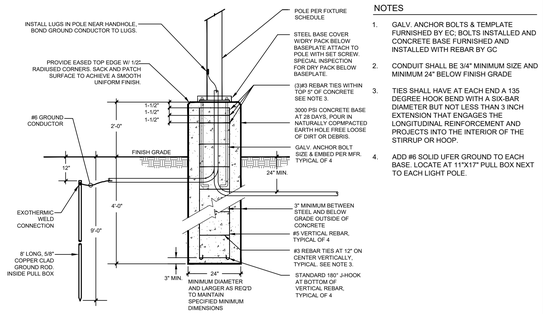
1 MAIN SWITCHBOARD MOUNTING DETAIL
E-004



14 TYPICAL BRANCH CIRCUIT TRENCH DETAIL
E-004



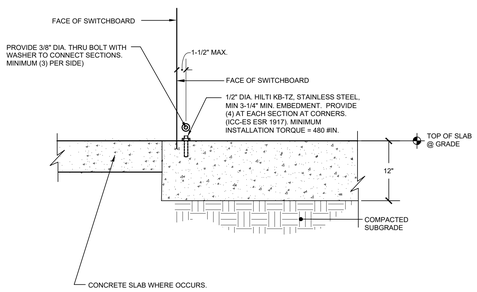
10 GROUND/BOND DETAIL AT PB1 & PB2 AT NORTH&SOUTH BUNKER BUILDING
E-004



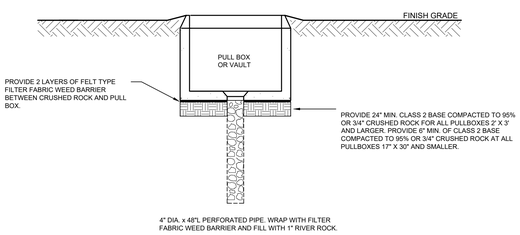
NOTES

1. GALV. ANCHOR BOLTS & TEMPLATE FURNISHED BY EC; BOLTS INSTALLED AND CONCRETE BASE FURNISHED AND INSTALLED WITH REBAR BY GC
2. CONDUIT SHALL BE 3/4" MINIMUM SIZE AND MINIMUM 24" BELOW FINISH GRADE
3. TIES SHALL HAVE AT EACH END A 135 DEGREE HOOK BEND WITH A SIX-BAR DIAMETER BUT NOT LESS THAN 3 INCH EXTENSION THAT ENGAGES THE LONGITUDINAL REINFORCEMENT AND PROJECTS INTO THE INTERIOR OF THE STIRRUP OR HOOP.
4. ADD #6 SOLID UFER GROUND TO EACH BASE. LOCATE AT 11"X17" PULL BOX NEXT TO EACH LIGHT POLE.

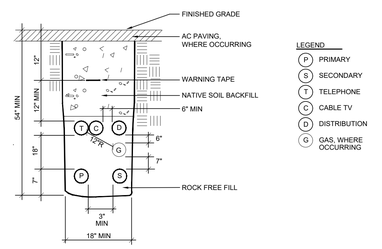
6 TYPICAL POLE MOUNTING DETAIL
E-004



2 SWITCHBOARD SECTION MOUNTING DETAIL
E-004



7 4" DIAMETER SUMP DRAIN DRAINAGE
E-004



COORDINATE UTILITY TRENCH DETAILS WITH UTILITY COMPANIES

3 TYPICAL UTILITY TRENCH DETAIL
E-004 NTS

SOUTHERN CALIFORNIA EDISON

13.0 Short-Circuit Current

Where state and/or local building inspection agencies require that customers install service equipment with overcurrent protective devices with a short-circuit rating equal to or not less than the available short-circuit current at its supply terminal, the customer should obtain from SCE, the Company's contribution to short-circuit currents at the customer's service entrance.

The Company's contribution to short-circuit currents, at the customer's service entrance, will be as follows for the applicable type of service to be rendered.

13.1 10000 A and Below (100–400 Maximum Amperes Self-Contained Type Meter Panels)

The Company's contribution to the available short-circuit current at the service entrance will not exceed 10000 A for single-family dwellings, duplexes, or individually metered mobile homes that use self-contained type Company meters.

Temporary service, when served from a single-phase 120/240 V transformer, will not exceed 10000 A. Self-contained 300/400 A (Class 320) type meter panels are not acceptable for temporary service.

13.2 Greater than 10000 A—Multi-Family Residential (Three or More Grouped Meters), Commercial, and Industrial

Table 1–5: Short-Circuit Current

Phase	Serving Voltage	Service Entrance Ampacities	Utilities Contribution to Fault Current will Not Exceed
Single	120/240	600 or less	42,000
Three	120/208 or 240	800 or less	42,000
Three	480	1200 or less	30,000

13.3 Exceptional Cases

When the application of the above fault current limitation appears too restrictive for new installations, the customer may request the utility to provide the available fault currents for a specific case and location.

All new installations with service voltage or service entrance ampacities larger than those stated above will be handled as individual cases, and the Company will provide the available fault duty for each installation.

14.0 Electric and Magnetic Fields

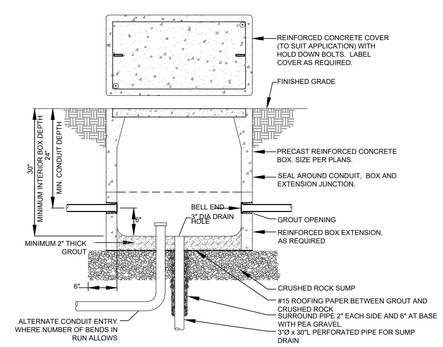
Electric and magnetic fields are also known as "electromagnetic fields" or "EMF." Electric and magnetic fields are a natural result of electricity. Whenever an electric charge or current is present, either natural or man-made, electric and magnetic fields occur. Electric power distribution facilities generate both electric and magnetic fields.

14.1 Electric Fields

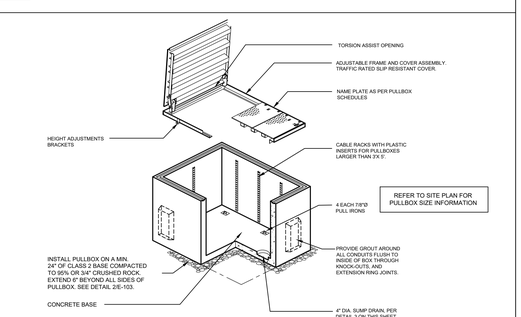
Electric fields result when voltage is present. The strength "E" of electric fields is represented by "volts per meter." As the distance increases from the source, the electric field strength decreases rapidly.

EFFECTIVE DATE 01-29-2021	General Information	ESR–1
APPROVED:	Electrical Service Requirements ►SCE Public◄	PAGE 1–27

12 SCE SHORT CIRCUIT CURRENT
E-004



8 TYPICAL SMALL CONCRETE PULL BOX MOUNTING DETAIL
E-004



REFER TO SITE PLAN FOR PULLBOX SIZE INFORMATION

GENERAL NOTES

1. LOCATE ALL VAULTS / PULLBOXES INSIDE PLANTER AREAS, GROUP ALL PULLBOXES TOGETHER.
2. DETAIL SHOWN IS FOR PULLBOXES 2' X 3' AND LARGER.
3. SEE DETAILS ON THIS SHEET FOR CABLE RACK SUPPORT REQUIREMENTS.
4. PROVIDE METAL STAKE WITH ENGRAVED PLASTIC TAG(S) IN PULLBOXES INDENTIFYING DUCT(S) ROUTED THRU PULLBOXES.

4 TYPICAL LARGE CONCRETE PULL BOX MOUNTING DETAIL
E-004

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cac@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. THOMA — ELECTRICAL — STATE OF CALIFORNIA — EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

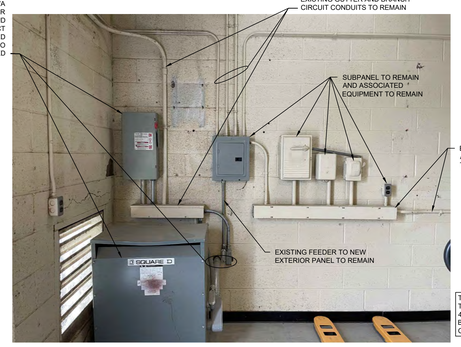
COUNTY DWG NO — SHEET 114 OF 123

SHEET TITLE
ELECTRICAL DETAILS

SHEET NO
E-004

K:\ENG\2020\20-8119_20-8119_E004_ELECTRICAL DETAILS.dwg - CReyes - Aug 23, 2023 - 1:03pm

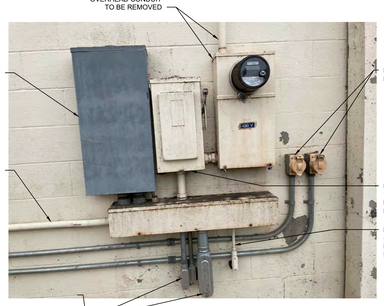
A ES-101 IMAGE AT NORTH BUNKER



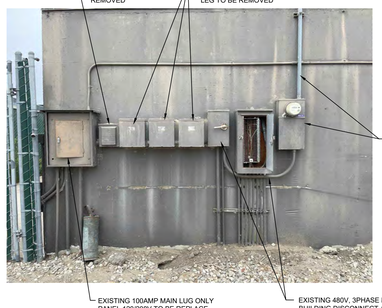
E ES-101 ELEVATION OF SOUTH WALL OF NORTH BUNK ELECTRICAL ROOM

B ES-101 IMAGE AT SOUTH BUNKER BUILDING

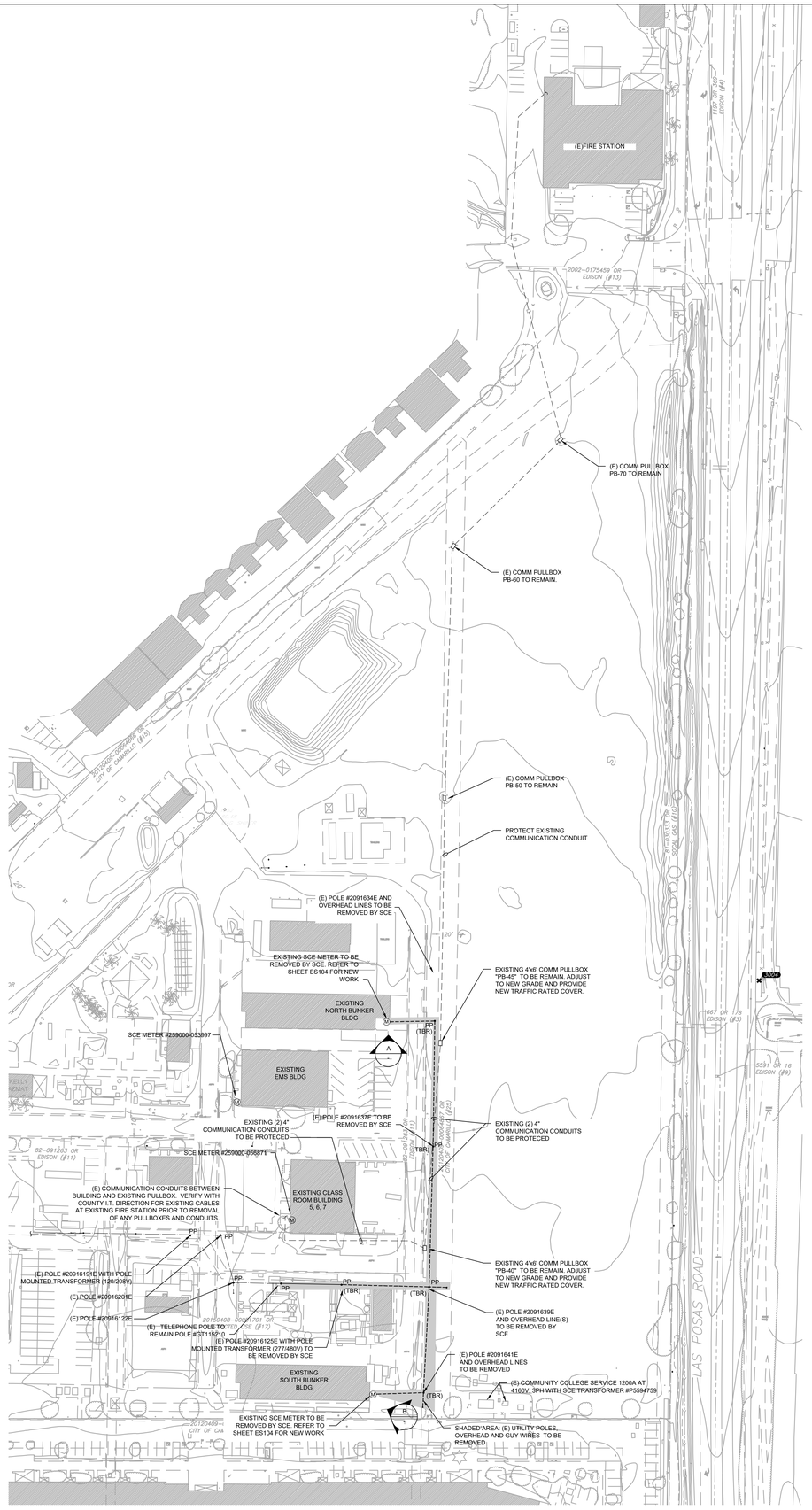
F ES-101 ELEVATION OF CLASSROOM SERVICE EQUIPMENT



C ES-101 IMAGE AT NORTH BUNKER EQUIPMENT



D ES-101 IMAGE AT SOUTH BUNKER EQUIPMENT



DEMOLITION ELECTRICAL SITE PLAN

SCALE: 1" = 60'-0"

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cas@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. THOMA — NO. 10757 — ELECTRICAL — STATE OF CALIFORNIA — EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA — Resource Management Agency — APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER: Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

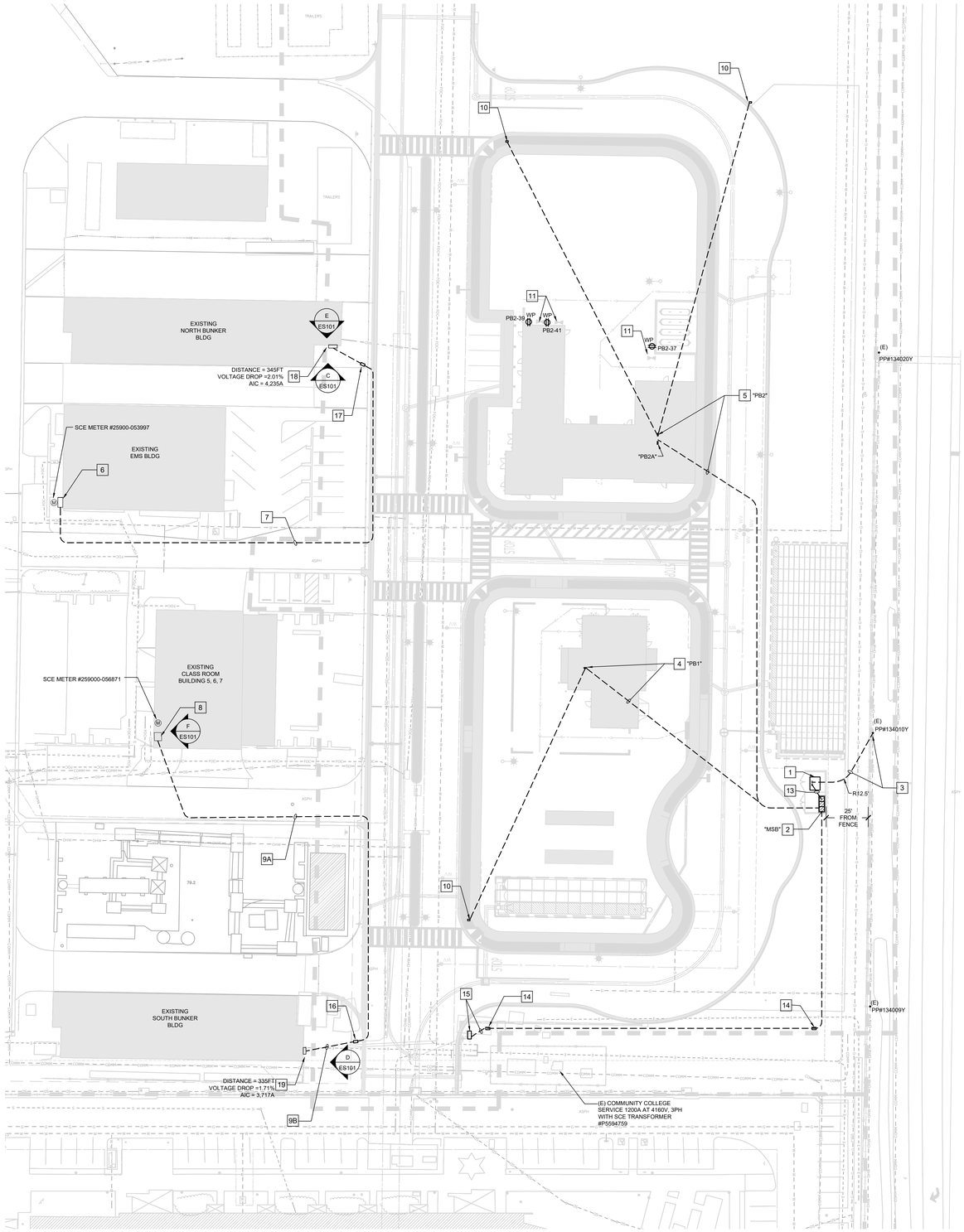
COUNTY SPEC NUMBER: CP23-02

COUNTY PROJECT NUMBER: P6T18021

COUNTY DWG NO — SHEET 115 OF 123

SHEET TITLE: DEMOLITION ELECTRICAL SITE PLAN

SHEET NO: ES-101



ELECTRICAL SITE PLAN

NORTH

SCALE: 1" = 30'-0"

GENERAL SITE PLAN NOTES

A. UTILITY COMPANY CONTACTS: BEFORE CONSTRUCTION, COORDINATE & VERIFY ALL UTILITY COMPANY REQUIREMENTS:

B. TRENCHING AND BACKFILLING FOR ALL CONDUIT SYSTEMS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL CONDUITS SHALL HAVE MINIMUM COVER REQUIREMENTS AS SPECIFIED IN CEC 300-5. MORE STRINGENT DEPTH REQUIREMENTS MAY BE IMPOSED BY UTILITY COMPANY AND / OR THIS SPECIFICATION. JOINT TRENCHING MAY BE UTILIZED WHERE PRACTICABLE AND WERE PERMITTED BY THIS SPECIFICATION.

C. LOCATIONS OF EXISTING UNDERGROUND (UG) UTILITY SYSTEMS SHALL BE DETERMINED BY CALLING UNDERGROUND SERVICE ALERT (USA). WHEN PLANNING UNDERGROUND WORK, AND BEFORE YOU DIG, CONTACT UNDERGROUND SERVICE ALERT (USA) AT LEAST 48 HOURS PRIOR TO EXCAVATION (WEEKENDS EXCLUDED) FOR THE LOCATION OF UNDERGROUND GAS AND ELECTRIC LINES OR EQUIPMENT.

D. MAINTAIN REQUIRED CLEARANCES FROM ALL SANITARY SEWER, WATER AND STORM DRAIN PIPING. REFER TO CIVIL PLANS FOR EXACT LOCATIONS AND DEPTHS OF PIPING.

E. ALL SITE UTILITY WORK SHALL BE INSTALLED PER THE UTILITY COMPANY ISSUED CONSTRUCTION DRAWINGS AND SPECIFICATIONS SPECIFIC TO THIS PROJECT. ANY UTILITY WORK PERFORMED WITHOUT PRIOR UTILITY COMPANY APPROVAL SHALL BE DONE AT THE CONTRACTOR'S RISK.

F. BRANCH CIRCUIT SITE LIGHTING ARE ALL POWERED FROM THE CLASS A BUILDING PROP LIGHTING CONTROL PANEL. SHOW 1'CONDUIT WITH (4)#8 THWN AND (1)#10 CU GROUND.

REFERENCE NOTES

1. NEW 72"X94" TRANSFORMER PAD PER SCE REQUIREMENTS.
2. NEW MAIN SWITCHBOARD, "MSB" PER SINGLE LINE DIAGRAM.
3. NEW SCE 1-5" PRIMARY SERVICE CONDUIT TO EXISTING POWER POLE AT LAS POSAS. COORDINATE WITH SCE.
4. NEW 100AMP SUBFEED PANEL "PB1". REFER TO SINGLE LINE DIAGRAM.
5. NEW 400AMP SUBFEED PANEL "PB2". REFER TO SINGLE LINE DIAGRAM.
6. EXISTING 400AMP, 120/208V, 3PH, 4W WITH 1-125AMP 3P BREAKER FOR EMS BLDG. PROVIDE NEW 200AMP 3 POLE BREAKER TO MATCH EXISTING FOR NORTH BUNKER CONNECTION.
7. NEW 2-1/2" FEEDER UNDERGROUND (PVC 40) CONDUIT TO NORTH BUNKER DISCONNECT WITH (4)#4/0 THWN AND (1)#4 CU GROUND.
8. EXISTING 400AMP DISTRIBUTION BOARD, "ACOP" , 120/208V, 3PH, 4W TO BE REPLACE WITH NEW. REFER TO PANEL SCHEDULE ON SHEET E-002. PROVIDE 1-100AMP 3 POLE BREAKER TO FEED SOUTH BUNKER. PROVIDE NEW GROUND SYSTEM PER DETAIL 10/E-004.
9. NEW 2" FEEDER UNDERGROUND (PVC 40) CONDUIT SOUTH BUNK PANEL
   A. (4)#3/0 THWN AND (1)#6 CU GROUND.
   B. (4)#2 THWN AND (1)#6 CU GROUND
10. NEW 1"C.O. STUB FOR FUTURE USE. PROVIDE AND INSTALL 11"X17" PULL BOX FLUSH IN GRADE.
11. PROVIDE 120V DEDICATED OUTLET TO EACH OUTDOOR PROP . HOME RUN 1"C (2)#10 THWN AND (1)#10 CU GROUND TO PANEL "PB2".
12. NOT USED.
13. NEW 2-4" SECONDARY SERVICE CONDUIT PER SCE REQUIREMENTS.
14. 2" FEEDER TO STORM DRAIN DUPLEX LIFT STATION CONTROL PANEL VIA PULL BOX. PROVIDE 17"X30" PULL BOX FLUSH IN GRADE. LABEL LID ELECTRICAL. REFER TO SINGLE LINE DIAGRAM FOR FEEDER SIZE.
15. CONNECT TO DUPLEX LIFT STATION PER CIVIL PLAN. EC TO PROVIDE 208V 3PH CONNECTION AND RACEWAY TO CONTROL PANEL AND TO PUMP. COORDINATE WITH CIVIL PLANS FOR ADDITIONAL REQUIREMENTS. (SEE DETAIL K ON SHEET C-17).
16. PROVIDE 11"X17" FLUSH IN GRADE. STAMP LID "ELECTRICAL".
17. PROVIDE 17"X30" TRAFFIC RATED PULL BOX FLUSH IN GRADE. STAMP LID "ELECTRICAL".
18. NEW 200AMP DISCONNECT NEMA 3R SWITCH WITH 150AMP FUSE (120/208V 3PH)
19. NEW 100AMP PANEL NEMA 3R TO REPLACE EXISTING. REFER TO PANEL SCHEDULE "SB" ON SHEET E-002. PROVIDE NEW GROUNDING SYSTEM PER DETAIL 10/E-004.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA ELECTRICAL STATE OF CALIFORNIA
EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

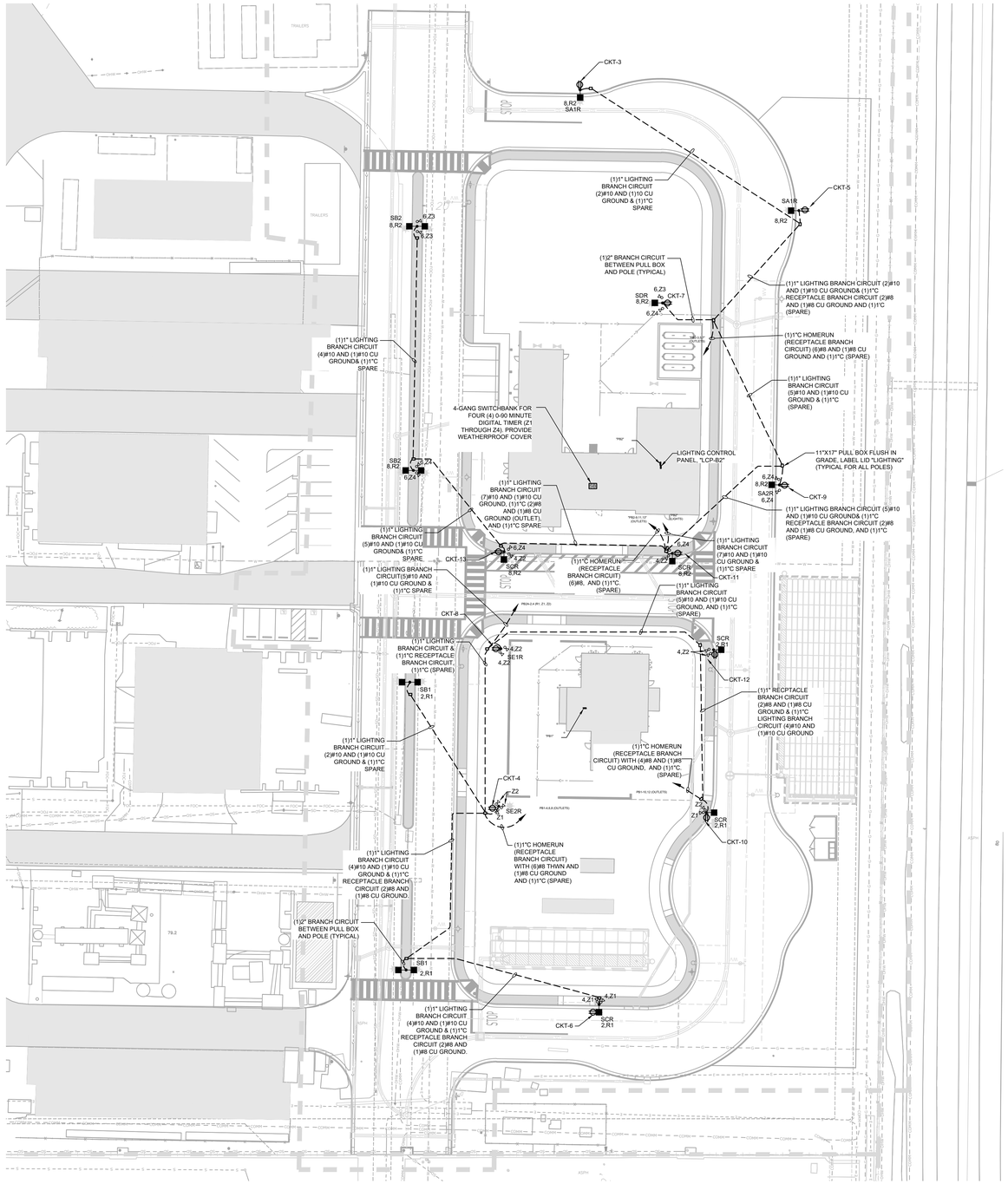
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 116 OF 123

SHEET TITLE
ELECTRICAL SITE PLAN

SHEET NO
ES-102



LIGHTING SITE PLAN

SCALE: 1" = 30'-0"

NORTH

GENERAL SITE PLAN NOTES

A. UTILITY COMPANY CONTACTS: BEFORE CONSTRUCTION, COORDINATE & VERIFY ALL UTILITY COMPANY REQUIREMENTS:

B. TRENCHING AND BACKFILLING FOR ALL CONDUIT SYSTEMS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL CONDUITS SHALL HAVE MINIMUM COVER REQUIREMENTS AS SPECIFIED IN CEC 300-5. MORE STRINGENT DEPTH REQUIREMENTS MAY BE IMPOSED BY UTILITY COMPANY AND / OR THIS SPECIFICATION. JOINT TRENCHING MAY BE UTILIZED WHERE PRACTICABLE AND WERE PERMITTED BY THIS SPECIFICATION.

C. LOCATIONS OF EXISTING UNDERGROUND (UG) UTILITY SYSTEMS SHALL BE DETERMINED BY CALLING UNDERGROUND SERVICE ALERT (USA). WHEN PLANNING UNDERGROUND WORK, AND BEFORE YOU DIG, CONTACT UNDERGROUND SERVICE ALERT (USA) AT LEAST 48 HOURS PRIOR TO EXCAVATION (WEEKENDS EXCLUDED) FOR THE LOCATION OF UNDERGROUND GAS AND ELECTRIC LINES OR EQUIPMENT.

D. MAINTAIN REQUIRED CLEARANCES FROM ALL SANITARY SEWER, WATER AND STORM DRAIN PIPING. REFER TO CIVIL PLANS FOR EXACT LOCATIONS AND DEPTHS OF PIPING.

E. ALL SITE UTILITY WORK SHALL BE INSTALLED PER THE UTILITY COMPANY ISSUED CONSTRUCTION DRAWINGS AND SPECIFICATIONS SPECIFIC TO THIS PROJECT. ANY UTILITY WORK PERFORMED WITHOUT PRIOR UTILITY COMPANY APPROVAL SHALL BE DONE AT THE CONTRACTOR'S RISK.

F. BRANCH CIRCUIT SITE LIGHTING ARE ALL POWERED FROM THE CLASS A BUILDING PROP LIGHTING CONTROL PANEL. SHOW 1"CONDUIT WITH (4)#8 THWN AND (1)#10 CU GROUND.

SITE LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NO.	VOLTAGE	MAX. VA.	LAMPING	MOUNTING	DESCRIPTION
SA1	LITHONIA	DSX0 LED P6 40K T3M MOLT RPA DDBXD RSA 23 4-5C MC19AS DDBXD	MVOLT	134	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT TYPE III MEDIUM DISTRIBUTION WITH ANCHOR BASE POLE (1 AT 90°) MOTION SENSORS
SA2	LITHONIA	DSX0 LED P6 40K T3M MOLT RPA DDBXD RSA 23 4-5G DM28AS EHH15A FBC DDBXD SMACBT 14/8T RND4	MVOLT	134 +156 ((2) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT, TYPE III MEDIUM DISTRIBUTION, ANCHOR BASE POLE (2 AT 180°) MOUNTED ON 2FT BASE AND BAND MOUNT BULLHORN MOUNTED AT 16FT, WITH (2) 'SF' FLOODLIGHTS MOTION SENSORS
SB1	LITHONIA	(2) DSX0 LED P6 40K T5W MOLT RPA DDBXD RSA 23 4-5C DM28AS DDBXD FBC	MVOLT	(2)134	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT, TYPE V WIDE DISTRIBUTION WITH PHOTOCELL, ANCHOR BASE POLE (2 AT 180°) MOTION SENSORS
SB2	LITHONIA	(2) DSX0 LED P6 40K T5W MVOLT RPA DDBXD RSA 23 4-5G DM28AS EHH15A FBC DDBXD SMACBT 14/8T RND4	MVOLT	(2)134 +156 ((2) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT, TYPE V WIDE DISTRIBUTION WITH PHOTOCELL, ANCHOR BASE POLE (2 AT 180°) MOUNTED ON 2FT BASE AND BAND MOUNT BULLHORN MOUNTED AT 16FT, WITH (2) 'SF' FLOODLIGHTS MOTION SENSORS
SC	LITHONIA	DSX0 LED P6 40K T3M MVOLT RPA DDBXD RSA 23 4-5G DM19AS FBC DDBXD SMACBT 14/8T RND4	MVOLT	134 +156 ((2) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT, TYPE III MEDIUM DISTRIBUTION, ANCHOR BASE POLE (1 AT 90°) MOUNTED ON 2FT BASE AND BAND MOUNT BULLHORN MOUNTED AT 16FT, WITH (2) 'SF' FLOODLIGHTS MOTION SENSORS
SD	LITHONIA	DSX0 LED P3 40K T3M MVOLT RPA DDBXD RSA 23 4-5G DM19AS FBC DDBXD SMACBT 14/8T RND4	MVOLT	71 +156 ((2) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 25 FT LED POLE LIGHT, TYPE III MEDIUM DISTRIBUTION, ANCHOR BASE POLE (1 AT 90°) MOUNTED ON 2FT BASE AND BAND MOUNT BULLHORN MOUNTED AT 16FT, WITH (2) 'SF' FLOODLIGHTS MOTION SENSORS
SE1	LITHONIA	RSA 14 4-5G T20 XXXX FBC BS28 T20 TD2	MVOLT	156 ((2) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 16FT POLE. ANCHOR BASE POLE MOUNTED AT GRADE AND 3 IN LINE ROUND BULLHORN, WITH (2) 'SF' FLOODLIGHTS
SE2	LITHONIA	RSA 14 4-5G T20 XXXX FBC BS38 T20 TD2	MVOLT	234 ((3) SF)	LED 4000K	CONCRETE BASE 6 E-004	OVERALL 16FT POLE. ANCHOR BASE POLE MOUNTED AT GRADE AND 3 IN LINE ROUND BULLHORN, WITH (3) 'SF' FLOODLIGHTS
SF	LITHONIA	DSXF2 LED P2 40K MFL MVOLT IS DDBXD	MVOLT	78	LED 4000K	BULL HORN	LED FLOODLIGHT

NOTE:

1. PROVIDE DARK BRONZE COLOR FINISH
2. FIXTURE TYPES DENOTING "R" AFTER FIXTURE: PROVIDE POLE WITH FESTOON OUTLET LESS ELECTRIC, #FDLXY. CONTRACTOR TO PROVIDE GFCI OUTLET AND METAL WHILE IN USE COVER. COVER PLATE MUST MATCH THE POLE COLOR FINISH. "X" = 2FT AND "Y" IS 180 DEGREES FROM ORIGINAL HANDHOLE.

Ventura County Fire Department FIRE & RESCUE

PUBLIC VENTURA COUNTY WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA NO. 10757 ELECTRICAL STATE OF CALIFORNIA EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

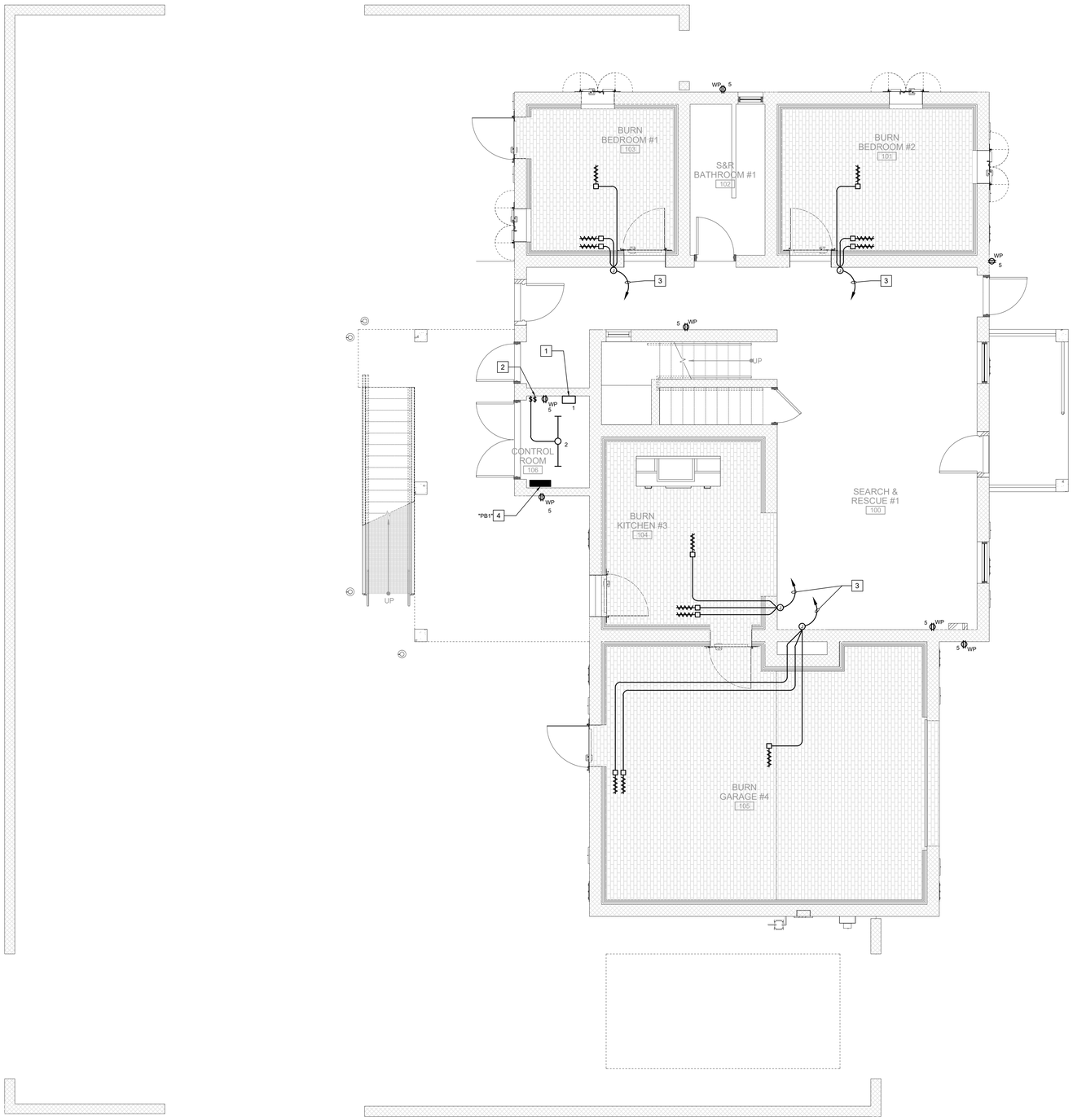
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 117 OF 123

SHEET TITLE
LIGHTING SITE PLAN

SHEET NO
ES-103



REFERENCE NOTES

1. PROVIDE 120V CONNECTION TO TEMPERATURE MONITORING UNIT FURNISHED AND INSTALLED BY OWNER'S VENDOR. VERIFY EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH-IN.
2. LIGHT SWITCH TO CONTROL BUILDING LIGHTS. LABEL "ATTIC".
3. PROVIDE 2-GANG BOX AND 3/4"C TO TEMPERATURE MONITORING UNIT FOR LOW VOLTAGE WIRING MY OWNER'S VENDOR. DO NOT INSTALL WIRING IN OR THROUGH ANY BURN ROOMS.
4. 100AMP, 120/208V, 3PH, 4-WIRE PANELBOARD. PROVIDE (24) 20AMP, 1 POLE BREAKER AND (2) 30 AMP, 3 POLE BREAKER.

LEGEND

- TEMPERATURE SENSOR PROBE BY VENDOR. CEILING MOUNT PROBE IN MIDDLE OF ROOM. ELECTRICAL CONTRACTOR TO INSTALL JUNCTION BOX AND ½"CONDUIT FOR LOW VOLTAGE WIRING BY VENDOR. COORDINATE EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.
- TEMPERATURE SENSOR PROBE BY VENDOR. WALL MOUNTED PROBE AT 24" ABOVE FINISHED FLOOR. WALL MOUNTED PROBE AT 6'-0" ABOVE FINISHED FLOOR. ELECTRICAL CONTRACTOR TO INSTALL JUNCTION BOX AND 3/4"CONDUIT FOR LOW VOLTAGE WIRING BY VENDOR. COORDINATE EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN..
- 12W WALL MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH(CANLET #68-02-12W-L-W-F 09-11)
- 12W CEILING MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH (CANLET #68-02-12W-C-F-09-11)
- WP — GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.
- 49W 4FT STRIP LED LIGHT WET LOCATION RATED WITH INTEGRAL MOTION SENSOR (LITHONIA #VAP-6000LM FST-MD-MVOLTGZ10-40K-80CRI-WLX DL-MSI10NWL)

BURN BUILDING FIRST FLOOR ELECTRICAL PLAN

NORTH

SCALE: 1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA NO. 10757 ELECTRICAL STATE OF CALIFORNIA
EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO	DATE
20-8119	3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

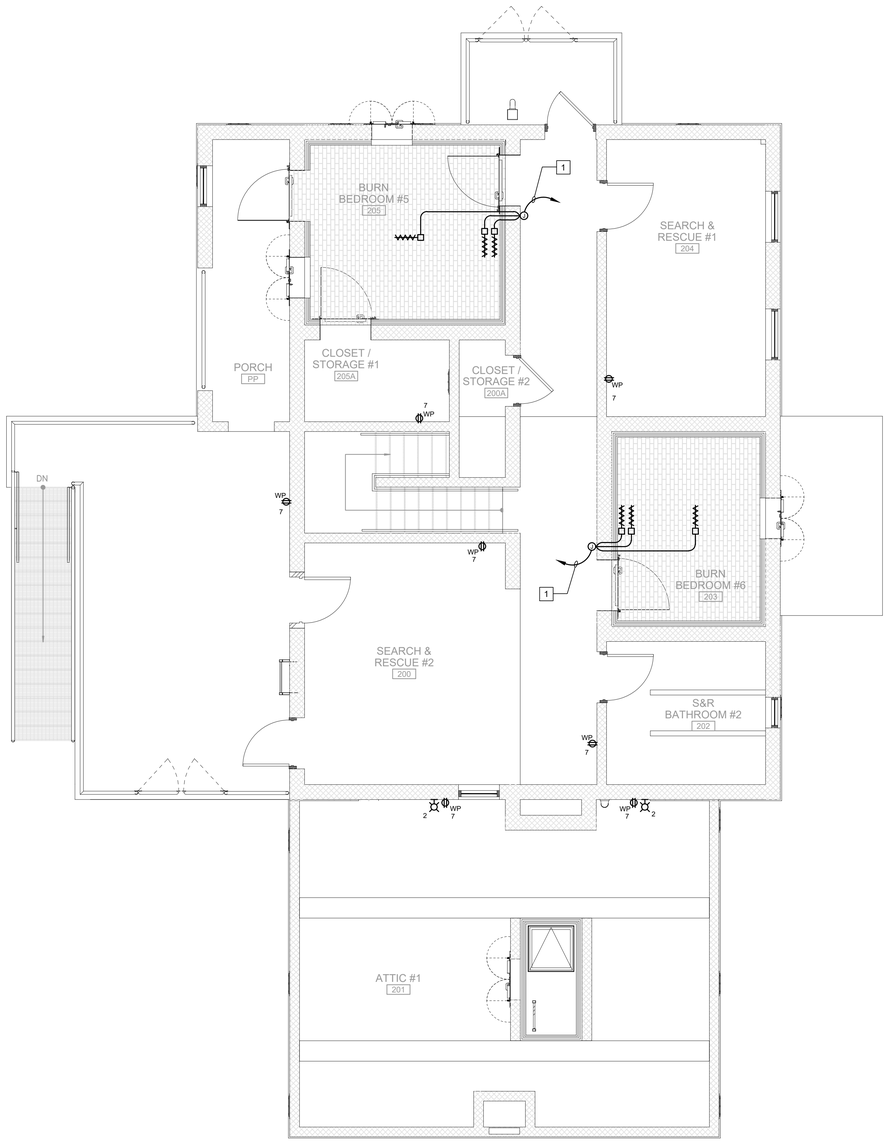
COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 118 OF 123

SHEET TITLE
BURN BUILDING FIRST FLOOR ELECTRICAL PLAN

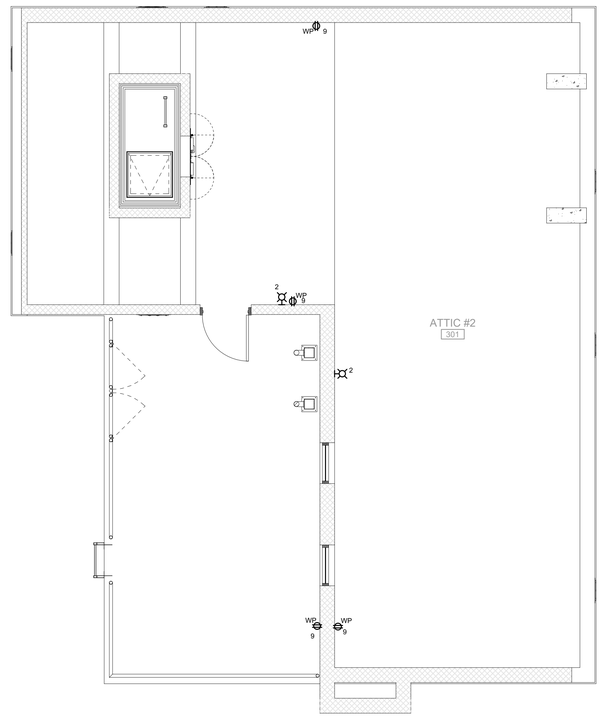
SHEET NO
B1-E101



BURN BUILDING SECOND FLOOR ELECTRICAL PLAN

NORTH

SCALE: 1/4" = 1'-0"



BURN BUILDING THIRD FLOOR ELECTRICAL PLAN

NORTH

SCALE: 1/4" = 1'-0"

REFERENCE NOTES

1. PROVIDE 2-GANG AND 3/4"C TO TEMPERATURE MONITORING UNIT FOR LOW VOLTAGE WIRING MY OWNER'S VENDOR. DO NOT INSTALL WIRING IN OR THROUGH ANY BURN ROOMS.

LEGEND

- TEMPERATURE SENSOR PROBE BY VENDOR. CEILING MOUNT PROBE IN MIDDLE OF ROOM. ELECTRICAL CONTRACTOR TO INSTALL JUNCTION BOX AND 3/4"CONDUIT FOR LOW VOLTAGE WIRING BY VENDOR. COORDINATE EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.
- TEMPERATURE SENSOR PROBE BY VENDOR. WALL MOUNTED PROBE AT 24" ABOVE FINISHED FLOOR. WALL MOUNTED PROBE AT 6'-0" ABOVE FINISHED FLOOR. ELECTRICAL CONTRACTOR TO INSTALL JUNCTION BOX AND 3/4"CONDUIT FOR LOW VOLTAGE WIRING BY VENDOR. COORDINATE EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN..
- 12W WALL MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH(CANLET #68-02-12W-L-W-F 09-11)
- 12W CEILING MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH (CANLET #68-02-12W-C-F-09-11)
- WP — GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.
- 49W 4FT STRIP LED LIGHT WET LOCATION RATED WITH INTEGRAL MOTION SENSOR (LITHONIA #VAP-6000LM FST-MD-MVOLTGZ10-40K-80CRI-WLX DL-MSI10NWL)

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA NO. 10757 ELECTRICAL STATE OF CALIFORNIA
EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

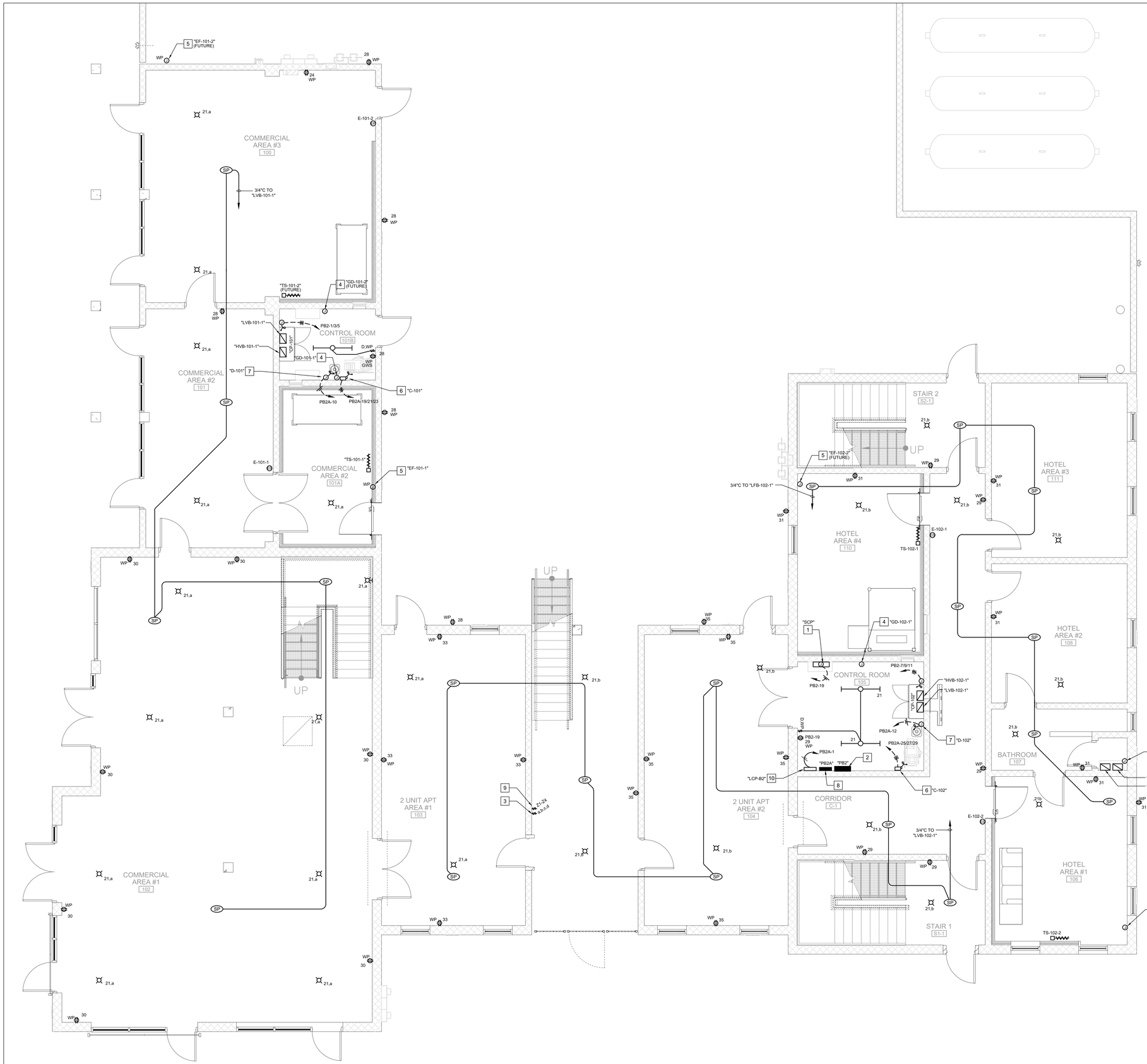
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 119 OF 123

SHEET TITLE
BURN BUILDING
2ND AND 3RD FLOOR
ELECTRICAL PLAN

SHEET NO
B1-E102

K:\ENG\2020\20-8119\20-8119_B1-E102_BURN BUILDING 2ND AND 3RD FLOOR ELECTRICAL PLAN.dwg - CReyes - Aug 23, 2023 - 1:03pm



MULTI-PURPOSE BUILDING FIRST FLOOR ELECTRICAL PLAN

NORTH

SCALE: 1/4" = 1'-0"

REFERENCE NOTES

1. SOUND CONTROL PANEL, "SCP."
2. 400AMP, 120/208V, 3-PHASE, 4-WIRE, NEMA 3R LOAD CENTER.
3. FOUR-GANG SWITCHES TO CONTROL LIGHTS AT EACH FLOOR. PROVIDE WEATHEPROOF COVER.
4. GAS DETECTION MONITOR PANEL. PROVIDE 3/4" CONDUIT TO LOW VOLTAGE CABINET AND 3/4" CONDUIT TO HIGH VOLTAGE CABINET PER VENDOR'S PLANS. VERIFY EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.
5. EXHAUST FAN, PROVIDE 2-GANG JUNCTION BOX WITH 3/4" CONDUIT TO HIGH VOLTAGE PULL BOX PER VENDOR'S DRAWINGS. VERIFY EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.
6. CONNECT TO AIR COMPRESSOR (2HP, 8FLA, 208V, 3Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
7. CONNECT TO AIR DRYER (1/10HP, 2.8FLA, 120V, 1Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
8. 200AMP, 120/208V, 3PHASE-WIRE, NEMA 3R LOAD CENTER.
9. 4-GANG SWITCHBANK FOR FOUR (4)0-90 MINUTE DIGITAL TIMER (Z1 THROUGH Z4). PROVIDE WEATHERPROOF COVER. (REFER TO LIGHTING SITE PLAN ES103 FOR ADDITIONAL REQUIREMENTS).
10. PROVIDE A 8 RELAY TIMECLOCK FOR SITE LIGHTING LITHONIA "ARP" OR EQUAL. PROVIDE LOW VOLTAGE SWITCH TO CONTROL FLOOD LIGHTS FOR CLASS A PROP AND MULTIPURPOSE PROP BUILDING.

LEGEND

- 12W WALL MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH(CANLET #68-02-12W-L-W-F 09-11)
- 12W CEILING MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH (CANLET #68-02-12W-C-F-09-11)
- WP — GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.
- 49W 4FT STRIP LED LIGHT WET LOCATION RATED WITH INTEGRAL MOTION SENSOR (LITHONIA #VAP-6000LM FST-MD-MVOLTGZ10-40K-80CRI-WLX DL-MSI10NWL)
- SP — SPEAKER FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY AS SHOWN AND HOMERUN TO LOW VOLTAGE CABINET. LOW VOLTAGE WIRING BY VENDOR. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.
- C.R. — CONTROL RACK FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO PROVIDE 50AMP 120/208V 3 PHASE FEEDER CONNECTION FROM PANELBOARD. HOMERUN 1"C WITH (4)#6 THWN AND (1)#10 CU GROUND.
- E — EMERGENCY STOP FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S DRAWINGS
- HIGH VOLTAGE OR LOW VOLTAGE PULL BOX (12"X12"X8") ENCLOSURE TYPE 4 PER VENDOR'S REQUIREMENT. FURNISHED AND INSTALL BY ELECTRICAL CONTRACTOR. PROVIDE 2" CONDUIT BETWEEN PULLBOXES PER VENDOR'S PLANS
- TEMPERATURE SENSOR FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S PLANS. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. THOMA — ELECTRICAL — STATE OF CALIFORNIA — NO. 16767 — EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER: Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO: 20-8119	DATE: 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02

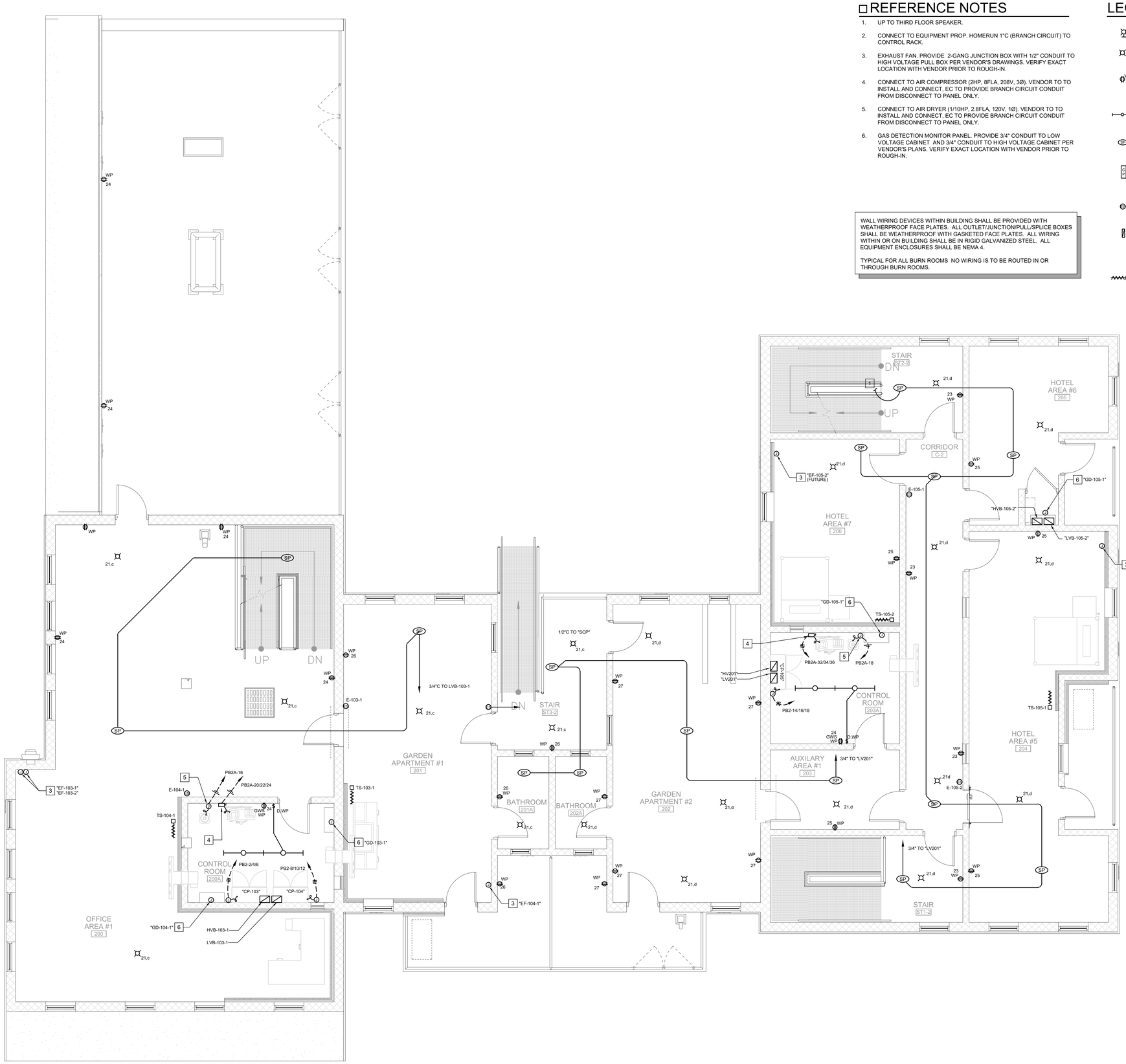
COUNTY PROJECT NUMBER: P6T18021

COUNTY DWG NO

SHEET 120 OF 123

SHEET TITLE: MULTI-PURPOSE BUILDING FIRST FLOOR ELECTRICAL PLAN

SHEET NO B2-E101



MULTI-PURPOSE BUILDING SECOND FLOOR ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"

NORTH

REFERENCE NOTES

1. UP TO THIRD FLOOR SPEAKER.
2. CONNECT TO EQUIPMENT PROP. HOMERUN 1"C (BRANCH CIRCUIT) TO CONTROL RACK.
3. EXHAUST FAN. PROVIDE 2-GANG JUNCTION BOX WITH 1/2" CONDUIT TO HIGH VOLTAGE PULL BOX PER VENDOR'S DRAWINGS. VERIFY EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.
4. CONNECT TO AIR COMPRESSOR (2HP, 8FLA, 208V, 3Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
5. CONNECT TO AIR DRYER (1/10HP, 2.8FLA, 120V, 1Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
6. GAS DETECTION MONITOR PANEL. PROVIDE 3/4" CONDUIT TO LOW VOLTAGE CABINET AND 3/4" CONDUIT TO HIGH VOLTAGE CABINET PER VENDOR'S PLANS. VERIFY EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.

WALL WIRING DEVICES WITHIN BUILDING SHALL BE PROVIDED WITH WEATHERPROOF FACE PLATES. ALL OUTLET/JUNCTION/PULL/SPLICE BOXES SHALL BE WEATHERPROOF WITH GASKETED FACE PLATES. ALL WIRING WITHIN OR ON BUILDING SHALL BE IN RIGID GALVANIZED STEEL. ALL EQUIPMENT ENCLOSURES SHALL BE NEMA 4.

TYPICAL FOR ALL BURN ROOMS NO WIRING IS TO BE ROUTED IN OR THROUGH BURN ROOMS.

LEGEND

- 12W WALL MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH(CANLET #68-02-12W-L-W-F 09-11)
- 12W CEILING MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH (CANLET #68-02-12W-C-F-09-11)
- WP — GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.
- 49W 4FT STRIP LED LIGHT WET LOCATION RATED WITH INTEGRAL MOTION SENSOR (LITHONIA #VAP-6000LM FST-MD-MVOLTGZ10-40K-80CRI-WLX DL-MSI10NWL)
- SP — SPEAKER FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)1/2" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S PLANS. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.
- CR — CONTROL RACK FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO PROVIDE 50AMP 120/208V 3 PHASE FEEDER CONNECTION FROM PANELBOARD. HOMERUN 1"C WITH (4)#6 THWN AND (1)#10 CU GROUND.
- S — EMERGENCY STOP FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S DRAWINGS
- HIGH VOLTAGE OR LOW VOLTAGE PULL BOX (12"X12"X8") ENCLOSURE TYPE 4 PER VENDOR'S REQUIREMENT. FURNISHED AND INSTALL BY ELECTRICAL CONTRACTOR. PROVIDE 2" CONDUIT BETWEEN PULLBOXES PER VENDOR'S PLANS
- TEMPERATURE SENSOR FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S PLANS. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cas@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA No. 10757 ELECTRICAL STATE OF CALIFORNIA EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

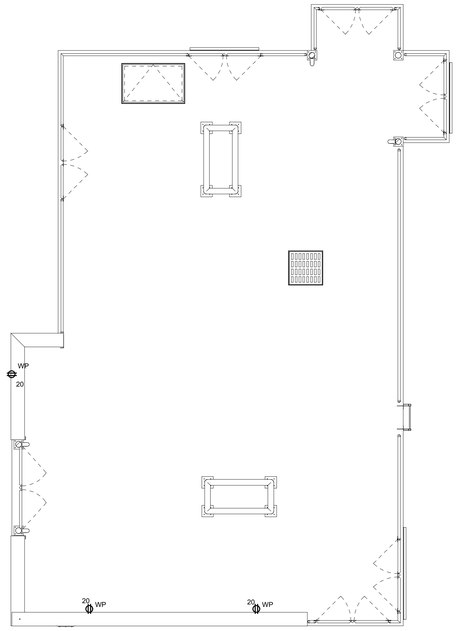
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 121 OF 123

SHEET TITLE
BURN BUILDING SECOND FLOOR ELECTRICAL PLAN

SHEET NO
B2-E102

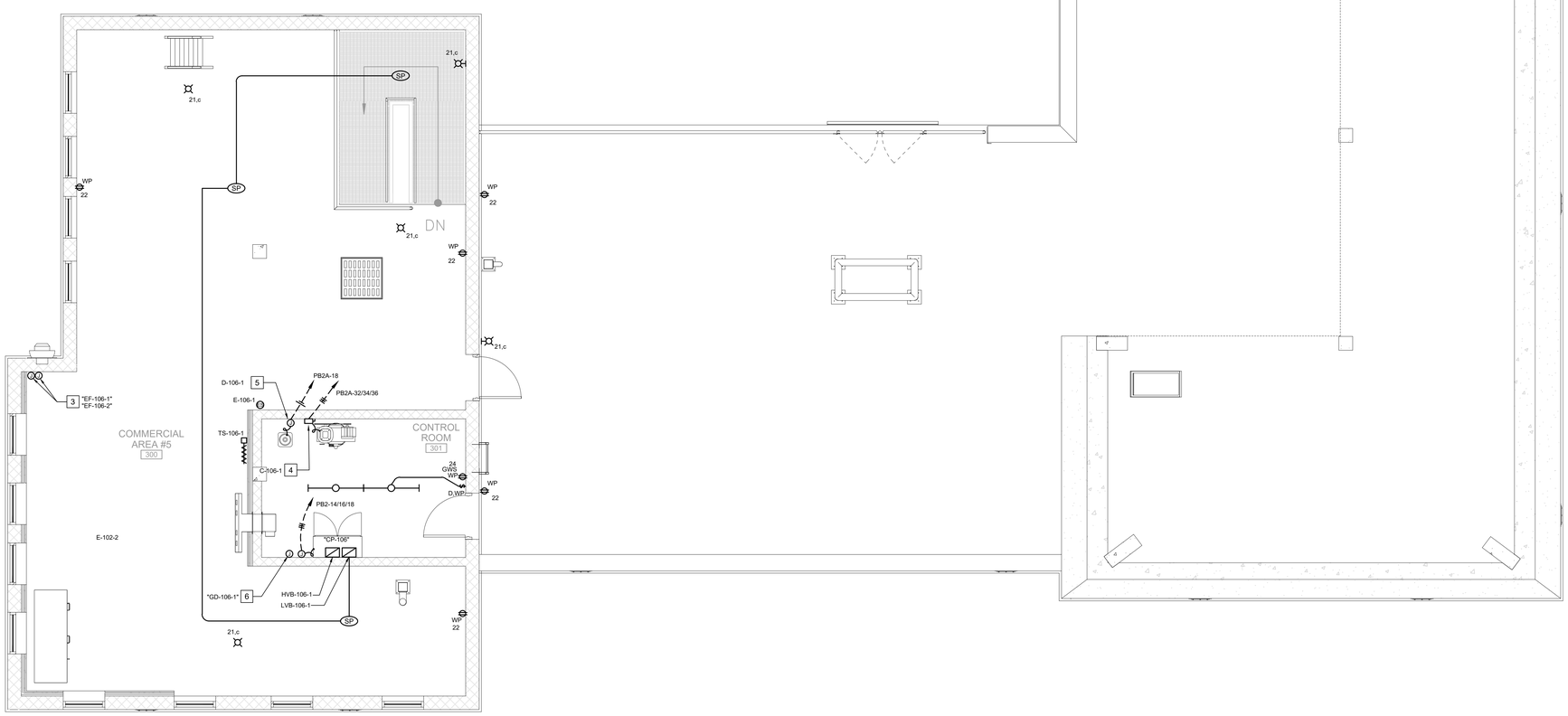
K:\ENG\2020\20-8119\20-8119_B2-E102_MULTI-PURPOSE 2ND FLOOR ELECTRICAL PLAN.dwg - CReyes - Aug 23, 2023 - 1:03pm



MULTI-PURPOSE BUILDING FOURTH FLOOR ELECTRICAL PLAN

NORTH

SCALE: 3/16" = 1'-0"



MULTI-PURPOSE BUILDING THIRD FLOOR ELECTRICAL PLAN

NORTH

SCALE: 1/4" = 1'-0"

REFERENCE NOTES

1. DOWN TO SPEAKER.
2. CONNECT TO EQUIPMENT PROP. HOMERUN 1"C (BRANCH CIRCUIT) TO CONTROL RACK.
3. EXHAUST FAN. EC TO INSTALL 3/4"C (BRANCH CIRCUIT) ONLY TO HIGH VOLTAGE CABINET. BRANCH CIRCUIT WIRING AND DISCONNECT FURNISHED AND INSTALL BY VENDOR.
4. CONNECT TO AIR COMPRESSOR (2HP, 8FLA, 208V, 3Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
5. CONNECT TO AIR DRYER (1/10HP, 2.8FLA, 120V, 1Ø). VENDOR TO TO INSTALL AND CONNECT, EC TO PROVIDE BRANCH CIRCUIT CONDUIT FROM DISCONNECT TO PANEL ONLY.
6. GAS DETECTION MONITOR PANEL. PROVIDE 3/4" CONDUIT TO LOW VOLTAGE CABINET AND 3/4" CONDUIT TO HIGH VOLTAGE CABINET PER VENDOR'S PLANS. VERIFY EXACT LOCATION WITH VENDOR PRIOR TO ROUGH-IN.

LEGEND

- 12W WALL MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH(CANLET #68-02-12W-L-W-F 09-11)
- 12W CEILING MOUNTED LED VAPOR-TIGHT WITH HEAT RATED CLEAR GLASS, GRAY FINISH (CANLET #68-02-12W-C-F-09-11)
- WP — GFCI (GROUND FAULT CURRENT INTERRUPTER) 20A, 125V DUPLEX, WEATHER RESISTANT RECEPTACLE OUTLET NEMA 520R SPECIFICATION GRADE, WEATHER RESISTANT RECEPTACLES WITH WEATHERPROOF COVER.
- 49W 4FT STRIP LED LIGHT WET LOCATION RATED WITH INTEGRAL MOTION SENSOR (LITHONIA #VAP-6000LM FST-MD-MVOLTGZ10-40K-80CRI-WLX DL-MSI10NWL)
- SP — SPEAKER FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S PLANS. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.
- CONTROL RACK FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO PROVIDE 50AMP 120/208V 3 PHASE FEEDER CONNECTION FROM PANELBOARD. HOMERUN 1"C WITH (4)#6 THWN AND (1)#10 CU GROUND.
- EMERGENCY STOP FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)1/2" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S DRAWINGS
- HIGH VOLTAGE OR LOW VOLTAGE PULL BOX (12"X12"X8") ENCLOSURE TYPE 4 PER VENDOR'S REQUIREMENT. FURNISHED AND INSTALL BY ELECTRICAL CONTRACTOR. PROVIDE 2" CONDUIT BETWEEN PULLBOXES PER VENDOR'S PLANS
- TEMPERATURE SENSOR FURNISHED AND INSTALL BY VENDOR. ELECTRICAL CONTRACTOR TO INSTALL (1)3/4" CONDUIT ONLY TO LOW VOLTAGE CABINET PER VENDOR'S PLANS. COORDINATE EXACT LOCATION AND WITH VENDOR'S DRAWINGS.

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cas@thomaelec.com
THOMA #20-8119

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. THOMA NO. 10757 ELECTRICAL STATE OF CALIFORNIA EXP: 06/30/26

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER
Christopher M. Jose

DRAWN BY	CHECKED BY
TR/CJ	CJ/JT
CONSULTANT JOB NO 20-8119	DATE 3/04/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T118021

COUNTY DWG NO

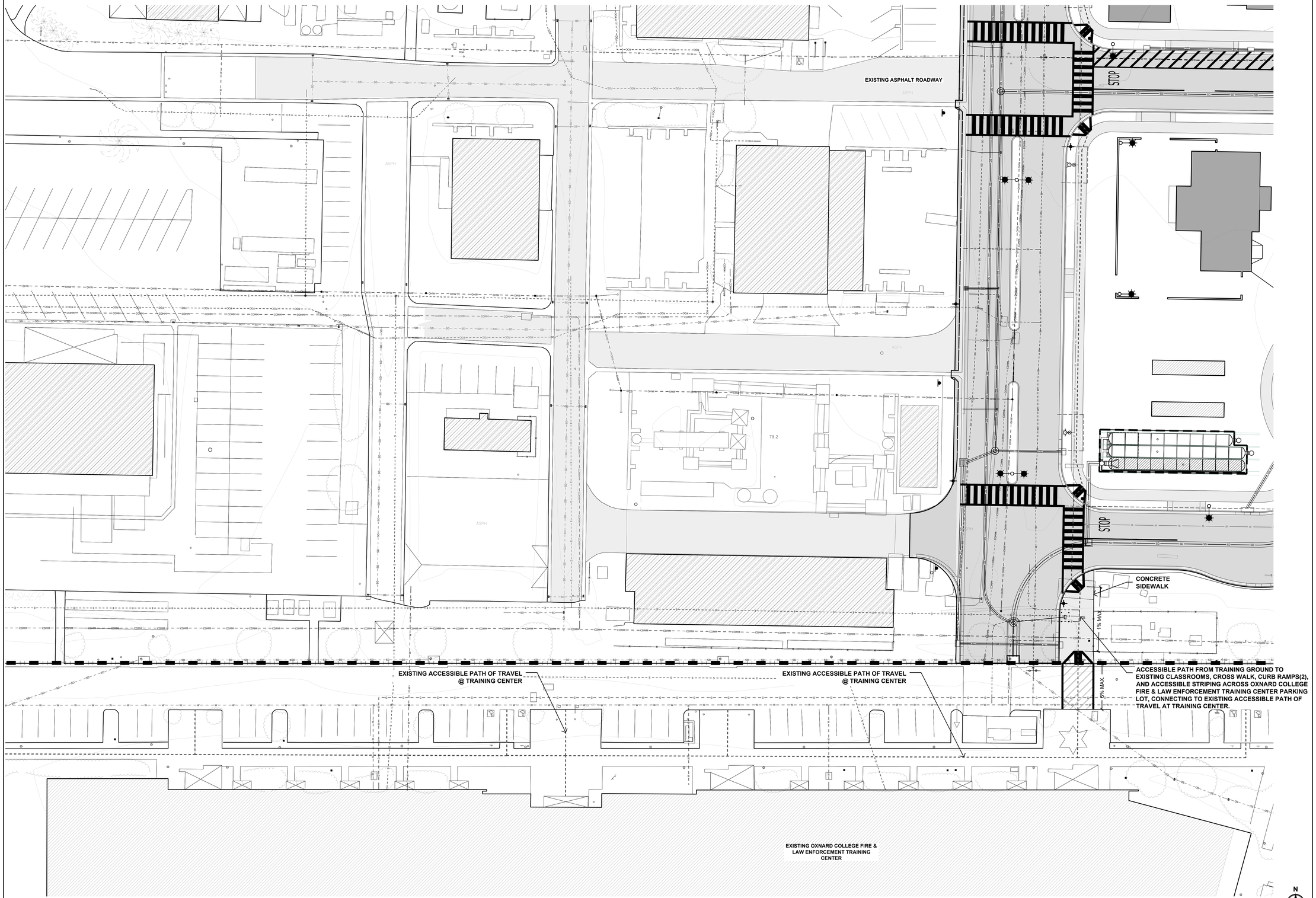
SHEET 122 OF 123

SHEET TITLE
BURN BUILDING
THIRD FLOOR
ELECTRICAL PLAN

SHEET NO
B2-E103

GENERAL NOTES:

1. REFER TO CIVIL DRAWINGS FOR GRADING WORK AND SITE IMPROVEMENTS.
2. REFER TO ELECTRICAL PLAN FOR SITE & EXTERIOR BLDG. LIGHTING, INTERIOR LIGHTING, POWER AND COMMUNICATIONS.
3. REFER TO LANDSCAPE DRAWING FOR LANDSCAPE IMPROVEMENTS.
4. REFER TO HORIZONTAL CONTROL PLAN FOR BUILDING LOCATIONS, SETBACK NOTES ON ARCHITECTURAL SITE PLAN FOR REFERENCE ONLY.
5. REFER TO STRUCTURAL DRAWINGS FOR MORE INFORMATION.



1 **ENLARGED ARCHITECTURAL SITE PLAN - ACCESSIBLE PATH FROM TRAINING GROUND TO EXISTING CLASSROOMS**

1" = 20'

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16th STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN. 08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
Stephanie Silva 08/30/2023
Building and Safety Division

PERMIT NO C21-777 & C21-778

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
SL	MM
CONSULTANT JOB NO 123-456-789	DATE 08/22/2020

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET 123 OF 123

SHEET TITLE

ACCESSIBILITY EXHIBIT

SHEET NO

G002

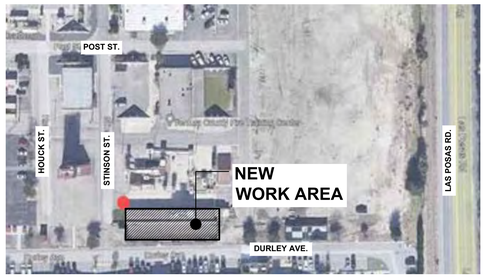
VENTURA COUNTY FIRE TRAINING CENTER
LADDER TRAINING PROP

PROJECT NO: P6T18021
SPEC NO: CP23-02

BID SET 08/21/2023

DRAWING INDEX

VICINITY MAP



EI = 44

PROJECT DESCRIPTION

The project includes the construction of a new training prop for fire rescue ladder training over the roof of an existing concrete storage bunker on the existing training grounds.

The existing concrete storage bunker will remain in place with no change to the use or function. A new structural steel framing system on the north side and along the center spine of the bunker will frame an open grate catwalk system with railings and corrugated metal panel walls. The wall panel system will provide various training scenarios for fire laddering training including multiple opening sizes, roof edges, and parapets for ladder training at varying heights.

The training prop is an unoccupied structure and shall be designed to the requirements indicated within NFPA 1402.

Second Floor Platform	1,300 S.F.
Third Floor Platforms	940 S.F.
Fourth Floor Platform	240 S.F.

PROJECT TEAM

ARCHITECT
MARY MCGRATH | ARCHITECTS
610 16th Street, Suite 219
Oakland, CA 94612
Phone: 510-208-9400

PUBLIC SAFETY CONSULTANT
MANNS WOODWARD STUDIOS
10839-D Philadephia Road
White Marsh, Maryland 21162
Phone: 410-344-1460
Fax: 443-403-2460

STRUCTURAL ENGINEER
CORNERSTONE STRUCTURAL
ENGINEERING GROUP
986 W. Aluvial Ave. Suite 201
Fresno, CA 93711
Phone: 559-320-3200

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrathartchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
www.mwsarch.com 410-344-1460

10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY LR	CHECKED BY MM
CONSULTANT JOB NO	DATE 10/12/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY LADDER TRAINING PROP

165 DURLEY AVE
CAMARILLO, CA 93010

C22000727

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

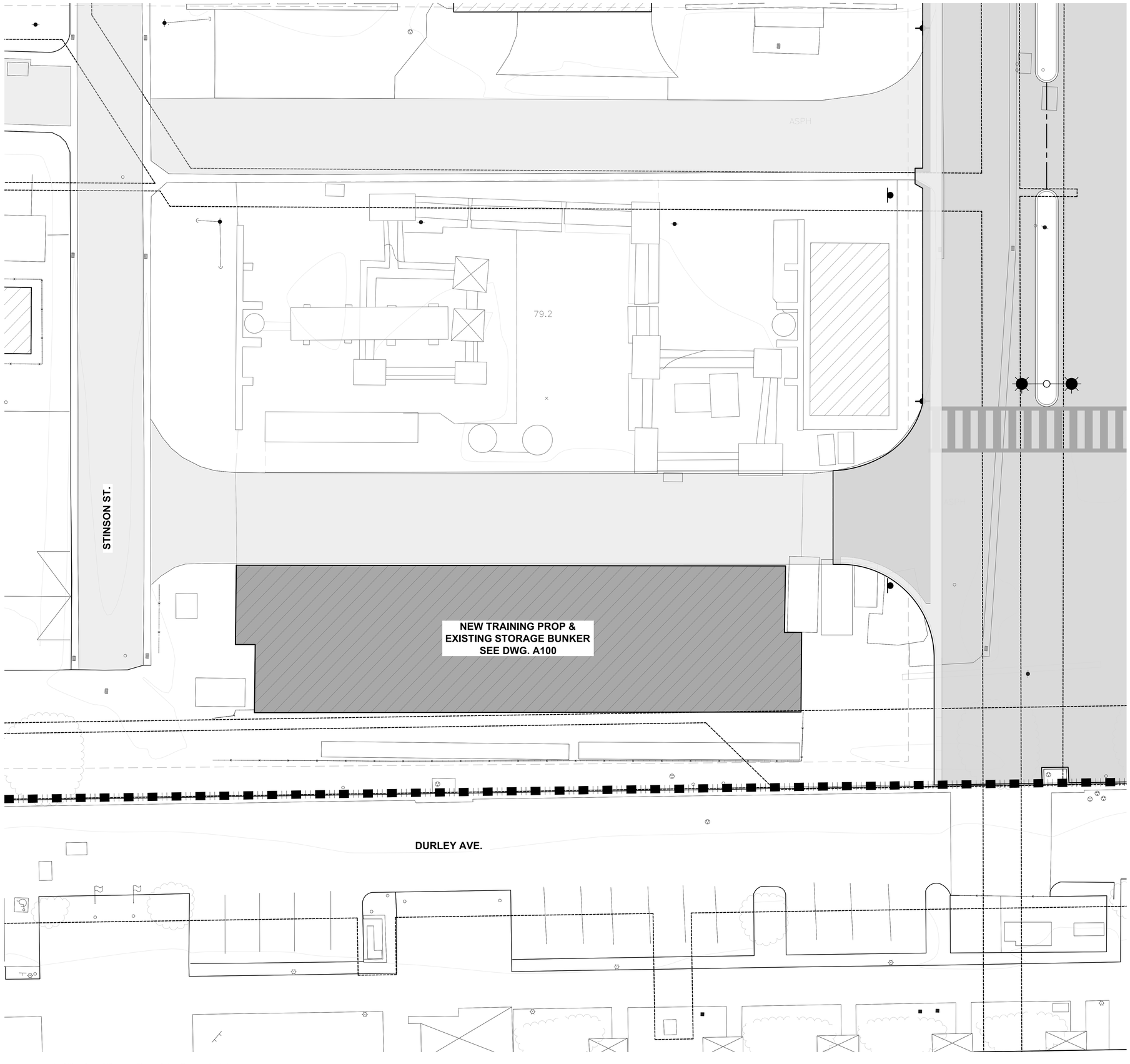
COUNTY DWG NO | SHEET NO. 1 OF 15

SHEET TITLE
COVER SHEET

DWG. NO.
G000

P:\2803.01 Ventura County Fire Training\06 Design\6.04 Construction Documents\LADDER TRAINING PROP\6.0401 CAD Files\2803_LTP - COVER SHEET.dwg

Aug 23, 2023-11:23am



1 **ENLARGED ARCHITECTURAL SITE PLAN**
1" = 10'

SCALE: 1"=10'
0 10 20 30
N

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
610 16TH STREET, SUITE 219
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
ARCHITECTURE
MASTER PLANNING
www.mwsarch.com 410-344-1460
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone: 430.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-2023

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
LR	MM
CONSULTANT JOB NO	DATE
	10/12/2022

PROJECT TITLE AND ADDRESS

VENTURA COUNTY LADDER TRAINING PROP

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO

SHEET NO. 2 OF 15

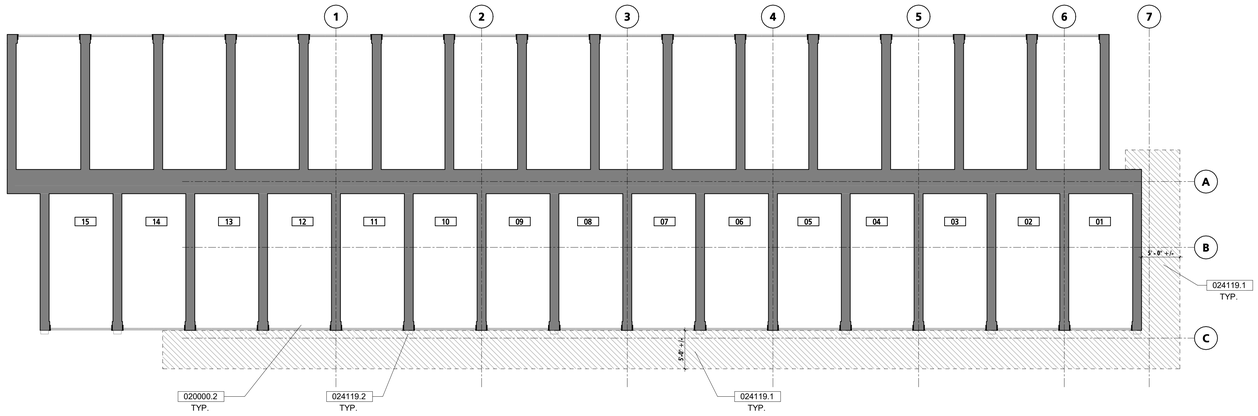
SHEET TITLE

SITE PLAN

DWG. NO.
A-1.0

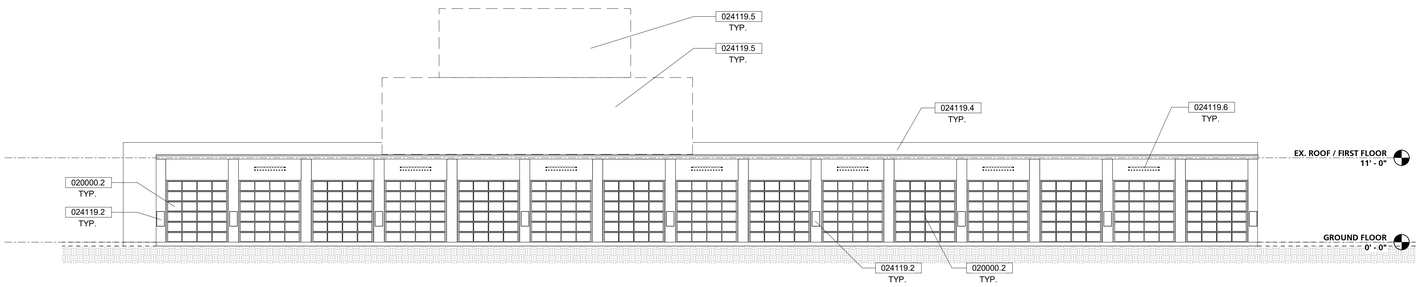
P:\2803.01 Ventura County Fire Training\06 Design\6.04 Construction Documents\LADDER TRAINING PROP\6.04D1 CAD Files\2803_LTP - A100_Arch Site Plan.dwg

Aug 23, 2023-11:23am



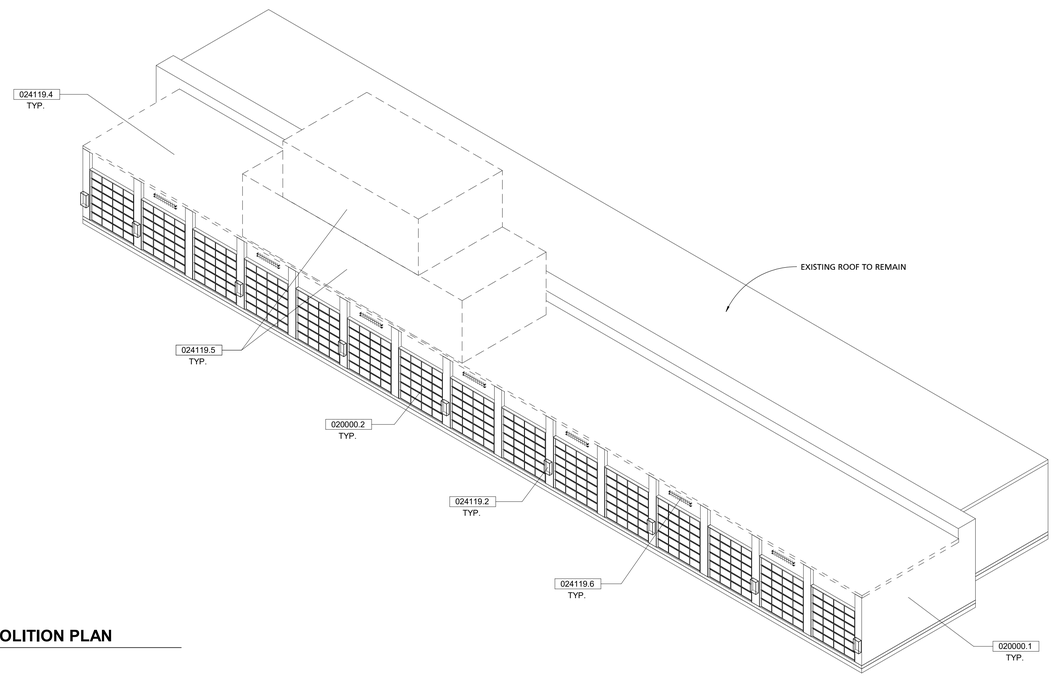
1 FIRST FLOOR DEMOLTION PLAN

1/8" = 1'-0"



2 EXISTING / DEMOLITION - SOUTH ELEVATION

1/8" = 1'-0"



3 3D DEMOLITION PLAN

GENERAL DEMOLITION NOTES

1	ALL BIDDERS SHALL MAKE THEMSELVES FAMILIAR WITH THE EXISTING PROJECT CONDITIONS PRIOR TO SUBMITTING A BID. THIS IS INCLUSIVE OF CONDITIONS ABOVE ACCESIBLE CEILINGS TO DETERMINE WORKING CONDITIONS.
2	PRIOR TO THE PERFORMANCE OF ANY DEMOLITION WORK THE CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH THE EXISTING CONDITIONS OF THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, PROVIDING, INSTALLING, AND MAINTAINING ALL TEMPORARY SUPPORT AND BRACING REQUIRED TO COMPLETE THE WORK.
3	THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS, DIMENSIONS, CONSTRUCTION ASSEMBLIES AND THE LIKE PRIOR TO FABRICATING, INSTALLING, OR PURCHASING ANY NEW WORK. DETAILS INDICATING EXISTING MATERIALS OF CONDITIONS MAY BE SHOWN WITHIN THE DOCUMENTS BUT ARE NOT INTENDED TO FULLY DEFINE EXISTING CONDITIONS.
4	DEMOLITION WORK MAY BE INDICATED THROUGHOUT THE CONTRACT DOCUMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL DOCUMENTS FOR ADDITIONAL DEMOLITION WORK.
5	IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN SAFE WORKING CONDITIONS THROUGHOUT THE CONSTRUCTION SITE. THE CONTRACTOR SHALL PROVIDE TEMPORARY BARRIERS AS REQUIRED TO PROTECT PERSONS AND PROPERTY AND OTHERWISE MAINTAIN SAFE WORKING CONDITIONS.
6	THE CONTRACTOR SHALL MAINTAIN A CLEAR, CLEAN, USEABLE CONSTRUCTION SITE THROUGH DAILY CLEANUP OF WORK AREAS.
7	THE OWNER SHALL BE MAINTAINING OCCUPANCY OF THE SITE AND PORTIONS OF THE BUILDING DURING THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND THE OWNER'S PERSONNEL THROUGHOUT THE CONSTRUCTION TO MINIMIZE, TO THE GREATEST EXTENT POSSIBLE, ANY DISRUPTIONS IN THE OWNER'S WORKING PROCEDURES. THE PHASING OF THE PROJECT SHALL BE DETERMINED BY THE CONTRACTOR AND SHALL NOT BE REASON FOR ADDITIONAL FEES. ADDITIONALLY, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER A MINIMUM OF 72 HOURS PRIOR TO ANY DISRUPTION OF SERVICES/UTILITIES REQUIRED TO COMPLETE THE WORK.
8	THE CONTRACTOR SHALL PROVIDE PROTECTION FROM THE WEATHER FOR PORTIONS OF EXISTING CONSTRUCTION THAT ARE TO REMAIN OCCUPIED OR USEABLE BY THE OWNER OR TO AREAS THAT CONTAIN ITEMS TO REMAIN THAT WILL BE DAMAGED BY WEATHER.
9	ALL ITEMS INDICATED TO BE REMOVED AND/OR DEMOLISHED SHALL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL REVIEW WITH THE OWNER IF ANY ITEMS TO BE REMOVED AND/OR DEMOLISHED ARE TO BE RETAINED BY THE OWNER PRIOR TO ANY DEMOLITION WORK BEING PERFORMED. ALL ITEMS TO BE RETAINED BY THE OWNER SHALL BE REMOVED BY THE CONTRACTOR AND DELIVERED TO THE OWNER IN THE CONDITION FOUND PRIOR TO ANY WORK BEING PERFORMED. ALL OTHER ITEMS INDICATED TO BE REMOVED AND/OR DEMOLISHED SHALL BE DISPOSED OF OFF SITE BY THE CONTRACTOR IN A LAWFUL MANNER.
10	THE CONTRACTOR SHALL REPLACE OR REPAIR ANY ITEMS DAMAGED BY THE CONTRACTOR OR ANY OF ITS AGENTS TO A MINIMUM CONDITION MATCHING THE ITEMS' CONDITION AT THE START OF CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
11	THE CONTRACTOR SHALL REPAIR ANY MATERIALS, SYSTEMS, OR FINISHES WITHIN OR OUTSIDE OF THE GENERAL WORK AREA THAT ARE REQUIRED TO BE DISTURBED TO COMPLETE THE ENTIRE SCOPE OF WORK ASSOCIATED WITH BUILDING SYSTEM CONNECTIVITY.
12	THE CONTRACTOR SHALL PREPARE ALL SURFACES AFFECTED BY DEMOLITION OPERATIONS TO RECEIVE NEW WORK AS BOTH INDICATED WITHIN THESE DRAWINGS AND SPECIFICATIONS/PROJECT MANUAL AND AS RECOMMENDED BY THE MANUFACTURERS' WRITTEN INSTRUCTIONS FOR THE INSTALLATION OF EACH RESPECTIVE PRODUCT.
13	THE CONTRACTOR SHALL REMOVE EXISTING FINISHES AS INDICATED THROUGHOUT THE CONTRACT DOCUMENTS AND ENSURE THAT SUBSTRATE CONDITIONS ARE SMOOTH AND IN SATISFACTORY CONDITION TO RECEIVE NEW WORK.
14	THE CONTRACTOR SHALL REMOVE ALL ANCHORS, FASTENERS, WALL HANGERS, AND MISCELLANEOUS EXTRUSIONS AND APPURTENANCES OF ITEMS BOTH NO LONGER INSTALLED AND ITEMS REMOVED THROUGH DEMOLITION PROCEDURES.
15	THE CONTRACTOR SHALL COORDINATE ANY SAW CUTS WITHIN THE EXISTING SLABS WITHIN THE NEW WORK AREA AS REQUIRED TO INSTALL NEW ELECTRICAL CONDUIT, PLUMBING, AND/OR STRUCTURAL ELEMENTS. CONTRACTOR SHALL COORDINATE SIZE, LOCATION, AND DEPTH WITH THE FULL SET OF DOCUMENTS. REPLACE AND REPAIR CONCRETE AND FLASH AS REQUIRED TO CREATE A FLUSH SUBSTRATE AFTER COMPLETION OF WORK TASKS.
16	EXISTING ROOF MATERIAL ARE KNOWN TO CONTAIN ASBESTOS CONTAINING MATERIALS (ACM). OWNER WILL ABATE ACM PRIOR TO CONTRACTOR PERFORMING ANY CONSTRUCTION ACTIVITIES.

PLAN LEGEND

EXISTING WALL TO REMAIN

NEW WALL/PARTITION

KEY VALUE	KEYNOTE TEXT
020000.1	EXISTING CONCRETE WALL
020000.2	EXISTING SECTIONAL DOOR
024119.1	SAW CUT EXISTING CONCRETE SLAB AS NEEDED FOR INSTALLATION OF COLUMN FOUNDATION, SEE NEW WORK PLANS
024119.2	EXISTING ELECTRICAL BOXES, DISCONNECT AND REROUTE NEW CONDUIT AND RECONNECT. COORDINATE REROUTED CONDUT WITH NEW WORK
024119.4	DEMOLISH EXISTING ROOF SYSTEM, BALLAST, EDGE FLASHING AND BASE FLASHING DOWN TO CONCRETE DECK. PREPARE SURFACE TO RECEIVE NEW WORK
024119.5	DEMOLISH EXISTING ROOFTOP MOUNTED WOOD PROP STRUCTURE FROM EXISTING ROOF.
024119.6	REMOVE, RELOCATE AND REINSTALL EXISTING LIGHT FIXTURE, CONDUIT AND ASSOICATED WIRING

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

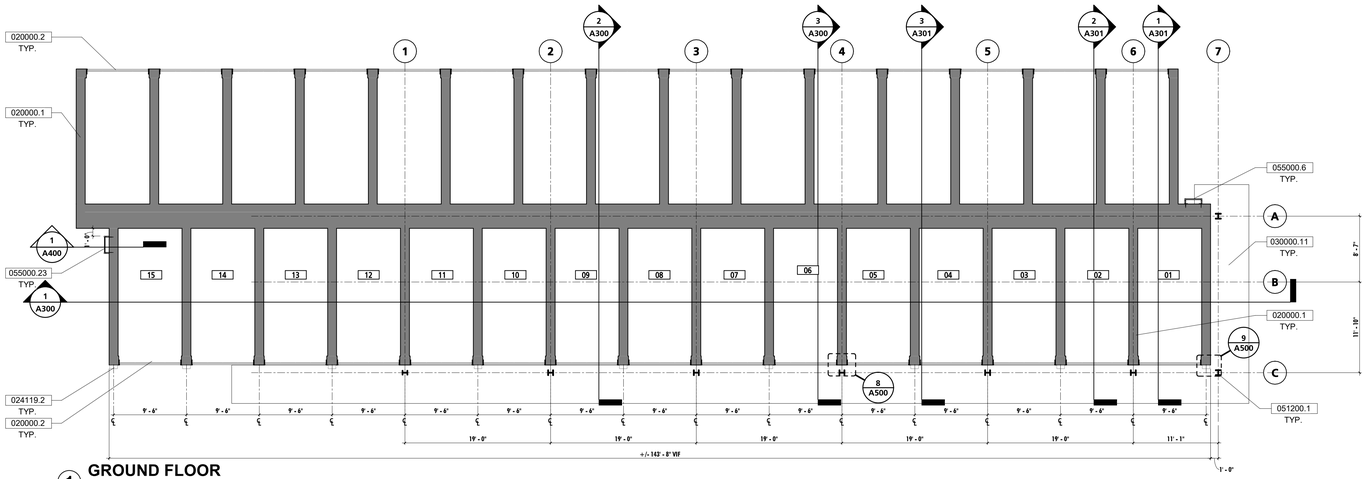
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 3 OF 15

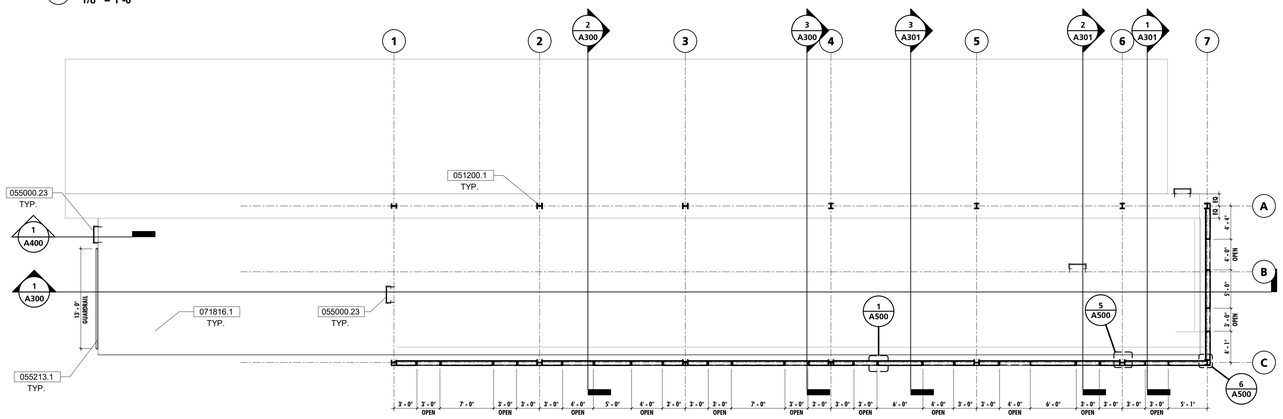
SHEET TITLE
EXISTING / DEMOLITION PLAN

SHEET NO
AD100

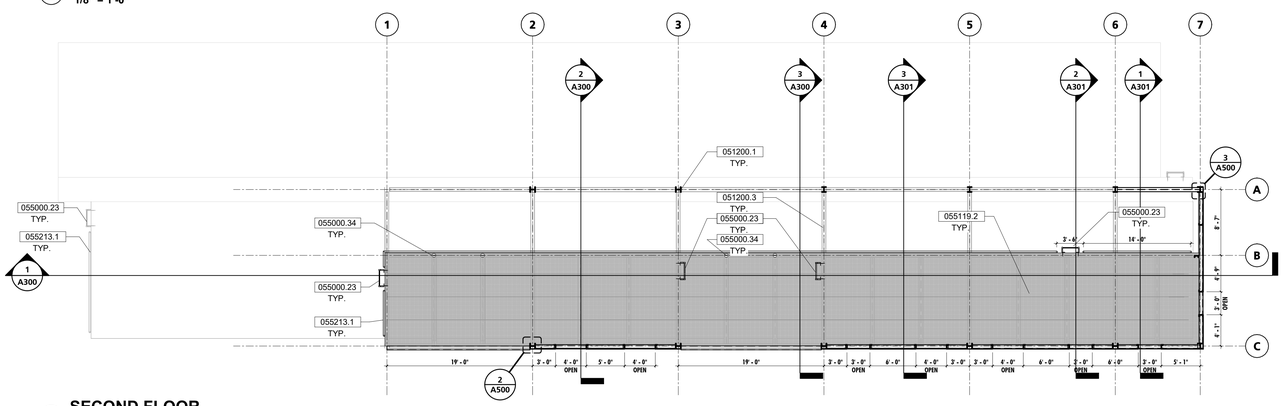
BID SET



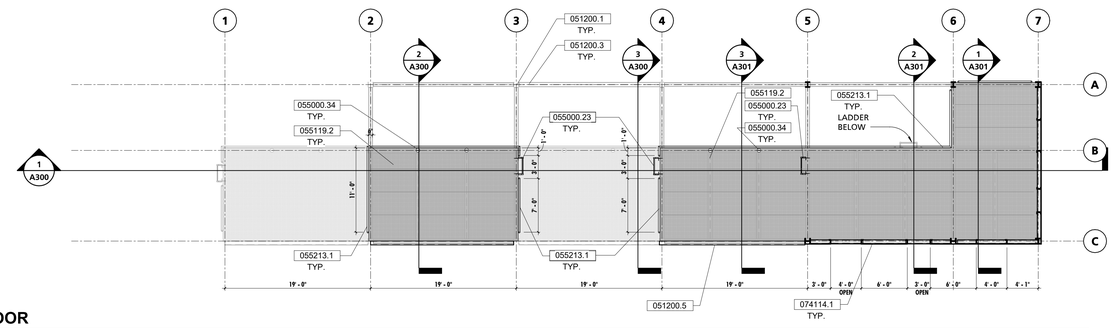
1 GROUND FLOOR
1/8" = 1'-0"



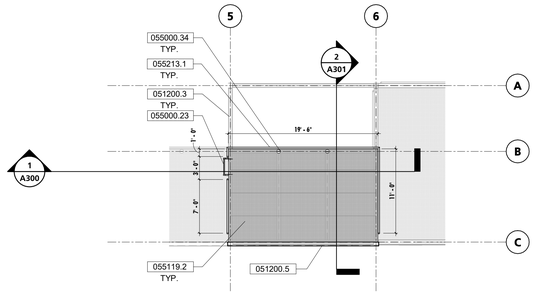
2 FIRST FLOOR
1/8" = 1'-0"



3 SECOND FLOOR
1/8" = 1'-0"



4 THIRD FLOOR
1/8" = 1'-0"



5 FOURTH FLOOR
1/8" = 1'-0"

GENERAL DIMENSION PLAN NOTES

1	G.C. SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.
2	ALL STEEL FRAMING, GRATES, RAILING, COMPONENTS, LADDERS, ETC. TO BE GALVANIZED U.N.O.

PLAN LEGEND

EXISTING WALL TO REMAIN

NEW WALL/PARTITION

KEY VALUE	KEYNOTE TEXT
020000.1	EXISTING CONCRETE WALL
020000.2	EXISTING SECTIONAL DOOR
024119.2	EXISTING ELECTRICAL BOXES, DISCONNECT AND REROUTE NEW CONDUIT AND RECONNECT. COORDINATE REROUTED CONDUT WITH NEW WORK
030000.11	PATCH CONCRETE FOLLOWING THE INSTALLTION OF FOOTING AND REROUTING OF ELECTRICAL CONDUITS.
051200.1	STEEL COLUMN, REFER TO STRUCTURAL DWGS
051200.5	STEEL TUBE AT LANDING
055000.6	METAL LADDER, SEE SHEET A907
055000.23	METAL LADDER
055000.34	GUARDIAN CB-12 ANCHOR POINT; REFER TO STRUCTURAL DWGS
055119.2	1-1/2" GALVANIZED STEEL GRATE, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
071816.1	TRAFFIC COATING SYSTEM
074114.1	METAL WALL PANELS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

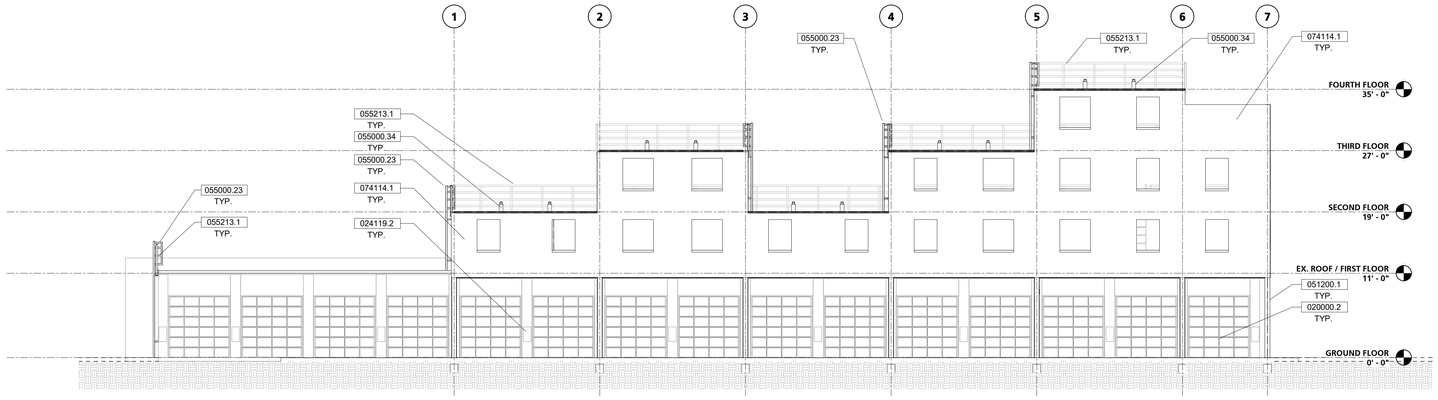
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO — SHEET 4 OF 15

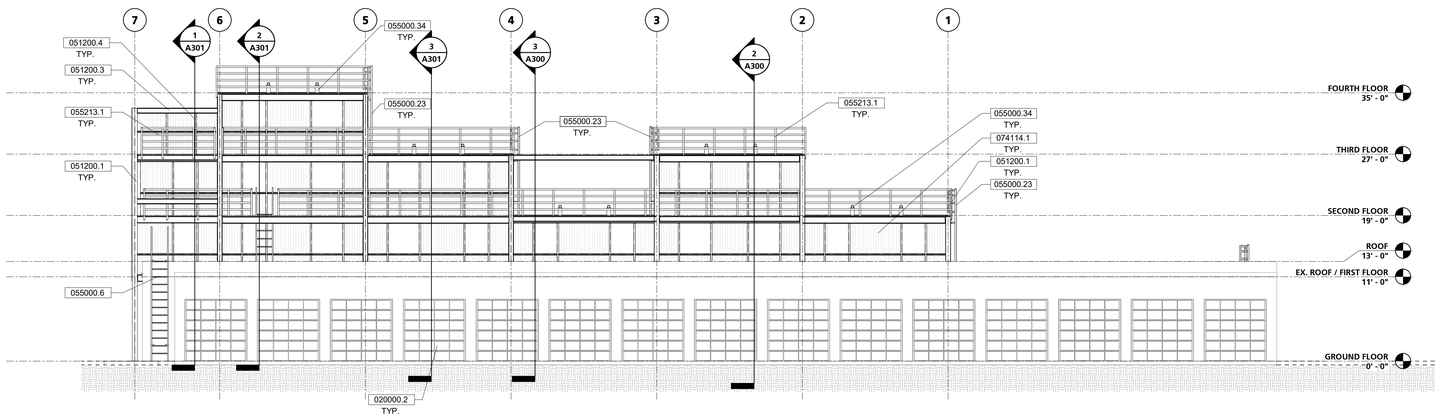
SHEET TITLE
NEW WORK - FLOOR PLANS

SHEET NO
A100

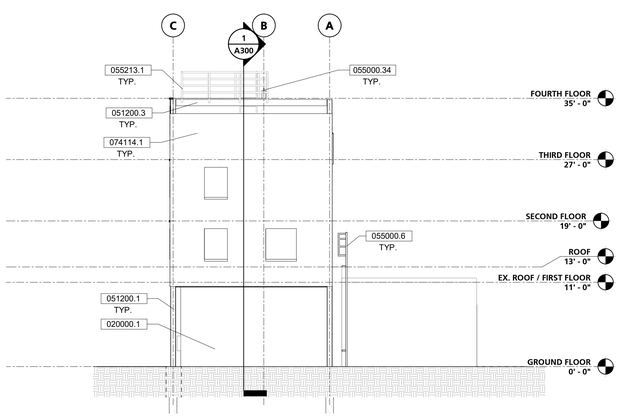
BID SET



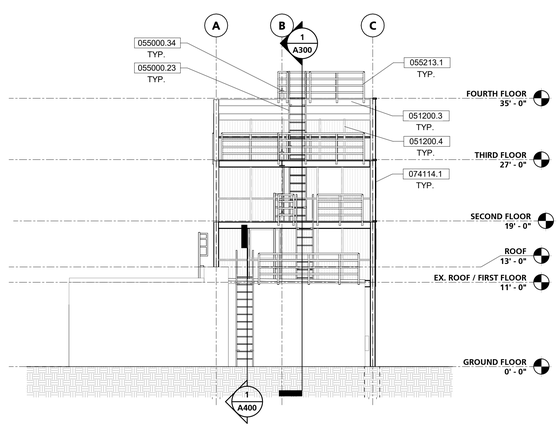
1 SOUTH ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"



3 EAST ELEVATION
1/8" = 1'-0"



4 WEST ELEVATION
1/8" = 1'-0"

GENERAL ELEVATION NOTES

NOTE #	NOTE
1	SEE OTHER ELEVATIONS FOR TYPICAL NOTES.

KEY VALUE	KEYNOTE TEXT
020000.1	EXISTING CONCRETE WALL
020000.2	EXISTING SECTIONAL DOOR
024119.2	EXISTING ELECTRICAL BOXES, DISCONNECT AND REROUTE NEW CONDUIT AND RECONNECT. COORDINATE REROUTED CONDUT WITH NEW WORK
051200.1	STEEL COLUMN, REFER TO STRUCTURAL DWGS
051200.3	STEEL BEAM, REFER TO STRUCTURAL DWGS
051200.4	STEEL FRAMING, BEYOND
055000.6	METAL LADDER, SEE SHEET A907
055000.23	METAL LADDER
055000.34	GUARDIAN CB-12 ANCHOR POINT; REFER TO STRUCTURAL DWGS
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
074114.1	METAL WALL PANELS

Ventura County Fire Department FIRE & RESCUE

PUBLIC WORKS VENTURA COUNTY

ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT MARY C. MCGRATH C-24435 REN-08-30-23 STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.

K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY: JB	CHECKED BY: GC
CONSULTANT JOB NO: 20-126	DATE: 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02

COUNTY PROJECT NUMBER: P6T18021

COUNTY DWG NO | SHEET 5 OF 15

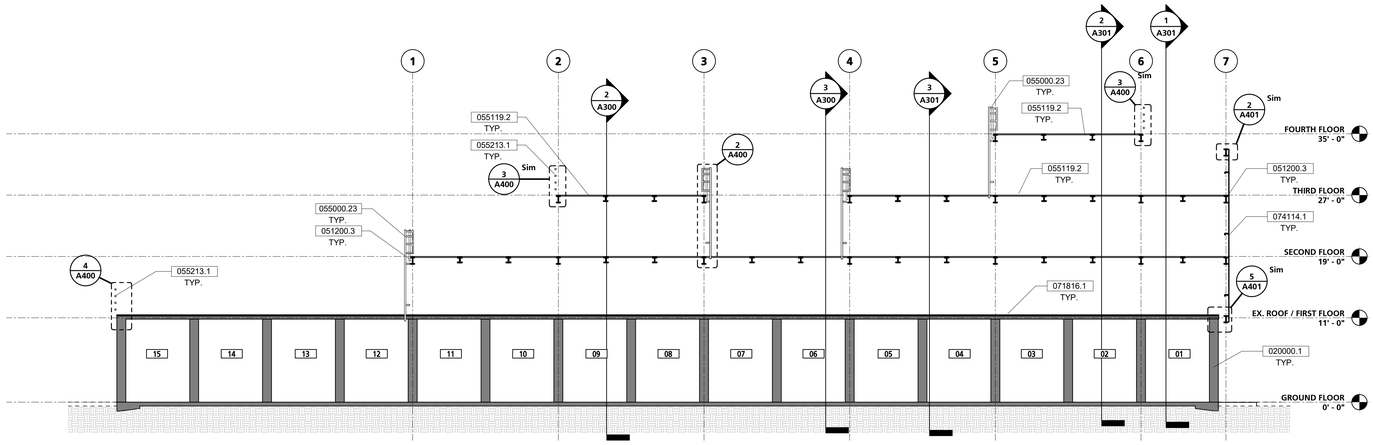
SHEET TITLE: BUILDING ELEVATIONS

SHEET NO: A200

BID SET

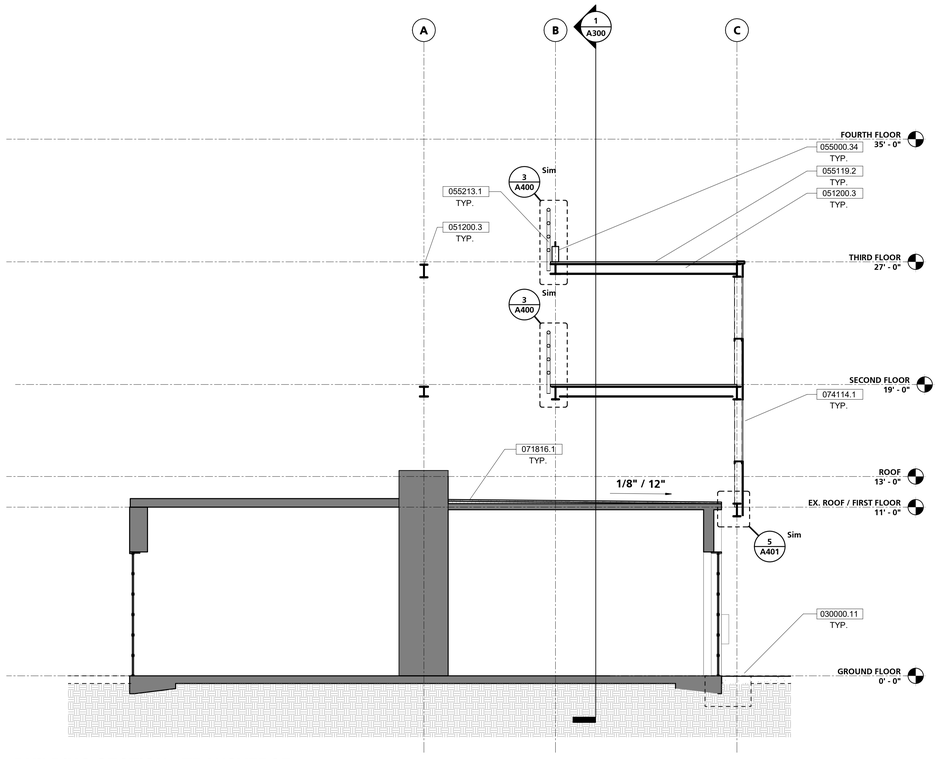
GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

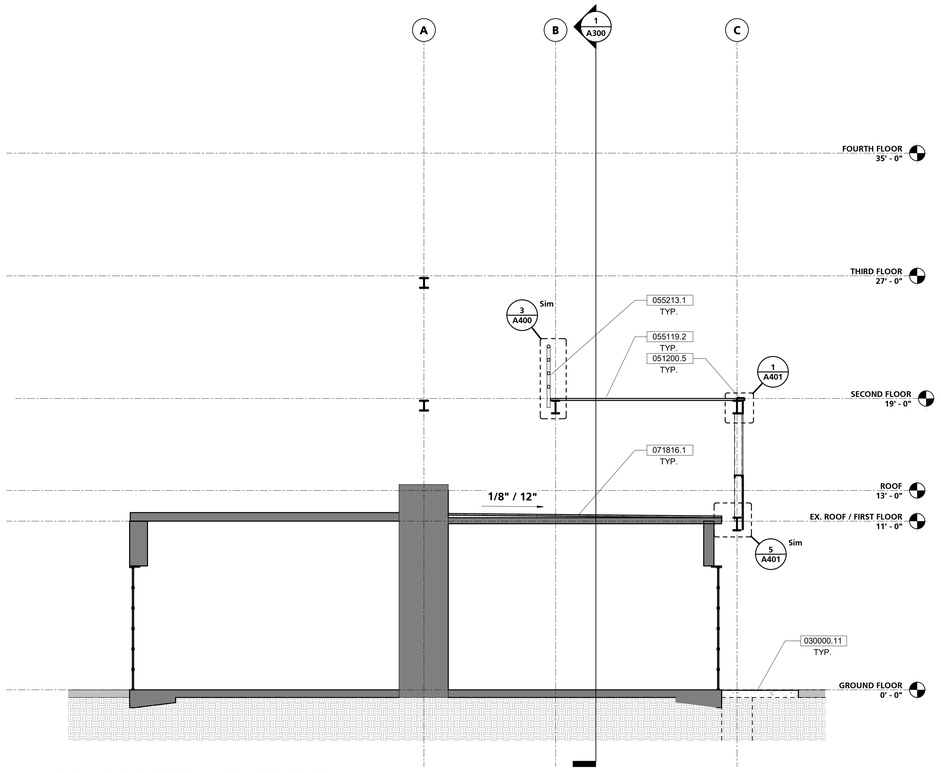


1 **BUILDING SECTION - LONGITUDINAL**
1/8" = 1'-0"

KEY VALUE	KEYNOTE TEXT
020000.1	EXISTING CONCRETE WALL
030000.11	PATCH CONCRETE FOLLOWING THE INSTALLTION OF FOOTING AND REROUTING OF ELECTRICAL CONDUITS.
051200.3	STEEL BEAM, REFER TO STRUCTURAL DWGS
051200.5	STEEL TUBE AT LANDING
055000.23	METAL LADDER
055000.34	GUARDIAN CB-12 ANCHOR POINT; REFER TO STRUCTURAL DWGS
055119.2	1-1/2" GALVANIZED STEEL GRATE, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
071816.1	TRAFFIC COATING SYSTEM
074114.1	METAL WALL PANELS



2 **BUILDING SECTION - TRANSVERSE**
1/4" = 1'-0"



3 **BUILDING SECTION - TRANSVERSE**
1/4" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division
PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY: JB	CHECKED BY: GC
CONSULTANT JOB NO: 20-126	DATE: 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

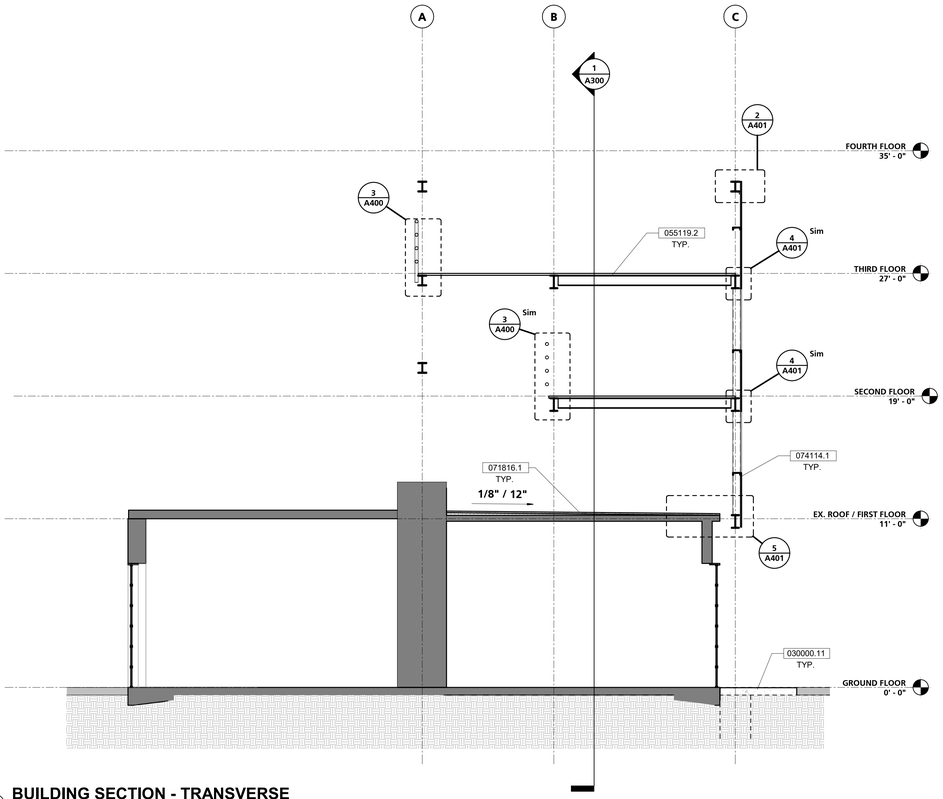
102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER: CP23-02
COUNTY PROJECT NUMBER: P6T18021
COUNTY DWG NO
SHEET 6 OF 15

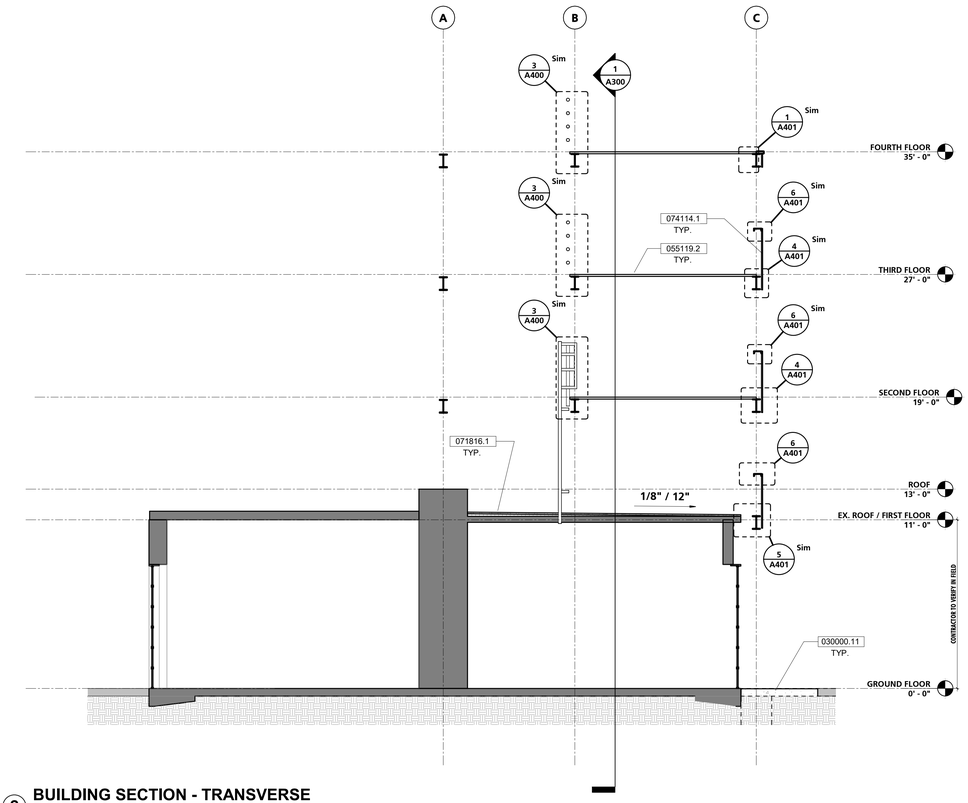
SHEET TITLE
BUILDING SECTIONS

SHEET NO
A300

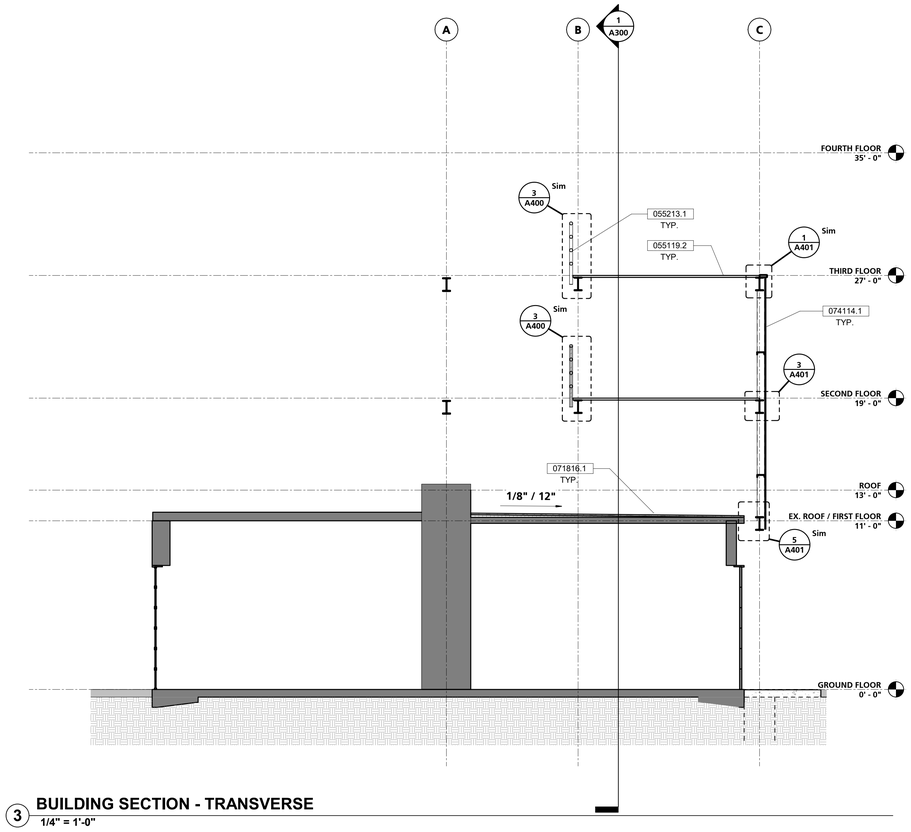
BID SET



1 **BUILDING SECTION - TRANSVERSE**
1/4" = 1'-0"



2 **BUILDING SECTION - TRANSVERSE**
1/4" = 1'-0"



3 **BUILDING SECTION - TRANSVERSE**
1/4" = 1'-0"

GENERAL BUILDING SECTION NOTES

NOTE #	NOTE
1	BUILDING SECTIONS ARE INTENDED TO SHOW OVERALL RELATIONSHIPS OF SPACES, OVERALL ASSEMBLIES, AND THE GEOMETRY OF THE BUILDING. SEE REFERENCED WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

KEY VALUE	KEYNOTE TEXT
030000.11	PATCH CONCRETE FOLLOWING THE INSTALLTION OF FOOTING AND REROUTING OF ELECTRICAL CONDUITS.
055119.2	1-1/2" GALVANIZED STEEL GRATE, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
071816.1	TRAFFIC COATING SYSTEM
074114.1	METAL WALL PANELS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

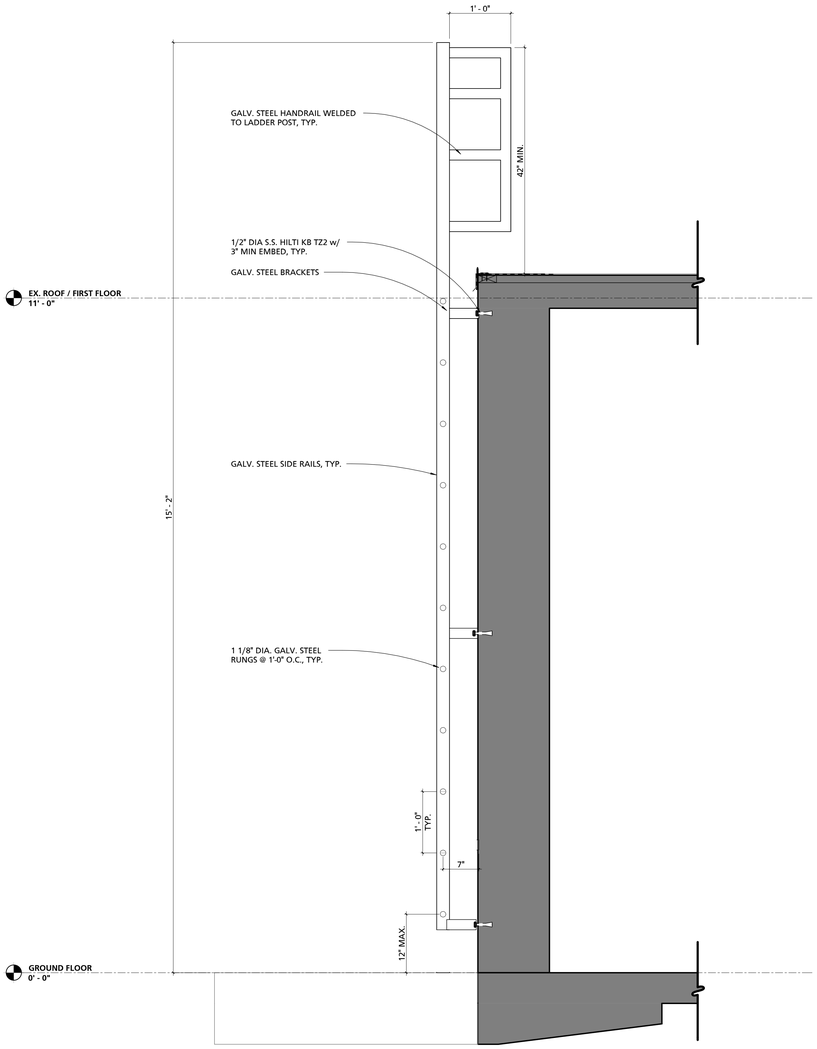
102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO
SHEET 7 OF 15

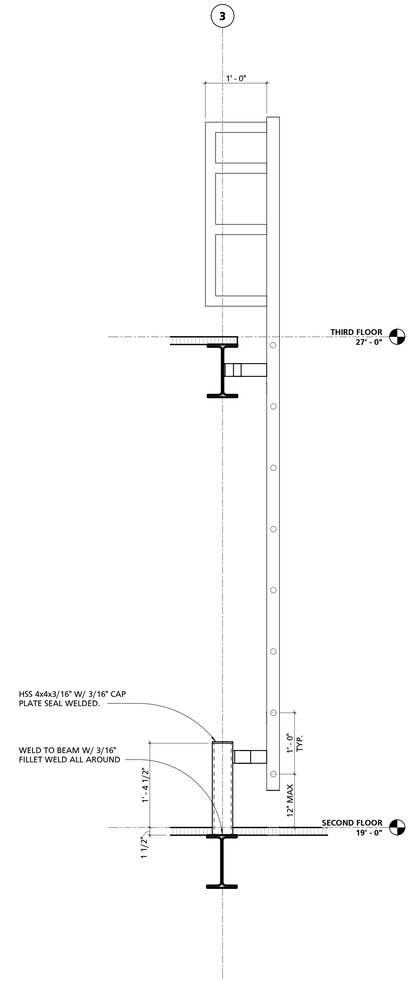
SHEET TITLE
BUILDING SECTIONS

SHEET NO
A301

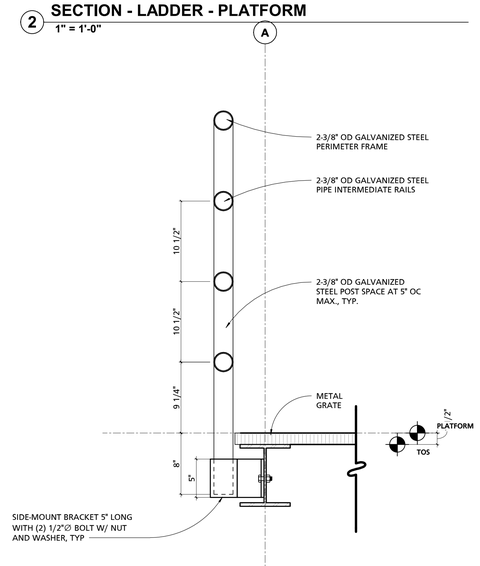
BID SET



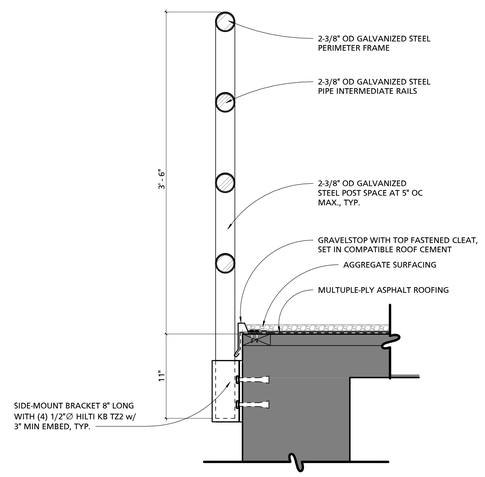
1 SECTION LADDER - WALL MOUNTED
1" = 1'-0"



2 SECTION - LADDER - PLATFORM
1" = 1'-0"



3 SECTION - HANDRAIL BRACKET AT LANDING
1 1/2" = 1'-0"



4 SECTION - HANDRAIL BRACKET AT WALL
1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

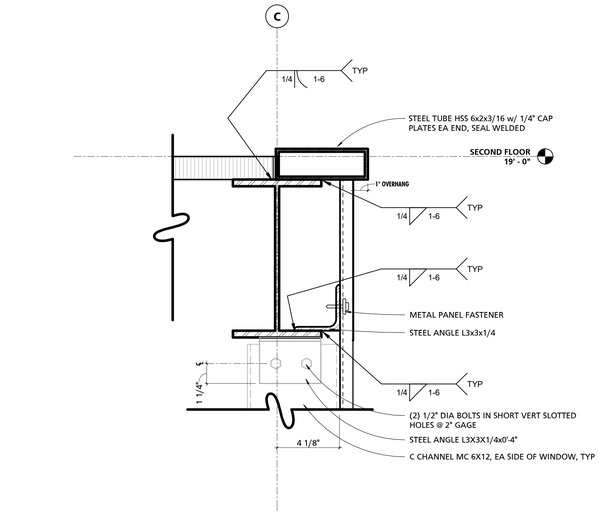
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 8 OF 15

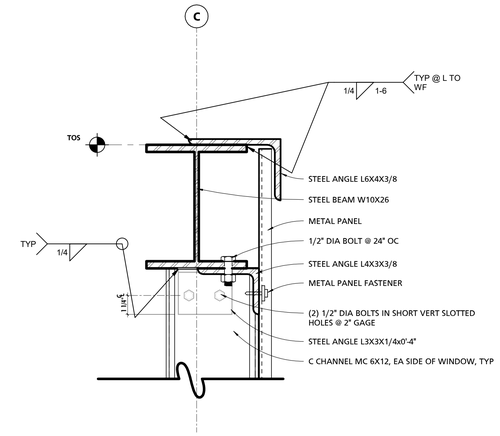
SHEET TITLE
SECTION DETAILS

SHEET NO
A400

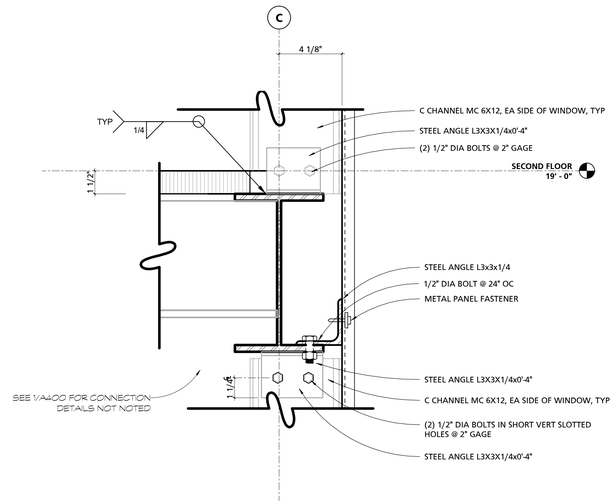
BID SET



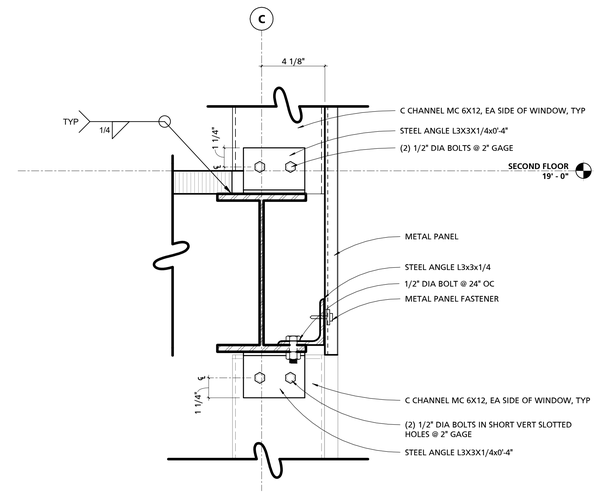
1 SECTION - LANDING EDGE
3" = 1'-0"



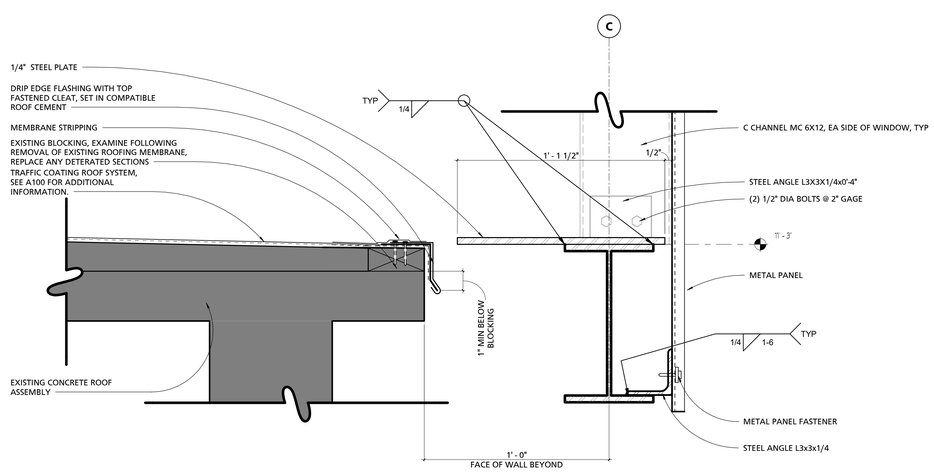
2 SECTION - PARAPET CAP
3" = 1'-0"



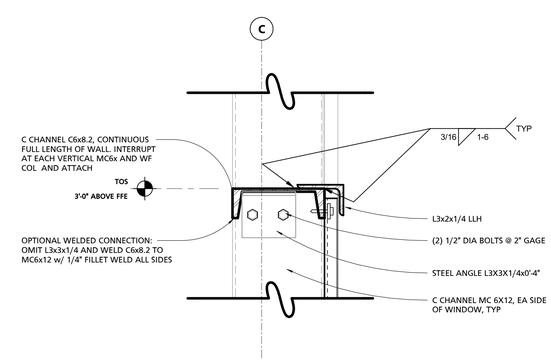
3 SECTION - METAL PANEL AT LANDING
3" = 1'-0"



4 SECTION - OPENING HEAD
3" = 1'-0"



5 SECTION - WALL BASE DETAIL
3" = 1'-0"



6 SECTION - OPENING SILL
3" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP
COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

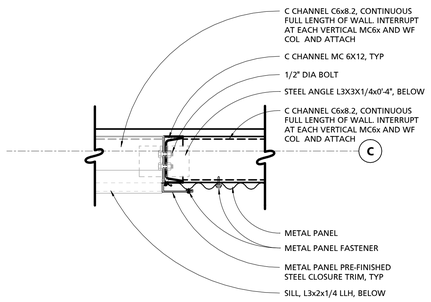
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 9 OF 15

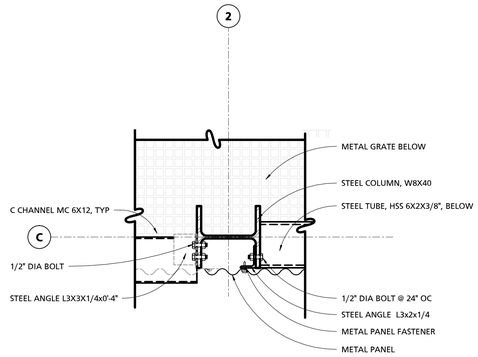
SHEET TITLE
SECTION DETAILS

SHEET NO
A401

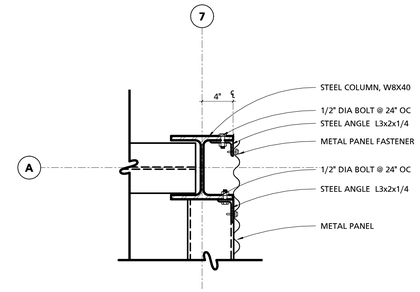
BID SET



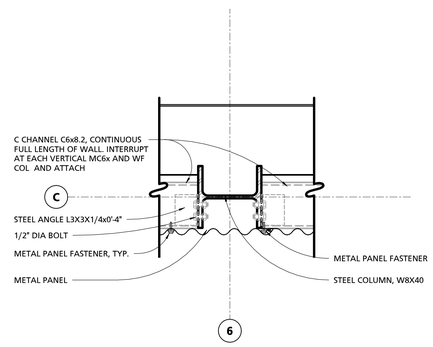
1 **TYPICAL OPENING JAMB DETAIL**
1 1/2" = 1'-0"



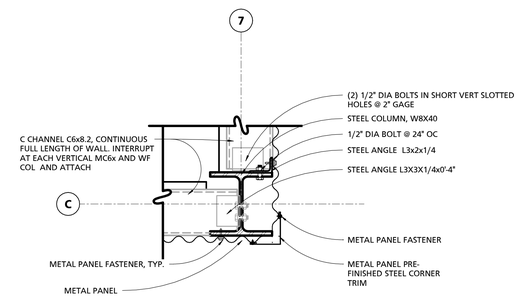
2 **TYPICAL COLUMN AT LOW PLATFORM**
1 1/2" = 1'-0"



3 **TYPCIAL B / 7 DETAIL AT METAL PANEL**
1 1/2" = 1'-0"

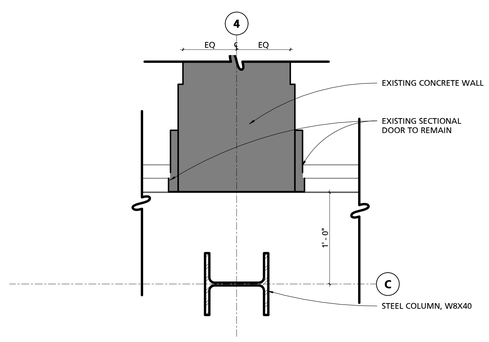


5 **TYPICAL COLUMN DETAIL AT METAL PANEL**
1 1/2" = 1'-0"

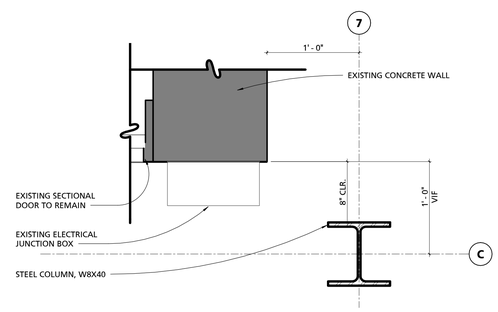


6 **TYPICAL OUTSIDE CORNER DETAIL AT C / 7**
1 1/2" = 1'-0"

DETAILS 4 AND 7 NOT IN USE



8 **GROUND FLOOR - TYPICAL COLUMN**
1 1/2" = 1'-0"



9 **GROUND FLOOR - C / 7**
1 1/2" = 1'-0"

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgrtharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY JB	CHECKED BY GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

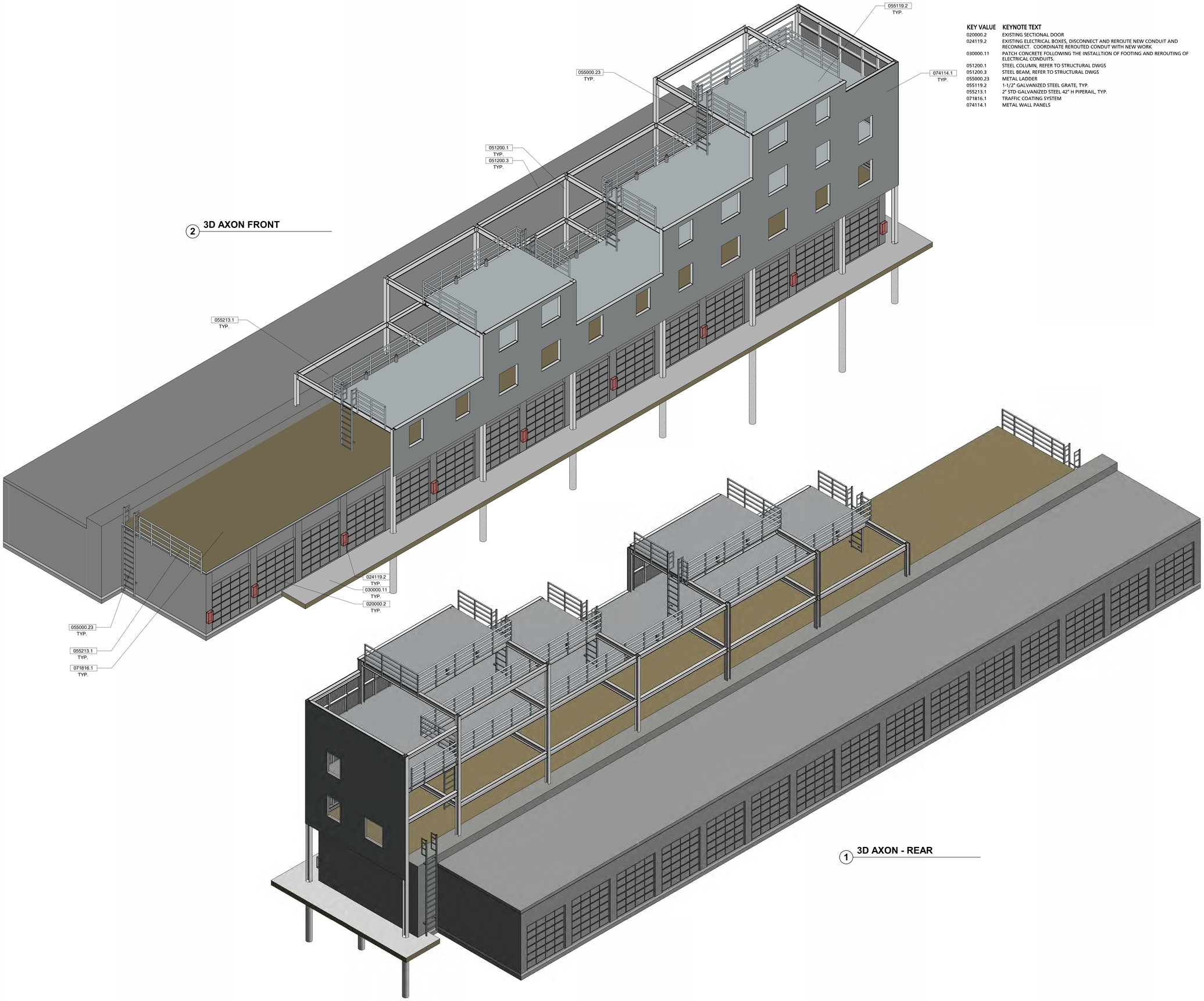
COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 10 OF 15

SHEET TITLE
PLAN DETAILS

SHEET NO
A500

BID SET



2 3D AXON FRONT

1 3D AXON - REAR

KEY VALUE	KEYNOTE TEXT
020000.2	EXISTING SECTIONAL DOOR
024119.2	EXISTING ELECTRICAL BOXES, DISCONNECT AND REROUTE NEW CONDUIT AND RECONNECT. COORDINATE REROUTED CONDUT WITH NEW WORK
030000.11	PATCH CONCRETE FOLLOWING THE INSTALLTION OF FOOTING AND REROUTING OF ELECTRICAL CONDUITS.
051200.1	STEEL COLUMN, REFER TO STRUCTURAL DWGS
051200.3	STEEL BEAM, REFER TO STRUCTURAL DWGS
055000.23	METAL LADDER
055119.2	1-1/2" GALVANIZED STEEL GRATE, TYP.
055213.1	2" STD GALVANIZED STEEL 42" H PIPERAIL, TYP.
071816.1	TRAFFIC COATING SYSTEM
074114.1	METAL WALL PANELS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
1212 BROADWAY, SUITE 1700
OAKLAND, CA 94612
phone: 510.208.9400
www.marymcgratharchitects.com

MW STUDIOS
MASTER PLANNING
10839 PHILADELPHIA ROAD
WHITE MARSH, MD 21162
phone 410.344.1460
www.mwsarch.com

LICENSED ARCHITECT
MARY C. MCGRATH
C-24435
REN-08-30-23
STATE OF CALIFORNIA

PROFESSIONAL SEALS

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO: C22-727

NO	REVISION	DATE
	BID SET	08-21-2022

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
JB	GC
CONSULTANT JOB NO 20-126	DATE 8-21-2023

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

102 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02

COUNTY PROJECT NUMBER
P6T18021

COUNTY DWG NO | SHEET 11 OF 15

SHEET TITLE
3D AXONS

SHEET NO
A900

BID SET

MATERIAL SPECIFICATIONS

GENERAL

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE GOVERNING CODE. SEE 'PROJECT DATA'

CONSTRUCTION LIABILITY

THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, AND THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL HARMLESS FROM ANY LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

CONCRETE & REINFORCING

REINFORCING STEEL

BARS FOR REINFORCING SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A706 OR A615. LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318, CURRENT EDITION UNLESS NOTED OTHERWISE ON THE PLANS. BARS TO BE WELDED OR FIELD BENT SHALL CONFORM TO ASTM A706.

CONCRETE

CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 301 & 318. CONCRETE SHALL BE READY-MIXED CONCRETE IN ACCORDANCE WITH ASTM C94.

MAXIMUM WATER-CEMENT RATIO, BY WEIGHT

28 DAY COMPRESSIVE STRENGTH	WATER-CEMENT RATIO
4000 PSI CONCRETE	0.45

AVERAGE DRYING SHRINKAGE FOR CONCRETE AFTER 21 DAYS OF DRYING SHALL NOT EXCEED 0.040% IN SUSPENDED SLABS AND 0.048% IN SLABS ON GRADE.

AT THE CONTRACTOR'S OPTION, AN AIR ENTRAINING AGENT CONFORMING TO THE LATEST REVISION OF ASTM SPECIFICATION C260 MAY BE ADDED TO THE CONCRETE TO PROVIDE UP TO A MAXIMUM OF 3% ± 1.5% ENTRAINED AIR. CEMENT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT PER ASTM DESIGNATION C150, TYPE II. NO MORE THAN 15% BY WEIGHT OF CEMENT MAY BE REPLACED BY FLY ASH CONFORMING TO ASTM C618, CLASS N OR F.

CONCRETE ELEMENT	MIN 28 DAY COMPRESSIVE STRENGTH	MAX SIZE AGGREGATE (INCHES)	SLUMP (INCHES)
DRILLED PIERS	4000	1	5 7 FOR TREMIE

SLUMP WILL BE MEASURED AT THE TRUCK DISCHARGE. SLUMPS NOTED ABOVE ARE FOR CONCRETE WITHOUT ADMIXTURES TO BE CONSOLIDATED USING VIBRATION. FORMWORK CONSTRAINTS, CONGESTION OF REBAR, AND PUMPING OF CONCRETE MAY REQUIRE INCREASED SLUMP BEYOND THE SLUMP LISTED ABOVE. THE CONTRACTOR SHALL ADJUST THE SLUMP UP TO 8" MAX USING ADMIXTURES AS NECESSARY TO PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED WITHOUT SEGREGATION OR EXCESSIVE BLEEDING. ALL ADMIXTURES SHALL BE NOTED IN THE SUBMITTED MIX DESIGN AND ARE SUBJECT TO THE ENGINEER'S REVIEW. THE SPECIAL INSPECTOR SHALL BE PROVIDED WITH A BATCH TICKET AND WEIGHT TAG UPON DELIVERY OF EACH LOAD OF CONCRETE.

ALL CONCRETE SHALL BE PLACED WITH MECHANICAL VIBRATION UNLESS NOTED OTHERWISE.

NON-SHRINK GROUT

NON SHRINK GROUT SHALL BE FLOWABLE, WITH A MINIMUM 7 DAY COMPRESSIVE STRENGTH OF 5000 PSI. NON-SHRINK GROUT SHALL BE MASTERFLOW 928 GROUT AS MANUFACTURED BY BASF OR APPROVED EQUAL.

POST INSTALLED ANCHORS

ADHESIVE ANCHORING SYSTEMS FOR CONCRETE

ADHESIVE ANCHORING SYSTEMS SHALL BE:

- HILTI HIT-RE 500 V3 (ICC ESR-3814) OR HIT-HY 200 (ICC ESR 3187)
- SIMPSON SET-XP (ICC ESR-2508) OR AT-XP (IAPMO UES ER-263)
- DEWALT\POWERS PURE 110+ (ICC ESR-3298) OR AC100+ GOLD (ICC ESR-2582)
- APPROVED EQUAL.

INSTALLATION OF ANCHORS AND ADHESIVE INCLUDING DRILLING AND CLEANING OF HOLES SHALL BE IN ACCORDANCE WITH THE CURRENT ICC OR IAPMO REPORT. ADHESIVES SHALL BE USED ONLY IN APPLICATIONS PERMITTED BY THE ADHESIVE'S ICC OR IAPMO REPORT. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT TIME OF ANCHOR INSTALLATION.

EXPANSION ANCHORS FOR CONCRETE

EXPANSION ANCHORS SHALL BE:

- HILTI KWIK BOLT TZ ANCHORS (ICC ESR-1917),
- SIMPSON STRONG BOLT 2 WEDGE ANCHOR (ICC ESR-3037)
- DEWALT\POWERS POWER-STUD+ SD2 (ICC ESR-2502)
- APPROVED EQUAL.

CONTRACTOR SHALL TORQUE ANCHORS IN ACCORDANCE WITH THE ICC OR IAPMO REPORT. EXPANSION ANCHORS SHALL USE WASHERS SIZED TO PREVENT CRUSHING OF THE ATTACHED MEMBER UNDER THE INSTALLATION TORQUE.

STRUCTURAL STEEL

STRUCTURAL STEEL AND MISCELLANEOUS IRON

STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC CODE OF STANDARD PRACTICE.

1. WIDE FLANGE AND STRUCTURAL TEE SHAPES SHALL CONFORM TO ASTM A992.
2. CHANNELS AND ANGLES SHALL CONFORM TO ASTM A36.
3. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO ASTM A500, GRADE C.
4. STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B.
5. STRUCTURAL PLATE SHALL CONFORM TO ASTM A36 OR ASTM A572 GR50.
6. RAISED-PATTERN FLOOR PLATE SHALL CONFORM TO ASTM A786.

ALL STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL RECEIVE SHOP PRIME COAT EXCEPT ON SURFACES RECEIVING WELDS, EMBEDDED IN CONCRETE, OR AT SLIP CRITICAL HIGH STRENGTH BOLTS WHICH SHALL BE TOUCHED UP AFTER CONNECTION IS COMPLETE. STRUCTURAL STEEL AND MISCELLANEOUS IRON WHICH IS TO HAVE SPRAY ON FIREPROOFING SHALL NOT BE PAINTED. STRUCTURAL STEEL PERMANENTLY EXPOSED TO WEATHER SHALL RECEIVE TWO COATS OF SEMI-GLOSS ALKYD ENAMEL COMPATIBLE WITH PRIMER.

MACHINE BOLTS, ANCHOR BOLTS AND THREADED RODS

BOLTS, NUTS, WASHERS AND RODS PERMANENTLY EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.

1. BOLTS SHALL CONFORM TO ASTM A307 GRADE A OR B OR A36.
2. ANCHOR BOLTS AND RODS SHALL CONFORM TO ASTM F1554 GR 36.
3. ALL BOLTS & LAG SCREWS SHALL HAVE STANDARD STEEL WASHERS, U.N.O.
4. NUTS SHALL BE AS SHOWN BELOW AND FINISH SHALL MATCH FASTENER.
5. BOLT HOLES SHALL BE STANDARD SIZE (BOLT DIA + 1/16") TYP, U.N.O.

FASTENER GRADE AND SIZE	NUT CLASS	NUT STYLE
ASTM A36 , ASTM A307A, F1554 1/4" TO 1-1/2"	ASTM A563-A	HEX
ASTM A36 , ASTM A307A, F1554, OVER 1-1/2" TO 4"	ASTM A563-A	HEAVY HEX
ASTM A307B, 1/4" TO 4"	ASTM A563-A	HEAVY HEX

HIGH STRENGTH BOLTS, NUTS, WASHERS & ANCHOR RODS

BOLTS, NUTS, WASHERS AND RODS PERMANENTLY EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.

1. BOLTS SHALL BE HEAVY HEX STRUCTURAL BOLTS PER ANSI B18.2.1 AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3125 GRADE A325 OR A490. BOLTS SHALL BE TYPE 1 AND SHALL BE USED IN A BEARING CONNECTION, U.N.O.
2. TENSION CONTROL BOLT ASSEMBLIES SHALL CONFORM TO ASTM F1852.
3. DIRECT-TENSION INDICATORS SHALL CONFORM TO ASTM F959.
4. RODS SHALL CONFORM TO ASTM F1554 GR 55 U.N.O.
5. WASHERS SHALL BE FLAT CIRCULAR, RECTANGULAR OR SQUARE BEVELED WASHERS AND SHALL CONFORM TO ASTM F436 TYPE I. FINISH SHALL MATCH NUT. WASHERS SHALL BE INSTALLED UNDER THE ELEMENT BEING TURNED FOR A325 BOLTS AND UNDER BOTH THE HEAD AND THE NUT FOR A490 BOLTS. WASHERS OVER OVERSIZED OR SLOTTED HOLES SHALL ALSO COMPLY WITH RCSC SPECIFICATIONS.
6. BOLT HOLES SHALL BE STANDARD SIZE (BOLT DIA + 1/16") TYP, U.N.O.
7. NUTS SHALL BE AS SHOWN BELOW AND FINISH SHALL MATCH FASTENER.

ITEM	FASTENER GRADE AND SIZE	NUT CLASS	NUT STYLE
BOLTS:			
ASTM F3125 GR A325	TYPE 1, UNCOATED	ASTM A563-C, C3,D,DH,DH3	HEAVY HEX
	TYPE 1, ZINC COATED	ASTM A563-DH	HEAVY HEX
	TYPE 3, UNCOATED	ASTM A563-C3, DH3	HEAVY HEX
ASTM F3125 GR A490	TYPE 1, UNCOATED	ASTM A563-DH, DH3	HEAVY HEX
	TYPE 3, UNCOATED	ASTM A563-DH3	HEAVY HEX
RODS:			
ASTM F1554	1/4" TO 1-1/2", UNCOATED	ASTM A563-A	HEAVY HEX
	OVER 1-1/2" TO 3", UNCOATED	ASTM A563-DH	HEAVY HEX
	1/4" TO 3", ZINC COATED	ASTM A563-DH	HEAVY HEX

WELDING

ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS PER AWS "STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. ALL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS WELDING CODE. ARC WELDING ELECTRODES SHALL BE E70 SERIES FOR A36, A53, A500, A572 & A992 MATERIAL, AND E80 SERIES FOR A706 REINFORCING STEEL.

WELD METAL TOUGHNESS SHALL BE REPORTED ON THE ELECTRODE MANUFACTURER'S CERTIFICATE OF COMPLIANCE. ALL ELECTRODES SHALL BE LOW HYDROGEN WITH A MINIMUM CVN VALUE OF 20 FT-LBS AT -20 DEGREE F. EXCEPTIONS: METAL DECK WELDING, STAIR AND HANDRAIL WELDING, LIGHT GAGE STEEL WELDING.

TACK WELDS, AIR-ARC GOUGING AND FLAME CUTTING SHALL NOT BE PERFORMED WITHOUT ADEQUATE PREHEAT OR INCORPORATION INTO THE FINAL WELD.

THE FILLER METAL MANUFACTURER'S PUBLISHED RECOMMENDATIONS SHALL BE THE BASIS FOR DETERMINING THE ALLOWABLE RANGE OF ESSENTIAL VARIABLES FOR THE PRE QUALIFIED WPS. UNLESS NOTED OTHERWISE ON THE PLANS, BACK-UP BARS FOR CJP WELDS SHALL BE REMOVED FOLLOWED BY BACKGOUGING AND BACKWELDING.

DEEP FOUNDATIONS

DRILLED PIERS / CAST-IN-DRILLED HOLE PIERS (CIDH)

DRILLED PIERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ACI STANDARD 336.1 - CURRENT EDITION OF "STANDARD SPECIFICATION FOR THE CONSTRUCTION OF DRILLED PIERS". FREE FALL OF CONCRETE SHALL NOT EXCEED 8 FT.

PROJECT DATA

1. PLANS AND CALCULATIONS FOR THE STRUCTURAL DESIGN WERE BASED UPON:
   - GOVERNING CODE: 2019 CALIFORNIA BUILDING CODE
   - SOILS REPORT: "GEOTECHINICAL ENGINEERING AND GEOLOGIC/SEISMIC HAZARD INVESTIGATION" BY COTTON, SHIRES AND ASSOCIATES, INC. DATED JULY 2020
2. VERTICAL LOADS:
   FLOOR DEAD LOAD = 12 PSF
   FLOOR LIVE LOAD = 50 PSF [REDUCED PER CODE]
3. EARTHQUAKE DESIGN DATA:
   EQUIVALENT LATERAL FORCE PROCEDURE
   $V = \frac{S_{DS}\,I}{R}\,W$
   $S_S = 1.686$; $S_1 = 0.624$
   $S_{DS} = 1.124$; $S_{D1} = 0.707$
   I = 1.0; RISK CATEGORY II
   SITE CLASS = D; SEISMIC DESIGN CAT = D
   SEISMIC RESISTING SYSTEM: ORDINARY STEEL MOMENT FRAME
   $R = 3.5$; $\Omega_o = 3$; $C_d = 3$

   V = 0.321 W [LRFD]
4. WIND DESIGN DATA:
   BASIC WIND SPEED = 93 MPH
   RISK CATEGORY II
   WIND EXPOSURE = C
   INTERNAL PRESSURE COEFFICIENT = +0.18, -0.18
   DESIGN WIND PRESSURE = 19.0 PSF
5. FOUNDATION DESIGN CRITERIA:
   BEARING PRESSURES PER GEOTECH REPORT:
   DL + LL 2000 PSF
   TOTAL LOAD 2667 PSF

   PER CBC 1810.3.3.1.4 DRILLED PIER ALLOWABLE SHAFT RESISTANCE:
   BEARING PRESSURE/6 = 0.333 KSF

GENERAL NOTES

1. CONSIDER GENERAL NOTES AS APPLYING TO ALL DRAWINGS.
2. DO NOT SCALE DRAWINGS. SCALE SHOWN FOR REFERENCE ONLY.
3. THE CONTRACTOR SHALL REFER TO THE PROJECT SPECIFICATIONS IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, AND MEP CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND RESOLVED PRIOR TO BIDDING AND PROCEEDING WITH THE WORK.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS REQUIRED TO COMPLETE THE PROJECT. NO PORTION OF THE STRUCTURE SHALL BE CONSIDERED TO BE SELF SUPPORTING UNTIL THE ENTIRE VERTICAL AND LATERAL LOAD RESISTING SYSTEM IS IN PLACE.
6. THE CONTRACTOR SHALL PROTECT AND SHORE ALL EXCAVATIONS WITH BRACING AND SHORING AS REQUIRED TO MAINTAIN SOIL STABILITY.
7. CONSTRUCT THOSE FEATURES OF THE PROJECT, WHICH MAY NOT BE FULLY SHOWN, IN MANNER SIMILAR TO THAT USED FOR SIMILAR FEATURES.
8. CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, U.N.O.
9. CENTERLINES OF FOUNDATION GRADE BEAMS COINCIDE WITH CENTERLINES OF WALLS, U.N.O.
10. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, U.N.O.
11. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING PROPOSED FOUNDATION CONSTRUCTION JOINT LOCATIONS, DETAILS, AND THE PLACEMENT SEQUENCE FOR THE STRUCTURAL ENGINEER'S APPROVAL PRIOR TO PROCEEDING WITH WORK.
12. NO CONSTRUCTION JOINTS WILL BE PERMITTED IN BEAMS, WALLS, AND SLABS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
13. SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE ENGINEER.
14. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS. VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ARCHITECTURAL DRAWINGS AND MECHANICAL DRAWINGS. NOTIFY STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES TYPICAL, U.N.O.

PROJECT DESCRIPTION

LEVELS:	4 STORY
FOUNDATION:	CONCRETE DRILLED PIERS
FLOOR SYSTEM:	BAR GRATING OVER STEEL BEAMS
ROOF SYSTEM:	N/A
LATERAL FORCE RESISTING SYSTEM:	ORDINARY STEEL MOMENT FRAMES
DIAPHRAGMS:	TIE ROD BRACING
CHORDS & COLLECTORS:	STEEL BEAMS

TESTING AND SPECIAL INSPECTION

GENERAL

THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR DURING CONSTRUCTION ON THE FOLLOWING TYPES OF WORK.

SPECIAL INSPECTOR

- THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE HIS COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF A PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- TESTING AND INSPECTIONS WILL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY SELECTED AND EMPLOYED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL. PROCEDURAL AND ACCEPTANCE CRITERIA ARE SET FORTH IN THE 2019 CALIFORNIA BUILDING CODE (CBC) SEC. 1704.

DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR

- THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPLICABLE PROJECT DRAWINGS AND SPECIFICATIONS.
- THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE OWNER OR OWNER'S DESIGNATED REPRESENTATIVE, THE ARCHITECT OR PROJECT MANAGER, THE STRUCTURAL ENGINEER OF RECORD, THE CONTRACTOR AND OTHER PERSONS DESIGNATED BY THE OWNER OR OWNER'S REPRESENTATIVE. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF UNCORRECTED, TO THE PROPER DESIGN AUTHORITY AND TO THE BUILDING OFFICIAL.
- THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE CBC.

SOILS & FOUNDATIONS

SOILS

- PERIODICALLY INSPECT EXCAVATIONS FOR PROPER DEPTH.

FOUNDATIONS

PRIOR TO THE CONTRACTOR REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE SOILS ENGINEER SHALL ADVISE THE BUILDING DEPARTMENT OF THE FOLLOWING IN WRITING:

- THAT THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILLED AND COMPACTED.
- THAT THE FOUNDATION AND PIERS COMPLY WITH THE SOILS REPORT AND THE APPROVED PLANS.

DRILLED PIERS

- CONTINUOUSLY INSPECT DRILLING OPERATIONS.

CONCRETE & REINFORCING

REINFORCING STEEL

- VERIFY THAT MILL CERTIFICATES SHOW REINFORCING STEEL IS IN COMPLIANCE WITH PROJECT SPECIFICATIONS.
- PERIODICALLY INSPECT THE PLACEMENT OF REINFORCING STEEL FOR SHOTCRETE, FOR CONCRETE WHICH IS REQUIRED TO HAVE CONTINUOUS INSPECTION AND FOR MASONRY.
- CONTINUOUSLY INSPECT THE INSTALLATION OF ALL MECHANICAL COUPLING DEVICES.

BOLTS INSTALLED IN CONCRETE

- PERIODICALLY INSPECT INSTALLATION OF BOLTS AND CONTINUOUSLY INSPECT PLACEMENT OF CONCRETE AROUND SUCH BOLTS.

CONCRETE

- CONTINUOUSLY INSPECT THE PLACEMENT OF ALL CONCRETE EXCEPT PERIODIC INSPECTION MAY BE PROVIDED FOR THE PLACEMENT OF CONCRETE FOR FOUNDATIONS WITH f'c EQUAL TO 2500 PSI OR LESS AND NON-STRUCTURAL SLABS ON GRADE.
- SAMPLE CONCRETE: ASTM C172, EXCEPT SLUMP SHALL COMPLY WITH ASTM C94.
- TEST SLUMP: ASTM C143, ONE TEST AT POINT OF TRUCK DISCHARGE FOR 150 CY OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE; ADDITIONAL TESTS REQUIRED WHEN CONCRETE CONSISTENCY SEEMS TO HAVE CHANGED.
- TEST CONCRETE TEMPERATURE: TEST HOURLY WHEN AIR TEMPERATURE IS 50 DEGREES F. (10 DEGREES C.) AND BELOW, AND WHEN 85 DEGREES F. (29 DEGREES C.) AND ABOVE; AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE.
- TAKE COMPRESSION TEST SPECIMENS: ASTM C31, TAKE ONE SET OF 3 STANDARD CYLINDERS FOR EACH 150 CY OF CONCRETE OR 5000 SQ. FT. OF SLABS & WALLS OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE TAKEN EACH DAY. MOLD AND STORE CYLINDERS FOR LABORATORY CURED TEST SPECIMENS EXCEPT WHEN FIELD-CURE TEST SPECIMENS ARE REQUIRED.
- TEST COMPRESSIVE STRENGTH: ASTM C39; ONE SPECIMEN TESTED AT 7 DAYS, TWO SPECIMENS TESTED AT 28 DAYS.

NON-SHRINK GROUT

- TAKE TEST SPECIMENS AND CONTINUOUSLY INSPECT THE PLACEMENT OF NON-SHRINK GROUT.

POST INSTALLED ANCHORS

POST-INSTALLED ANCHORS

- THE SPECIAL INSPECTOR SHALL VERIFY THE INSPECTION REQUIREMENTS WITH THE ICC REPORT FOR EACH ANCHOR TYPE.
- THE SPECIAL INSPECTOR SHALL VERIFY THE INITIAL INSTALLATIONS OF EACH TYPE AND SIZE OF ANCHOR BY CONSTRUCTION PERSONNEL.
- PERIODICALLY INSPECT PLACEMENT OF POST-INSTALLED ANCHORS.
- CONTINUOUSLY INSPECT PLACEMENT OF OVERHEAD (VERTICAL UP) POST-INSTALLED ANCHORS.
- THE SPECIAL INSPECTOR SHALL VERIFY THE FOLLOWING AND RECORD THE INSTALLATION IN THE INSPECTION REPORT:
  1. ANCHOR TYPE, SIZE, AND DIMENSIONS.
  2. HOLE DIMENSIONS AND CLEANLINESS.
  3. ANCHOR SPACING.
  4. EDGE DISTANCE.
  5. ANCHOR EMBEDMENT.
  6. TORQUE VALUE (AS APPLICABLE).
  7. ADHESIVE TYPE AND EXPIRATION (AS APPLICABLE).
  8. ADHESIVE ANCHOR INSTALLER CERTIFICATION (AS APPLICABLE).

STRUCTURAL STEEL

STRUCTURAL STEEL AND MISCELLANEOUS IRON

- VERIFY THAT MILL CERTIFICATES SHOW STRUCTURAL STEEL AND MISCELLANEOUS IRON IS IN COMPLIANCE WITH PROJECT SPECIFICATIONS.

HIGH STRENGTH BOLTING

PRIOR TO BOLTING OPERATIONS:

- VERIFY THAT MILL CERTIFICATES SHOW THAT BOLTS, NUTS AND WASHERS COMPLY WITH THE PROJECT SPECIFICATIONS.
- VERIFY THAT THE METHODS OF TIGHTENING TO BE USED BY THE CONTRACTOR COMPLY WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS" - CURRENT EDITION APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION (RCSC) AND ENDORSED BY AISC.
- PERFORM TENSION CALIBRATION TESTS WITH THE CONTRACTOR'S TOOLS ON 3 BOLT ASSEMBLIES FOR EACH DIAMETER, LENGTH, GRADE, PRODUCTION LOT AND TIGHTENING METHOD TO BE USED ON THE PROJECT INCLUDING PRETENSIONED ANCHOR RODS. TESTS SHALL BE PER RCSC SPECIFICATIONS.
- INSPECT THE FAYING SURFACES OF EACH BOLTED CONNECTION FOR COMPLIANCE WITH RCSC SPECIFICATIONS.

DURING BOLTING OPERATIONS:

- VERIFY THAT ALL PLIES OF CONNECTED MATERIAL HAVE BEEN DRAWN TOGETHER TO A SNUG CONDITION AS DEFINED PER RCSC SPECIFICATIONS BEFORE FINAL TIGHTENING.
- VERIFY PLACEMENT OF MATCH-MARKS OR WRENCH CALIBRATION AS REQUIRED.
- CONTINUOUSLY INSPECT FINAL TIGHTENING OPERATIONS PER RCSC SPECIFICATIONS.

EXCEPTIONS:

- THE SPECIAL INSPECTOR NEED NOT BE PRESENT DURING ALL FINAL TIGHTENING OPERATIONS PROVIDED IT CAN BE VERIFIED THAT PROPER PROCEDURES WERE FOLLOWED (I.E. THE USE OF DTI's, "TWIST-OFF" TYPE BOLTS OR MATCH MARKING).

WELDING

- VERIFY WELDER CERTIFICATIONS, COMPLIANCE WITH WELDING PROCEDURE SPECIFICATIONS AND PQR (IF APPLICABLE).
- CONTINUOUSLY INSPECT ALL STRUCTURAL WELDING, INCLUDING WELDING OF REINFORCING STEEL.

EXCEPTIONS:

- SINGLE PASS FILLET WELDS NOT EXCEEDING 5/16" MAY HAVE PERIODIC INSPECTION.
- FLOOR AND ROOF DECK WELDING MAY HAVE PERIODIC INSPECTION.
- WELDED STUDS USED FOR DIAPHRAGM OR COMPOSITE CONSTRUCTION MAY HAVE PERIODIC INSPECTION.
- WELDED SHEET STEEL FOR COLD FORMED STEEL FRAMING MAY HAVE PERIODIC INSPECTION.
- WELDED STAIRS AND RAILING SYSTEMS MAY HAVE PERIODIC INSPECTION.

NONDESTRUCTIVE TESTING:

- MAGNETIC PARTICLE TESTING OF 100% OF WEBS WHERE WELDING OF PLATES HAS OCCURRED IN THE K-AREA.
- ULTRASONIC TESTING OF 100% OF COMPLETE JOINT PENETRATION GROOVE WELDS ON MATERIALS 5/16" THICK AND GREATER.
- MAGNETIC PARTICLE TESTING OF 25% OF COMPLETE JOINT PENETRATION GROOVE WELDS OF BEAM TO COLUMN JOINTS.
- ULTRASONIC TESTING OF 100% OF COMPLETE JOINT PENETRATION GROOVE WELDS ON TEE AND CORNER JOINTS WHERE MATERIAL THICKER THAN 3/4" IS CONNECTED TO BASE METAL THICKER THAN 1-1/2".
- MAGNETIC PARTICLE TESTING OF 100% OF BEAM COPES AND ACCESS HOLES AT WELDED SPLICES.
- MAGNETIC PARTICLE TESTING OF 100% OF THE ENDS OF WELDS FROM WHICH WELD TABS HAVE BEEN REMOVED, EXCEPT AT CONTINUITY PLATES.

EXCEPTION:

- THE RATE OF TESTING FOR ULTRASONIC WELDS MAY BE REDUCED TO 25% IF THE FAILURE RATE MEETS THE REQUIREMENTS OF AISC 341 APPENDIX Q.

ABBREVIATIONS

@	AT
ø	DIAMETER
#	NUMBER
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAILING
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BVC	BEGIN VERTICAL CURVE
C-C	CENTER TO CENTER
CL	CENTERLINE
CF	CUBIC FOOT
CIDH	CAST IN DRILLED HOLE
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CLG	CEILING
CLR	CLEAR. CLEARANCE
CMP	CORRUGATED STEEL PIPE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CSK	COUNTERSINK
CY	CUBIC YARD
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DET	DETAIL
DF	DOUGLAS FIR
DIAG	DIAGONAL
Ø	DIAMETER
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DWG	DRAWING
(E)	EXISTING
EA	EACH
EC	END HORIZONTAL CURVE
ECR	END CURB RETURN
EL	ELEVATION
ELEV	ELEVATOR
EMB	EMBANKMENT
EN	EDGE NAILING
EQ	EQUAL
EVC	END VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPRESSWAY
FBC	FRAMED BEAM CONNECTION
FG	FINISHED GRADE
FIN	FINISH(ED)
FL	FLOW LINE
FND	FOUNDATION
FOC	FACE OF CONCRETE
FOHC	FREE OF HEART CENTER
FOM	FACE OF MASONRY
FOS	FACE OF STUD(S)
FP	FULL PENETRATION
FS	FAR SIDE
FTG	FOOTING
Ga	GAUGE
GALV	GALVANIZED
GLB	GLUE LAMINATED BEAM
H or HT	HEIGHT
HDR	HEADER
HEX	HEXAGONAL
HGR	HANGER
HORIZ	HORIZONTAL
HS	HIGH STRENGTH
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STRUCTURAL SECTION
ID	INSIDE DIAMETER
INSP	INSPECTION/INSPECTOR
INSUL	INSULATION
JT	JOINT
KIPS	ONE THOUSAND POUNDS
LBS	POUNDS
LF	LINEAR FOOT
LGS	LIGHT GAUGE STEEL
LL	LIVE LOAD
LLBB	LONG LEGS BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LOL	LAYOUT LINE
LONGIT	LONGITUDINAL
LS	LAG SCREW(S)
LT	LEFT
LW	LIGHT WEIGHT
MAX	MAXIMUM
MB	MACHINE BOLT(S)
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM, MINUTES
MISC	MISCELLANEOUS
MOD	MODIFIED OR MODIFY
(N)	NEW
NIC	NOT IN CONTRACT
No.	NUMBER
Ø	NOMINAL DIAMETER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OG	ORIGINAL GROUND
OH	OPPOSITE HAND
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST
PL	STEEL PLATE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE OR PORTLAND CEMENT CONCRETE
PCP	PERFORATED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PDF	POWDER DRIVEN FASTENER
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
P/L	PROPERTY LINE
PL	PLATE
PLY	PLYWOOD
POC	POINT ON HORIZONTAL CURVE
POT	POINT ON TANGENT
POVC	POINT ON VERTICAL CURVE
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OR POST TENSION
PTDF	PRESSURE TREATED DOUGLAS FIR
PVC	POLYVINYL CHLORIDE
RAD or R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REINF	REINFORCED, REINFORCING
REQ'D	REQUIRED
REV	REVISION
RS	ROUGH SAWN
RT	RIGHT
RW	RETAINING WALL
RWD	REDWOOD
R/W	RIGHT OF WAY
SAD	SEE ARCHITECTURAL DRAWINGS
SCHED	SCHEDULE
SEC	SECTION
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SLRS	SEISMIC LOAD RESISTING SYSTEM
SM	SHEET STEEL
SMS	SHEET STEEL SCREW
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STAG	STAGGERED
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
STS	SELF TAPPING SCREW
SYM	SYMMETRICAL
T&G	TONGUE AND GROOVE
TBR	TO BE REMOVED
TEMP	TEMPORARY
TO	TOP OF
TOF	TOP OF FOOTING
TOP	TOP OF PLATE
TOS	TOP OF SLAB OR STEEL
TOW	TOP OF WALL
TRANS	TRANSVERSE
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
VERT	VERTICAL
W/	WITH
WF	WIDE FLANGE
WP	WATERPROOF or WORKPOINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

POST-INSTALLED ANCHOR TESTING

ALLOWABLE LOAD AND TESTING REQUIREMENTS FOR EPOXY SET DOWELS IN CONCRETE

ANCHOR DIAMETER	MINIMUM EMBEDMENT	ALLOWABLE TENSION (POUNDS)	TENSION TEST (POUNDS)	SHEAR TEST
3/8"	2 3/4"	1,200	2,400	NONE
1/2"	4 1/2"	1,900	3,800	NONE
5/8"	5"	2,500	5,000	NONE
3/4"	6 3/4"	3,600	7,200	NONE
7/8"	7 3/4"	7,000	14,000	NONE

ALLOWABLE LOAD AND TESTING REQUIREMENTS FOR EXPANSION ANCHORS IN CONCRETE

ANCHOR DIAMETER	MINIMUM EMBEDMENT	ALLOWABLE TENSION (POUNDS)	TENSION TEST (POUNDS)	TORQUE LOADING (FOOT-LBS)
3/8"	2"	1,139	2,278	25
1/2"	2 1/4"	1,638	3,276	50
5/8"	4"	2,244	4,488	80
3/4"	4 3/4"	3,165	6,330	150

NOTES:

1. MINIMUM EMBEDMENTS VARY BETWEEN MANUFACTURERS. EMBEDMENTS NOTED ARE MINIMUMS AND SHOULD BE INCREASED AS REQUIRED TO MEET MANUFACTURER'S PUBLISHED MINIMUM EMBEDMENTS.
2. ANCHORS SHOULD BE INSTALLED INTO MEMBERS WITH A MINIMUM THICKNESS AS NOTED IN THE MANUFACTURER'S ICC REPORT.
3. WHERE DRILLED HOLE DEPTH IS WITHIN 2 1/2" OF THE EDGE OF MEMBER, CONTRACTOR SHALL USE ROTARY DRILL.

STRUCTURAL OBSERVATION

REQUIRED OBSERVATION BY THE STRUCTURAL ENGINEER OF RECORD

1. FOUNDATION REINFORCING.
2. STEEL ERECTION.

CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 2 WORKING DAYS PRIOR TO THE TIME WHEN HIS PRESENCE IS REQUIRED. PLEASE NOTE THAT THESE OBSERVATIONS ARE INDEPENDENT OF INSPECTIONS REQUIRED BY THE BUILDING DEPARTMENT.

SHEET INDEX

S100	STRUCTURAL NOTES
S200	STRUCTURAL FRAMING PLANS
S300	STRUCTURAL DETAILS
S301	TYPICAL MOMENT FRAME DETAILS

Ventura County Fire Department
FIRE & RESCUE

PUBLIC
VENTURA COUNTY
WORKS
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
MARY MCGRATH | ARCHITECTS
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE
structural engineering group
986 W. Aluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

DUSTIN G. LEE
No. S6623
EXP. 3/31/25

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-23

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER
DRAWN BY MEW
CHECKED BY DGL
CONSULTANT JOB NO 2018047
DATE 08-21-23

PROJECT TITLE AND ADDRESS

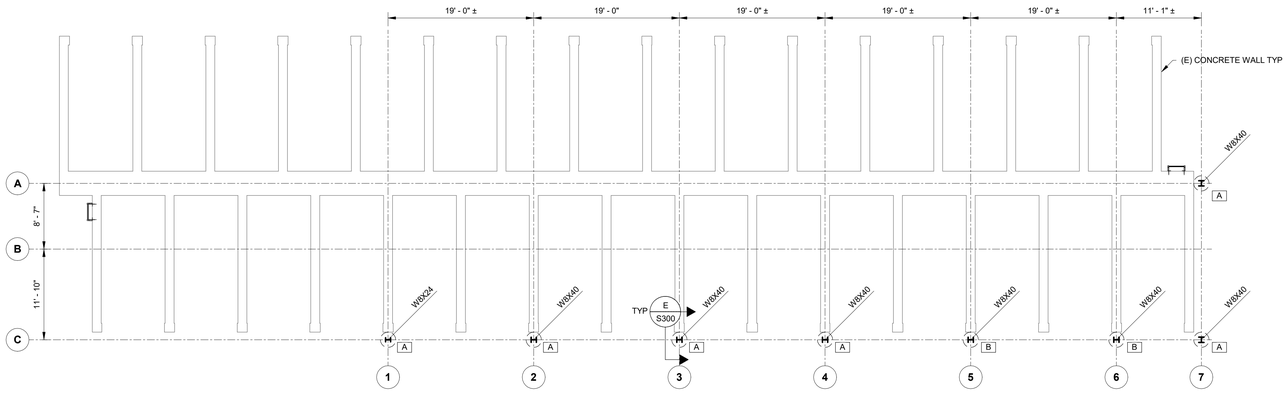
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02
COUNTY PROJECT NUMBER P6T18021
COUNTY DWG NO
SHEET 12 OF 15

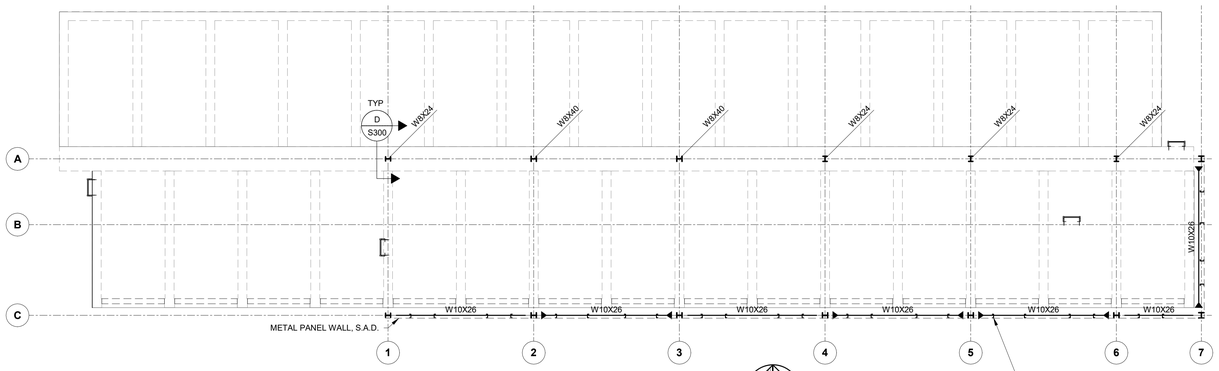
SHEET TITLE
STRUCTURAL NOTES

SHEET NO
S100



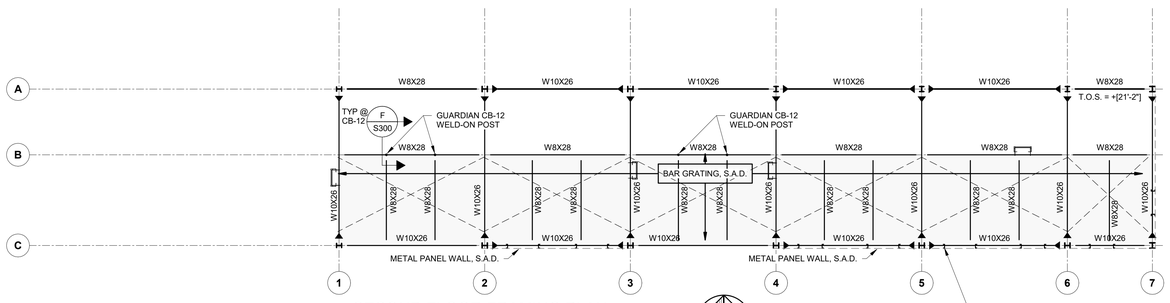
GROUND/FOUNDATION PLAN

1/8" = 1'-0"



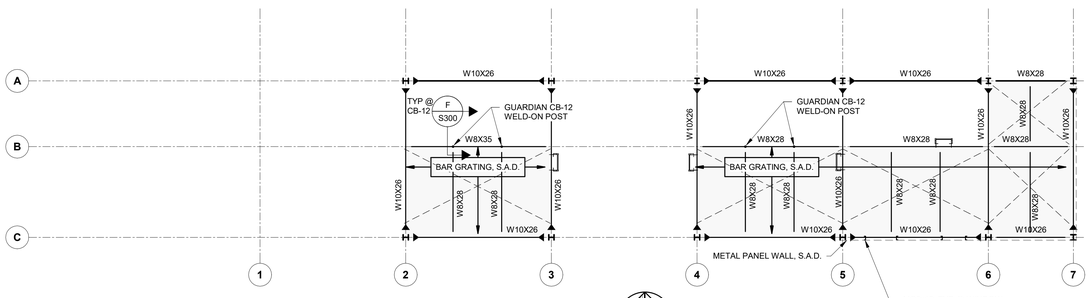
FIRST FLOOR FRAMING PLAN

1/8" = 1'-0"



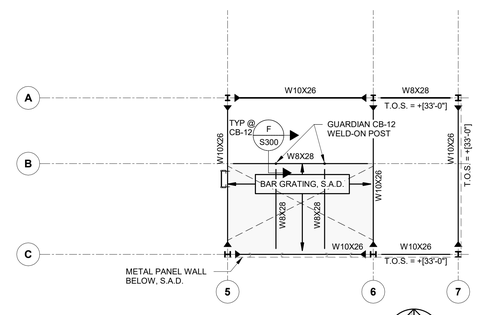
SECOND FLOOR FRAMING PLAN

1/8" = 1'-0"



THIRD FLOOR FRAMING PLAN

1/8" = 1'-0"



ROOF FRAMING PLAN

1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S100.
2. SEE SHEET S300 FOR TYPICAL FRAMING DETAILS.
3. TOP OF SLAB & GROUND FLOOR REFERENCE ELEVATION = +[0' - 0"] TYP, U.N.O.
4. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM BOTH ARCHITECT AND ENGINEER OF ANY CONFLICTING INFORMATION.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SIZES, CONDITIONS, MEMBER ELEVATIONS AND DIMENSIONS BEFORE BEGINNING CONSTRUCTION AND/OR ORDERING MATERIALS. ANY CONDITIONS ENCOUNTERED IN THE FIELD THAT CONFLICT WITH THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
7. THE SIZE & LOCATION OF ALL FOOTING AND SLAB PENETRATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
8. CONCRETE CONTRACTOR IS RESPONSIBLE FOR THE PLACEMENT OF ALL EMBEDDED ITEMS.
9. ANCHOR BOLTS AND BASE PLATES SHALL NOT BE WET SET.
10. ALL DIMENSIONS ARE TO CENTERLINE OF COLUMNS OR FACE OF CONCRETE, TYPICAL UNLESS NOTED OTHERWISE.
11. INDICATES FOUNDATION TAG. SEE SCHEDULE.
12. A — INDICATES TOP OF FOOTING ELEVATION BELOW SLAB. TOP OF FOOTING SHALL BE 1'-0" BELOW SLAB, UNO.
13. -[1'-0"] — INDICATES (E) CONCRETE WALL
14. INDICATES (E) CONCRETE WALL BELOW

DRILLED PIER FOOTING SCHEDULE			
TYPE	SIZE	REINFORCING	
		LONGITUDINAL	TRANSVERSE
A	24" DIA x 11'-0" DEEP	8 - #6	#4 @ 4" OC
B	24" DIA x 18'-0" DEEP	8 - #6	#4 @ 4" OC

FLOOR/ROOF FRAMING NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET S100.
2. SEE SHEET S300 & S301 FOR TYPICAL FRAMING DETAILS.
3. TOP OF STEEL ELEVATION = +11' - 3" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O. (1ST FLOOR)
4. TOP OF STEEL ELEVATION = +18' - 10" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O. (2ND FLOOR)
5. TOP OF STEEL ELEVATION = +26' - 10" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O. (3RD FLOOR)
6. TOP OF STEEL ELEVATION = +34' - 10" W/ RESPECT TO FOUNDATION REFERENCE ELEVATION, TYP U.N.O. (4TH FLOOR)
7. CONTRACTOR TO VERIFY ALL DIMENSIONS & ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM ARCHITECT & STRUCTURAL ENGINEER OF ANY DISCREPANCY.
8. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SIZES, CONDITIONS, MEMBER ELEVATIONS AND DIMENSIONS BEFORE BEGINNING CONSTRUCTION AND/OR ORDERING MATERIALS. ANY CONDITIONS ENCOUNTERED IN THE FIELD THAT CONFLICT WITH THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
9. REFER TO ARCHITECTURAL DRAWINGS FOR EDGE OF DECK LOCATIONS.
10. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF DECK PENETRATIONS.
11. NO MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. SHALL BE HUNG FROM STEEL DECK UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
12. INDICATES MOMENT CONNECTION, SEE DETAILS ON S301
13. INDICATES 3/4" DIA TIE ROD BRACING, SEE DETAIL C/S300

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
MARY MCGRATH | ARCHITECTS
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
DUSTIN G. LEE
No. S8623
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division

PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-23

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
MEW	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

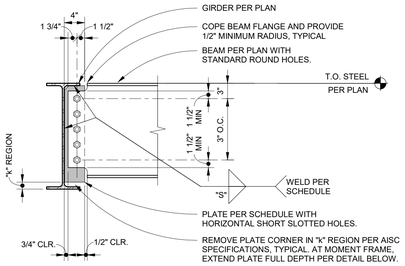
COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

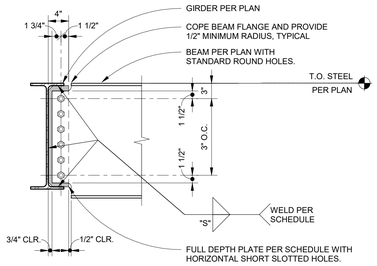
COUNTY DWG NO | SHEET 13 OF 15

SHEET TITLE
STRUCTURAL FRAMING PLANS

SHEET NO
S200



BEAM DEPTH LESS THAN OR EQUAL TO GIRDER

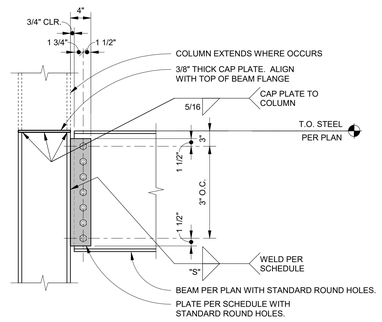


BEAM DEPTH GREATER THAN GIRDER

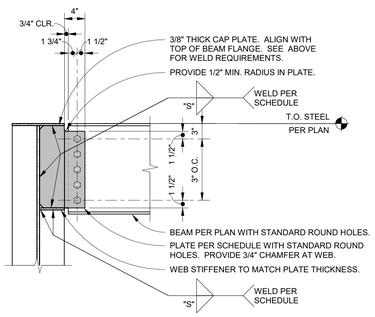
CONNECTION SCHEDULE				
BEAM SIZE	PLATE (3)		WELD SIZE "S"	BOLTS (2)
	MIN. DEPTH	THICKNESS		NO. & SIZE (1,4)
W8x, C8x	6"	3/8"	5/16	(2) 3/4"Ø
W10x, C10x	6"	3/8"	5/16	(2) 3/4"Ø

NOTES:
1. FOR SINGLE COLUMN OF BOLTS, UNLESS NOTED OTHERWISE.
2. ALL BOLTS SHALL BE A325N AND ORIENTED IN THE SAME DIRECTION, UNLESS NOTED OTHERWISE.
3. STEEL PLATE SHALL BE ASTM A36, UNLESS NOTED OTHERWISE. AT COLLECTOR AND MOMENT CONNECTIONS, PLATE SHALL BE A572 GR. 50
4. COPE FLANGES OR LOCATE TAB PLATE TO BE 1/16" MIN. CLEAR OF "k" PER AISC SPECIFICATIONS.
5. AVAILABLE ALLOWABLE STRENGTHS ARE BASED ON TABULATED VALUES FROM "TABLE 10-10a" OF THE AISC STEEL CONSTRUCTION MANUAL (ASD), 15TH EDITION, USING E70XX ELECTRODES.

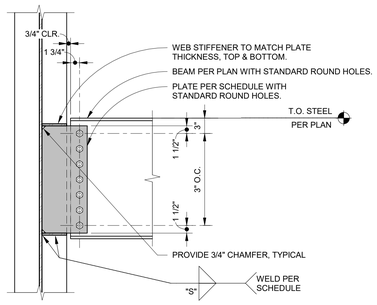
BEAM CONNECTION
1" = 1'-0"
A / S300



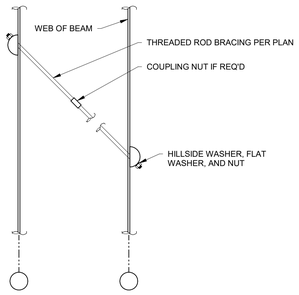
WIDE FLANGE BEAM TO WIDE FLANGE COLUMN FLANGE



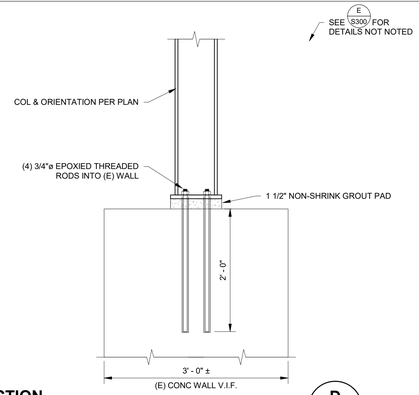
WIDE FLANGE BEAM TO WIDE FLANGE COLUMN WEB



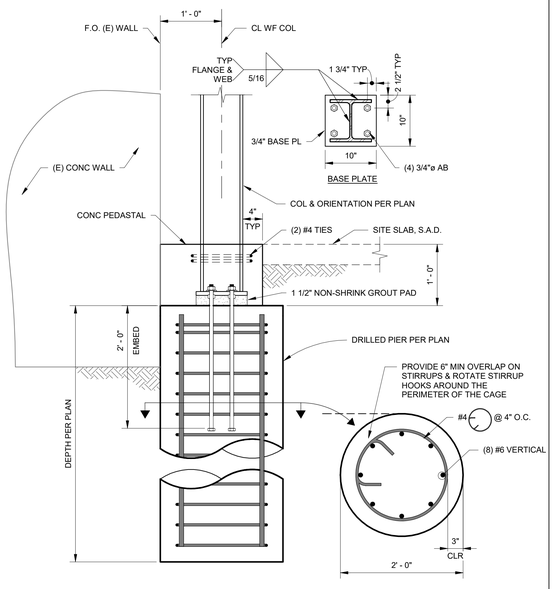
BEAM TO WIDE FLANGE COLUMN
1" = 1'-0"
B / S300



ROD BRACING
1" = 1'-0"
C / S300

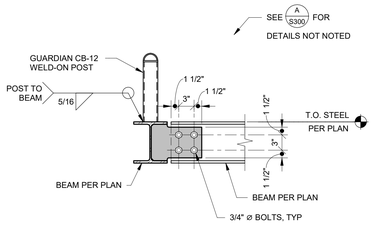


SECTION
1" = 1'-0"
D / S300



NOTE:
HISTORICAL HIGH GROUND WATER TABLE IS ESTIMATED TO BE 8 FT BELOW GRADE. IF WATER IS ENCOUNTERED IN THE DRILLED HOLES, THE CONCRETE SHALL BE PLACED UNDER SLURRY USING TREMIE TUBES, SEE SPECIFICATION 31 63 29.

TYPICAL DRILLED PIER
1" = 1'-0"
E / S300



SECTION
1" = 1'-0"
F / S300

Ventura County Fire Department
FIRE & RESCUE

PUBLIC WORKS
VENTURA COUNTY
ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
MARY MCGRATH | ARCHITECTS
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS
MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER
AUSTIN G. LEE
No. S6823
EXP. 3/31/25
STRUCTURAL
STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division
PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-23

PUBLIC WORKS PROJECT MANAGER
CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
MEW	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

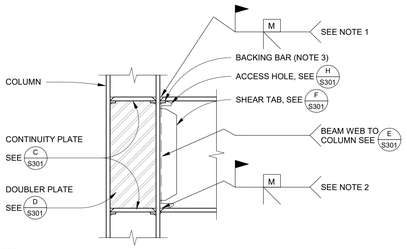
VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER
CP23-02
COUNTY PROJECT NUMBER
P6T18021
COUNTY DWG NO
SHEET 14 OF 15

SHEET TITLE
STRUCTURAL DETAILS

SHEET NO
S300

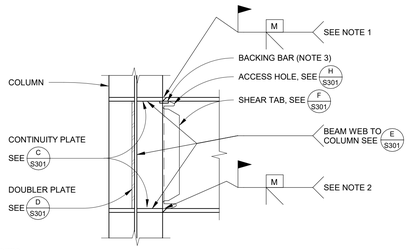


NOTES:
1. COMPLETE PENETRATION GROOVE WELD, EITHER (A) REMOVE WELD BACKING BAR, BACK GOUGE & ADD 5/16" FILLET WELD, OR (B) LEAVE BACKING BAR IN PLACE & ADD 5/16" FILLET UNDER BACKING BAR.
2. COMPLETE PENETRATION GROOVE WELD. REMOVE WELD BACKING BAR, AND PROVIDE REINFORCING FILLET.
   A. IF BACK GOUGED TO SOUND WELD STEEL AFTER REMOVAL OF BACKING:
      a. FOR FILLET LEG ADJACENT TO COLUMN PROVIDE 5/16" MINIMUM.
      b. FOR FILLET LEG ADJACENT TO BEAM FLANGE, THE WIDTH SHALL BE SUCH THAT THE FILLET TOE IS LOCATED ON THE BEAM FLANGE BASE STEEL (5/16" MINIMUM).
   B. IF THE BASE STEEL AND WELD ROOT ARE GROUND SMOOTH AFTER REMOVAL OF BACKING: THE FILLET LEG ADJACENT TO THE BEAM FLANGE NEED NOT EXTEND TO THE BEAM FLANGE BASE STEEL (5/16" MINIMUM).
3. DO NOT WELD (FILLET OR TACK) BACKING BARS TO UNDERSIDE OF BEAM FLANGE.

MOMENT CONNECTION - STRONG AXIS (WUF-W)

NO SCALE

A / S301

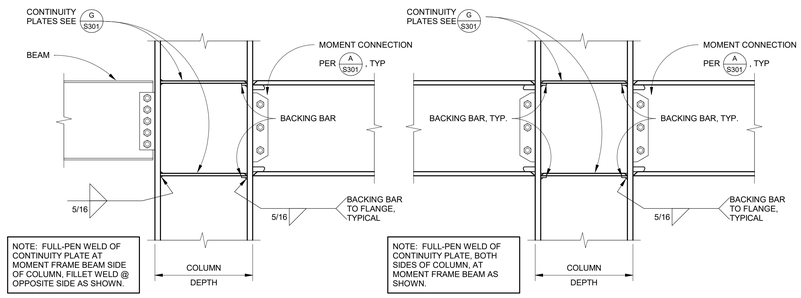


NOTES:
1. COMPLETE PENETRATION GROOVE WELD, EITHER (A) REMOVE WELD BACKING BAR, BACK GOUGE & ADD 5/16" FILLET WELD, OR (B) LEAVE BACKING BAR IN PLACE & ADD 5/16" FILLET UNDER BACKING BAR.
2. COMPLETE PENETRATION GROOVE WELD. REMOVE WELD BACKING BAR, AND PROVIDE REINFORCING FILLET.
   A. IF BACK GOUGED TO SOUND WELD STEEL AFTER REMOVAL OF BACKING:
      a. FOR FILLET LEG ADJACENT TO COLUMN PROVIDE 5/16" MINIMUM.
      b. FOR FILLET LEG ADJACENT TO BEAM FLANGE, THE WIDTH SHALL BE SUCH THAT THE FILLET TOE IS LOCATED ON THE BEAM FLANGE BASE STEEL (5/16" MINIMUM).
   B. IF THE BASE STEEL AND WELD ROOT ARE GROUND SMOOTH AFTER REMOVAL OF BACKING: THE FILLET LEG ADJACENT TO THE BEAM FLANGE NEED NOT EXTEND TO THE BEAM FLANGE BASE STEEL (5/16" MINIMUM).
3. DO NOT WELD (FILLET OR TACK) BACKING BARS TO UNDERSIDE OF BEAM FLANGE.

MOMENT CONNECTION - WEAK AXIS

NO SCALE

B / S301

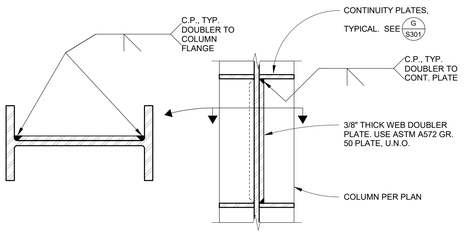


MOMENT FRAME BEAM, ONE SIDE OF COLUMN **MOMENT FRAME BEAM, EACH SIDE OF COLUMN**

BEAM TO COLUMN AT MOMENT FRAME

NO SCALE

C / S301

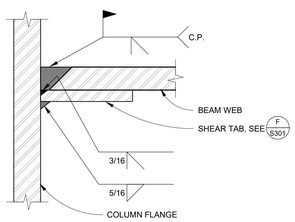


NOTES:
1. DOUBLER PLATES ARE ONLY REQUIRED AT SPECIFIC LOCATIONS, AND PLATE THICKNESS VARIES.
2. DOUBLER PLATES SHALL BE WELDED TO THE COLUMN FLANGESAND CONTINUITY PLATES WITH COMPLETE JOINT PENETRATION GROOVE WELD. WELD TO COLUMN FLANGE MAY REQUIRE MULTIPLE WELD PASSES DUE TO LARGE k REGION.
3. FRAMING MEMBERS CONNECTING TO COLUMN WEB, MAY BE WELDED TO DOUBLER PLATE AS REQUIRED.

DOUBLER PLATES - MF

NO SCALE

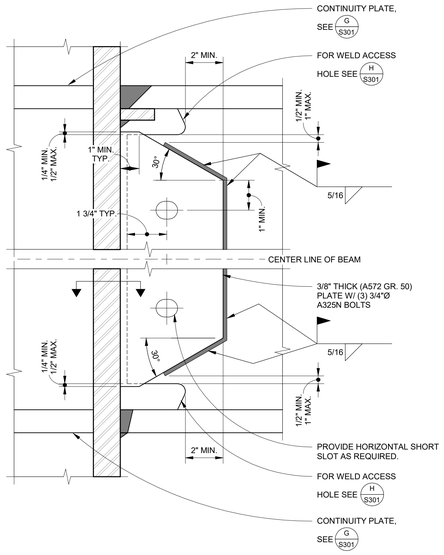
D / S301



SHEAR TAB AT BEAM TO COLUMN - MF

NO SCALE

E / S301

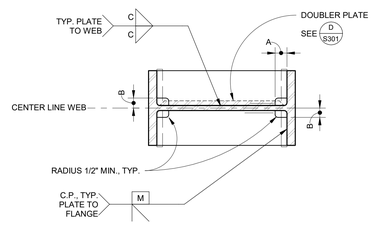


NOTE: ALL WELDS ON MOMENT FRAMES SHALL MEET LATERAL FRAME REQUIREMENTS - SEE GENERAL NOTES

SHEAR TAB AT BEAM - WUF-W

NO SCALE

F / S301



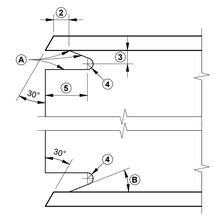
CONTINUITY PLATE SCHEDULE - FULL DEPTH					
COLUMN	PLATE	DIM 'A'	DIM 'B'	WELD SZ. 'C'	STEEL
W8x24	5/8"	2 3/8"	1 1/8"	3/8	A572 GR. 50
W8x40	5/8"	2 3/4"	1 5/16"	3/8	A572 GR. 50

NOTES:
1. ALL CONTINUITY PLATES SHALL EXTEND FULL DEPTH OF COLUMN, MINUS THICKNESS OF COLUMN FLANGES.
2. CONTINUITY PLATES SHALL EXTEND FLUSH WITH COLUMN FLANGE ENDS.
3. REMOVE WELD TABS TO 1/4" MAXIMUM FROM EDGE OF CONTINUITY PLATE. GRIND END OF WELD SMOOTH (500 micro-in), NOT FLUSH. DO NOT GOUGE COLUMN FLANGE.
4. STOP PLATE WELD TO COLUMN WEB 1/4" FROM PLATE NOTCHES.
5. MINIMUM 1/2" RADIUS OF NOTCH TO CLEAR FILLET.
6. WELD TABS SHALL NOT BE USED AT PLATE TO WEB WELDING.
7. DIM 'A' = k + 1 1/2"
8. DIM 'B' = k1 + 1/2"

CONTINUITY PLATES

NO SCALE

G / S301



Ⓐ SMOOTHNESS REQUIREMENTS AND CUTTING METHODS PER FEMA-353.
Ⓑ ANGLE SHALL NOT EXCEED 25 DEGREES.

WELD ACCESS HOLE SCHEDULE				
BEAM	2	3	4	5
W10x26	1/2"	3/4"	1/2"	1"

WELD ACCESS HOLE - MF

NO SCALE

H / S301

Ventura County Fire Department — FIRE & RESCUE

PUBLIC WORKS — VENTURA COUNTY — ENGINEERING SERVICES

MARY MCGRATH | ARCHITECTS
MARY MCGRATH | ARCHITECTS
OAKLAND, CA 94612
PHONE: 510.208.9400
WWW.MARYMCGRATHARCHITECTS.COM

MW STUDIOS MASTER PLANNING
MANNS WOODWARD STUDIOS
WHITE MARSH, MD 21162
phone 410.344.1460
WWW.MWSARCH.COM

CORNERSTONE structural engineering group
986 W. Alluvial Ave., Suite 201
Fresno, California 93711
559.320.3200
fax 320.3201

PROFESSIONAL SEALS

REGISTERED PROFESSIONAL ENGINEER — DUSTIN G. LEE — No. S6823 — EXP. 3/31/25 — STRUCTURAL — STATE OF CALIFORNIA

PERMIT APPROVAL STAMP

COUNTY of VENTURA
Resource Management Agency
APPROVED
This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building and Safety Division, County of Ventura. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County Ordinance of State Law.
K. LIN 08/31/2023
Building and Safety Division
PERMIT NO C22-727

NO	REVISION	DATE
	BID SET	08-21-23

PUBLIC WORKS PROJECT MANAGER

CONSULTANT PROJECT MANAGER

DRAWN BY	CHECKED BY
MEW	DGL
CONSULTANT JOB NO 2018047	DATE 08-21-23

PROJECT TITLE AND ADDRESS

VENTURA COUNTY FIRE TRAINING CENTER

165 DURLEY AVE
CAMARILLO, CA 93010

COUNTY SPEC NUMBER CP23-02

COUNTY PROJECT NUMBER P6T18021

COUNTY DWG NO — SHEET 15 OF 15

SHEET TITLE
TYPICAL MOMENT FRAME DETAILS

SHEET NO S301