

Classified Media Release

For Publication: Week of 07/16/2023
 Week of 07/23/2023

Advertisement for Bids

The Trinidad Rancheria respectfully requests bids from licensed contractors for the Trinidad Interpretive Center project located in Trinidad, Humboldt County, California.

A non-mandatory Pre-bid Conference and site visit will be held at the project site located at the South end of Edwards Street, Trinidad, CA 95570 on Thursday, July 27, 2023 at 10:00 am PST.

Bids are due Tuesday, August 15, 2023 at 2:00 PM PST at the Trinidad Rancheria located at 1 Cher-Ae Lane, Trinidad, CA.

Bidding and Contracting Documents can be viewed on the Humboldt Builders Exchange & Trinidad Rancheria websites. For questions, driving directions, and complete electronic Bidding and Contracting Documents contact Trinity Valley Consulting Engineers at 530.629.3000 or tvce@tvce.biz. Reference Trinidad Interpretive Center project.

COMPLETE BIDDING AND CONTRACTING MANUAL
INTERPRETIVE CENTER

TRINIDAD RANCHERIA,
HUMBOLDT COUNTY, CALIFORNIA

July 2023



Trinidad Rancheria

Post Office Box 630
Trinidad, CA 95570
(707) 677-0211



Trinity Valley Consulting Engineers, Inc.

67 Walnut Way, Willow Creek, CA 95546
Phone: (530) 629-3000 Email: tvce@tvce.biz

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
BIDDING AND CONTRACTING MANUAL

RECOMMENDED BY:

Jacque Hostler-Carmesin, CEO
Trinidad Rancheria

Date

Joshua T. McKnight, P.E.
RCE 60687 Expires 12/31/24

Date

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DIVISION 00
PROCUREMENT & CONTRACTING

**SECTION 001100
NOTICE TO CONTRACTORS**

The Trinidad Rancheria requests sealed bids for the **construction of a new building and associated site work, located at 1 Bay Street, Trinidad, CA. to provide for the Interpretive Center.**

Timeframes:

Envelopes containing bids should be clearly marked on the outside: **Interpretive Center**. Sealed proposals will be received by (and all bids should be mailed, or hand delivered to) the Trinidad Rancheria:

By Hand:

Trinidad Rancheria,
1 Cher-Ae Lane
Trinidad Rancheria, CA

By Mail:

Trinidad Rancheria,
PO Box 630,
Trinidad, CA. 95570

Bids will be received until **Tuesday, August 15, 2023 at 2:00 PM PST** at which time the sealed bids will be publicly opened and read aloud. Bid public opening and reading will be held in the Trinidad Rancheria Tribal Office, 1 Cher-Ae Lane, Trinidad, CA.

Prior to submitting a bid, all prospective bidders are **advised** to attend a pre-bid conference. The pre-bid conference will be held at the project site. The pre-bid conference will be held on **Thursday, July 27, 2023** beginning at **10:00 AM PST**.

Bidding and Contracting Manuals & Plan Set will be provided in electronic (PDF) format. Files will be available on Humboldt Builders Exchange and Trinidad Rancheria Website. Printed copies can be obtained at the cost of production (\$100.00) from Trinity Valley Consulting Engineers, Inc. at 67 Walnut Way, Willow Creek, CA 95573.

General Specifications:

1) The scope of work for this project is the completion of all work necessary for:

Construction of a new building and associated site work.

2) Upon Notice to Proceed, contractor shall complete all contractual obligations between _____, 202 and _____, 202 **which constitutes (ONE HUNDRED AND EIGHTY (180) CALENDAR DAYS)**. After which, a liquidated damage charge of \$1000.00 per calendar day is prescribed.

3) Davis Bacon wage requirements shall apply to this project.

4) **Tribal and Native American Preference per:**

Cher-Ae Heights Indian Community of the Trinidad Rancheria PROCUREMENT POLICY Adopted by the Cher-Ae Heights Indian Community of the Trinidad Rancheria (Trinidad Rancheria) Tribal Council by Resolution #TC-18-08 on April 20, 2018. The effective date of this Statement is April 20, 2018.

a. Issue the solicitation unrestricted to allow both non-Native American and qualified Native American-owned economic enterprises or organizations to submit bids and award shall be made to the qualified Native American-owned economic enterprises or

organizations with the lowest responsive bid, if the bid is within the total maximum contract price established for the procurement and within the applicable range specified in Appendix A of the lowest non-Native American bid price; or

Attachment A *If the bid from the qualified Native American-owned economic enterprise or organization is within the 10% range of the lowest, non-Native American firm, the Native American-owned firm will be given the opportunity to meet the lowest bid price. Should the Native American-owned firm refuse to meet the lower price, the bid shall then be awarded to the responsive and responsible low bidder for the project. The Trinidad Rancheria Tribal Council reserves the right to reject any and all bids and to waive any irregularity or informality which is contained in any bid. All construction is subject to availability of funds.*

- 5) Work conditions and schedule will be subject to the requirements of both the Coastal Development Permit (CDP) and Building Permit to be issued for this project.

Note: To meet the requirement of Attachment A the Native American-Owned firm will be required to adopt the bid schedule as submitted by the lowest responsive bidder.

Other Requirements:

- 1) A cash or bond guarantee, in the amount of five percent (5%) of the bid, must accompany the bid proposal.
- 2) Retention of 10% of the contract amount will be withheld and paid thirty calendar days after project completion and approval. **Prime contractors shall not withhold retention from sub-contractors.**
- 3) The successful Bidder shall furnish a payment bond and a performance bond, each in the amount of 100% of the contract amount, after receiving the Notice of Award.
- 4) The successful bidder shall provide both a certificate of liability and a certificate of worker's compensation, each in the amount of \$1,000,000 and each naming the Trinidad Rancheria as an additional insured. Any question shall be put in writing and directed to Leslie Sanders, Transportation and Land Use, lsanders@trinidadrancheria.com
- 5) The Contractor shall comply with and require its subcontractors to comply with all applicable federal, tribal and state regulations.
- 6) The Contractor shall comply with and require its subcontractors to comply with all applicable environmental and historical preservation laws, regulations and requirements of the Trinidad Rancheria relating to the performance of the work for this project.
- 7) **Cultural Monitoring shall be required during any ground disturbing activities. It is the responsibility of the contractor to notify the owner 72 hours prior to conducting ground disturbing activities.**
- 8) **Buy America Act applies to this project.**

For more information contact:

Leslie Sanders, Transportation Manager
Trinidad Rancheria 707 677-0211
lsanders@trinidadrancheria.com

SECTION 002100
INSTRUCTIONS TO BIDDERS

BID SUBMITTALS AND CONDITIONS

Bids shall be submitted as stated below and per section 001100 Notice to Contractors

The following documents constitute a complete bid and are required to be submitted to form a responsive bid:

1. 004000 Bid Form
2. 004100 Bid Schedule
3. 004300 Bid Security
4. 004336 Subcontractor Schedule
5. 004500 Bidder Qualifications
6. 004505 Indian Enterprise Qualifications Statement (if claimed)
7. 004519 Non-Collusive Affidavit

Each bid must be submitted in a sealed envelope, addressed:

Trinidad Rancheria,
1 Cher-Ae Lane
PO Box 630,
Trinidad Rancheria, CA 95570

The sealed envelope containing the bid must be plainly marked on the outside as:

BID FOR THE INTERPRETIVE CENTER

The envelope should also bear on the outside the name of the bidder, bidder address, and bidder license number.

If forwarded by mail, the bid must be received by the date and time of opening. Any bids received after the time and date of opening resulting from untimely delay due to the mail system or other methods of conveyance will not be considered.

Bids received prior to the time of opening will be securely kept, unopened. The official who is to open the bids will decide when the specified time has arrived, and no bid received thereafter will be considered. No responsibility will attach to office personnel for the premature opening of a bid not properly addressed and identified. Telegraphic bids or modifications will not be considered.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

All bids must be made on the provided bid form and schedule. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully completed and executed when submitted. A conditional or qualified bid will not be accepted. Each signature page must bear an original signature, whether within or separate from this document.

Bidders shall have a current California Contractors License appropriate for the nature of work to be performed. Bona fide bidders (Licensed and Bonded in accordance with current California State Contractor's Law) shall have a State of California Class "B" Contractor's License. Bidder must have at least a Class B license allowing for a subcontractor to fulfill the Specialty Class license requirements. All Subcontractors shall be properly licensed for the services they will be providing.

After bids have been submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done. No bidder may withdraw a bid within fourteen (14) calendar days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period; the time may be extended by mutual agreement between the Owner and the successful bidder.

WAGE REQUIREMENTS Davis Bacon wage requirements shall apply to this project.

BID REVIEW AND AWARD

The Owner may waive any informalities or minor defects or reject any and all bids.

Award will be made to the lowest responsive, responsible bidder with due consideration for Indian Preference.

BIDDING INFORMATION

The Owner shall provide to bidders prior to bidding:

An electronic package containing the bid and contract documents necessary to construct the project per section 001100 NOTICE TO CONTRACTORS

1. A pre-bid site visit is not mandatory.

The contract documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the contract.

Bidders must satisfy themselves as to the accuracy of the estimated quantities in the Bid Schedule (if any) by examining the site and reviewing the drawings and specifications including addenda (if applicable). The failure or omission to do this shall in no way relieve any bidders from any obligation in respect to his bid.

Requests for clarification must be in writing, via email to Leslie Sanders, Transportation and Land Use, lsanders@trinidadrancheria.com and received at least seven working days prior to the bid opening date. Owner provided clarifications and supplemental instructions will be issued as addenda to the specifications and provided to all Plan Holders no later than four working days prior to the bid opening date.

BIDDER QUALIFICATIONS

Bidders must fill out, sign and submit SECTION 004500 BIDDER QUALIFICATIONS form as part of the proposal. Bidders must also, if required, present additional satisfactory evidence that they are fully prepared with the necessary experience, capital, machinery and materials to furnish the articles called for and to conduct the work as required by the drawings and specifications.

NON-COLLUSIVE AFFIDAVIT

Each person submitting a bid for any portion of the work contemplated by the bidding documents shall execute an affidavit, in the form 004519 Non-Collusive Affidavit provided by the Owner, to the effect that he has not colluded with any other person, firm or corporation in regard to any bid submitted. Such affidavit shall be attached to the bid and be considered a part of the complete bid packet.

INDIAN PREFERENCE

Tribal and Native American Preference per:

Cher-Ae Heights Indian Community of the Trinidad Rancheria PROCUREMENT POLICY Adopted by the Cher-Ae Heights Indian Community of the Trinidad Rancheria (Trinidad Rancheria) Tribal Council by Resolution #TC-18-08 on April 20, 2018. The effective date of this Statement is April 20, 2018.

a. Issue the solicitation unrestricted to allow both non-Native American and qualified Native American-owned economic enterprises or organizations to submit bids and award shall be made to the qualified Native American-owned economic enterprises or organizations with the lowest responsive bid, if the bid is within the total maximum contract price established for the procurement and within the applicable range specified in Appendix A of the lowest non-Native American bid price; or

Attachment A If the bid from the qualified Native American-owned economic enterprise or organization is within the 10% range of the lowest, non-Native American firm, the Native American-owned firm will be given the opportunity to meet the lowest bid price. Should the Native American-owned firm refuse to meet the lower price, the bid shall then be awarded to the responsive and responsible low bidder for the project. The Trinidad Rancheria Tribal Council reserves the right to reject any and all bids and to waive any irregularity or informality which is contained in any bid. All construction is subject to availability of funds.

Note: To meet the requirement of Attachment A the Native American-Owned firm will be required to adopt the bid schedule as submitted by the lowest responsive bidder.

BONDING REQUIREMENTS

Bid, Performance, and Payment bonds will be required for this project.

Bid bonds totaling no less than five percent (5%) of the total bid and payable to the Owner shall accompany any bid. A cashier's check may be used in lieu of a bid bond. As soon as the bid prices have been compared, the Owner will return the bonds of all except the three lowest responsible bidders. When the Agreement is executed, the bonds of the two remaining unsuccessful bidders will be returned. The bid bond of the successful bidder will be retained until the Payment and Performance bonds have been executed and approved, after which it will be returned.

Performance and Payment bonds, each totaling 100% of the Contract price, with a corporate surety approved by the Owner, shall be provided to the Owner when the Agreement is executed.

Attorneys-in-fact who sign Bid, Payment, and Performance bonds must file with each bond a certified and effective dated copy of their power of attorney.

The Owner may make such investigations, as they deem necessary to determine the ability of the bidder to perform the work. Bidders shall be prepared to furnish such information and data for this purpose at the Owner's request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

The successful bidder will be required to execute an Agreement and obtain the Performance and Payment bond, if required, within ten calendar days from the date when the Notice of Award is delivered to the bidder. In case of failure of the bidder to execute the Agreement, the Owner may at their option consider the bidder in default, in which case any bid bond accompanying the proposal shall become the property of the Owner.

The Owner, within fourteen calendar days of receipt of the Agreement and any required Performance and Payment bonds signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the Owner not execute the Agreement within such period, the bidder may provide a written notice of withdraw of his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

NOTICE TO PROCEED

The Owner will issue the Notice to Proceed within fourteen calendar days after the Agreement is fully executed. Should there be reasons why the Notice to Proceed cannot be issued within such period; the time may be extended by mutual agreement between the Owner and Contractor. If the Notice to Proceed has not been issued within the acceptable period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

OTHER REQUIREMENTS

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

The successful bidder shall abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the General Conditions.

The successful bidder will be required to supply the names and addresses of major material suppliers and subcontractors to the Owner as part of their bid and within fourteen calendar days of receipt of the Notice to Proceed (supplemental to the Schedule of Subcontractors provided with

bid). In the event that major suppliers or subcontractors differ from those provided during bidding the Contractor will be required to provide a fully executed subcontractor release in strict conformance to the California Subletting and Subcontracting Fair Practices Act Public Code Section 4100-4113.

The successful bidder shall supply submittals information in accordance with the submittals section of the contract documents.

CULTURAL MONITORING

Cultural monitoring is required under this contract agreement for any ground disturbing activities. During construction the Contractor is to adhere to the requirements of Section 013591 Constraints and Mitigation in the event of discovery of sensitive items as defined and explained therein.

FEDERAL REQUIREMENTS

1. The work to be performed under this Contract is on a project subject to section 7(b) of the Indian Self- Determination and Education Assistance Act (25 U.S.C. 450e (b) which requires that to the greatest extent feasible: (a) preference and opportunities for training and employment shall be given to Indians; and (b) preferences in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. The parties to this Contract shall comply with the provisions of section 7(b) of this Act. In connection with this Contract, the Contractor shall, to the greatest extent feasible, give preference in the award of any subcontracts to Indian organizations and Indian-owned Economic Enterprises, and preferences and opportunities for training and employment to Indians. The Contractor shall include this section 7(b) clause in every subcontract in connection with the Contract, and shall, at the direction of the Owner, take appropriate action pursuant to the subcontract upon a finding by the Owner that the subcontractor has violated this section 7(b) clause of this Act.
2. Compliance with Executive Order 11246 of September 24, 1965 entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967 and as supplemented in Department of Labor regulations (41 CFR Chapter 60) (All construction contracts awarded in excess of \$10,000).
3. Compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR part 3) (All contracts and sub grants for construction or repair).
4. Compliance with the Davis-Bacon Act (40 U.S.C. 276a to a-7) as supplemented by Department of Labor regulations (29 CFR part 5) (Construction contracts in excess of \$2,000 when required by Federal grant program legislation).
5. Compliance with Sections 103 and 107 of the contract Work Hours and Safety Standards Act (40 U.S.C.).
6. 327-330) as supplemented by Department of Labor regulations (29 CFR part 5) (Construction contracts in excess of \$2,000, and in excess of \$2,500 for other contracts which involve the employment of mechanics or laborers).
7. Access to and retention of records for a period of three (3) years relating to this Project as required by 24 CFR 85.36(j) (10) and (11). Cooperation and provision of all necessary

- information and documentation as may be required for reporting relating to this project.
8. Affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible (24 CFR 85.36(e); E.O. 11625).
 9. No award or subcontract at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549, "Debarment and Suspension".
 10. Compliance with the provisions of the Hatch Act (5 U.S.C. 1501-1508) and the Intergovernmental Personnel Act of 1970 as amended by Title VI of Civil Service Reform Act (Pub. L. 95-454 Section 4728) prohibiting use of federally appropriated funds for influencing or attempting to influence the award of any federal monies and to make such reports and disclosures as are required there under. The signing of the contract in which this Attachment is referenced is a certification of agreed compliance.
 11. Prohibition against personal or financial interest in or benefit from this contract obtained by certain affiliates, associates, board members or employees of the Owner or its grantees, either from themselves, or their families, or business associates, during their tenure or for one year thereafter.
 12. Compliance with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821, et seq.) and implementing regulations at 24 CFR 570.608, as well as compliance with the requirements regarding asbestos of 40 CFR Part 61 and 40 CFR Part 763, as well as 29 CFR 1910.1001 and 1926.58.
 13. Except as Indian Preference requirements, compliance with prohibitions against discrimination as provided by Title VI of the Civil Rights Act of 1976 (Pub. L. 88-352), Age Discrimination Act of 1975, and the implementing regulations at 24 CFR Part 146, Section 504 of the Rehabilitation Act of 1973, as amended, 24 CFR Part 8, title VIII of the Civil Rights Act of 1968; 25 U.S.C. 1301-1303.
 14. In part, because of agreements regarding the monies utilized to fund this contract and federal requirements, the Owner has reserved certain rights to licenses and copyrights regarding work developed, or purchases made, relating to said funds.

SECTION 002500
PRE-BID CONFERENCE

PART 1 GENERAL

1.1 Description

- A. The Pre-bid Conference is a formal meeting held and hosted by the Owner, technical support personnel, and the Project Manager to officially convey the vital aspects of the project, bidding process and requirements, and to field the inquiries of potential bidders. In addition to covering the key aspects of the construction project and the bidding formalities prospective bidders will also have an opportunity to visit the project site.
- B. Attendance of prospective bidders at the pre-bid meeting is **not mandatory**.
- C. The pre-bid meeting is scheduled for **Thursday, July 27, 2023 at 10:00 AM PST**.
- D. The pre-bid conference will be held at project site

1 Bay Street, Trinidad, CA

PART 2 PRODUCTS

2.1 Documentation

- A. Contractors attending the pre-bid conference will be provided a formal Agenda and minutes following the meeting. Contractors will be required to sign an official Sign-In Sheet to document attendance.

PART 3 EXECUTION (NOT USED)

SECTION 004000
BID FORM

PROPOSAL OF

(hereinafter called "Bidder"), organized and existing under the laws of the State of California, doing business as

(a corporation, a partnership, an individual, etc.)

to the **Trinidad Rancheria** (hereinafter called "Owner").

In compliance with the Advertisement for Bids, Bidder hereby proposes to perform all work for the completion of the project as described under Section 011000 and all other appurtenant items in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated in the Bid Schedule, also included herein.

By submission of this Bid, the Bidder certifies, and in the case of a joint Bid each party thereto certifies as to Bidder's organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence work under this contract on or before a date, to be specified in the Notice to Proceed, and to fully complete the project within the allocated timeframe. Bidder further agrees to pay as liquidated damages, the sum of \$1,000.00 per calendar day for every day beyond the agreed upon date of completion as provided in the General Provisions (Time for Completion and Liquidated Damages section).

Bid Grand Total Amount:

(Numeric Amount)

(Written Amount)

Bidder agrees to perform all the work described in the Contract Documents for the unit prices or lump sum stated in the Bid Schedule.

Bid Respectfully Submitted:

Date

Bidder

Address

License No.

Expiration Date

Print Name

Title

Signature

SEAL – (if BID is by a corporation)

004100
BID SCHEDULE

Item	Description	Unit	Quantity	Unit Price	Item Total
1	General Conditions	LS	1		
2	Mobilization / Demobilization	LS	1		
3	Erosion Control	LS	1		
4	Temporary Facilities	LS	1		
5	Demolition	LS	1		
6	Building Pad/Slab & Foundation System	LS	1		
7	Misc. Concrete	LS	1		
8	Cultured Stone Veneer (CSV)	LS	1		
9	Framing	LS	1		
10	Shop Fabricated Wood Trusses	LS	1		
11	Wood Base & Shoe Molding	LS	1		
12	Insulation	LS	1		
13	Moisture Protection	LS	1		
14	Siding & Soffit	LS	1		
15	Seamless Gutters & Downspouts	LS	1		
16	Metal Roof System	LS	1		
17	Sun Tunnels	LS	1		
18	Windows & Doors	LS	1		
19	Sheetrock System	LS	1		
20	Ceramic Tile System	LS	1		
21	Epoxy Fluid Applied Flooring	LS	1		
22	Paint, Stain, & Seal	LS	1		
23	Casework	LS	1		
24	Countertops	LS	1		
25	Fire Suppression System	LS	1		
26	Plumbing Rough In	LS	1		
27	Plumbing Finish	LS	1		
28	HVAC	LS	1		
29	Electrical Rough In	LS	1		
30	Electrical Finish	LS	1		
31	½" Type A Hot Mix Asphalt Concrete	LS	1		
32	Utilities Connections	LS	1		
33	Caltrans Type G1 Drop Inlets	LS	1		
34	18" HDPE Storm Drain	LS	1		
35	6" Drain Pipe (Downspout to DI)	LS	1		
36	Connect (N) 18"SD to (E) Drain System	LS	1		
37	Kitchen Equipment	LS	1		
38	Fixtures	LS	1		

Bid Total: _____

SECTION 004300

BID SECURITY

PART 1 GENERAL

1.1 Description

- A. The Bid Guarantee provided by the Contractor is a submittal, with the Bid, affirming that the Contractor has the financial capability to undertake the proposed project.
- B. The Bid Security for this project will need to be provided in one of the acceptable forms listed under Part 2 below and shall be for no less than **five percent (5%)** of the total Bid.

PART 2 PRODUCTS

2.1 Bid Security Types

- A. Per industry standard and applicable regulations there will be four (4) types of acceptable Bid Security for this project. the security types are as follows:
 - a. Bank Certified Check
 - b. Bank Draft
 - c. US Government Bond
 - d. Surety Bid Bond

PART 3 EXECUTION

3.1 Surety Bid Bond

- A. For Surety Bid Bonds a form has been included in this Section to be filled out by the Contractor and provided with the Bid.

SURETY BID BOND FORM

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

_____ as Principal, and

_____ as Surety, are hereby held and firmly bound unto the **Trinidad Rancheria**, as Owner in the penal sum of _____ for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assignees.

Signed, this _____ day of _____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the completion of the **Interpretive Center** as described under Section 011000 of the Contract Documents and all other appurtenant items in strict accordance with the contract documents, within the time set forth therein, and at the prices stated in the Bid Schedule.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation, shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

BY: _____ (Seal)

Surety

BY: _____ (Seal)

IMPORTANT - Surety companies executing BONDS must be authorized to transact business in the state of California.

**SECTION 004500
BIDDER QUALIFICATIONS**

Legal Business Name: _____

D.B.A.: _____

Point of Contact: _____

SSN or EIN: _____

Business Address: _____

City: _____ Telephone: _____

CA State License Number: _____ Type(s): _____

DUNS: _____

How long in business? _____ How many employees? _____

Are you an equal opportunity employer? Yes / No (Circle One)

Are you eligible to perform state or federal government work? Yes / No (Circle One)

Bank Reference:

Insurance carrier:

List three similar construction jobs by name and address completed within the last five (5) years. Provide Point of Contact Name and Number for each job:

List Major Construction projects your organization has under contract on this date (attach additional sheets if needed to fully list current projects):

<u>Project Name</u>	<u>Owner</u>	<u>Contract Amount</u>	<u>% Complete</u>	<u>Scheduled Completion</u>

List the construction experience of the principal individuals of your organization (include designated foreman for this job):

<u>Name</u>	<u>Title</u>	<u>Experience (years)</u>

Conflict of Interest: Are you or any member of your family related to any employee of the Owner or member of the governing board of the Owner?

Yes / No (Circle One) If yes, please explain relationship(s):

Have you ever failed to complete any work awarded to you? Yes / No (Circle One) if yes, attach a description of each occurrence.

Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? Yes / No (Circle One) if yes, attach a description of each occurrence.

Have you received any citation or been assessed penalties for safety violations from any governmental agency? Yes / No (Circle One) if yes, attach a description of each citation.

Have you been fined, penalized, or otherwise found to have violated any prevailing wage or labor code provision within the past five (5) years? Yes / No (Circle One) if yes, attach a description of each occurrence.

Have you had any claims, litigation, or disputes ending in mediation or arbitration, or termination of contract for cause associated with any project in the past five (5) years? Yes / No (Circle One) if yes, attach a description of each instance including details of the total claim amount, settlement amount, and the owner's point of contact name and phone number.

In the last five (5) years has your firm, or any firm with which any of your company's owners, officers, or partners were or are associated with, been debarred, disqualified, removed, or otherwise prevented from bidding on, or completing, any government agency or public works projects for any reason? Yes / No (Circle One) if yes, attach a description of each instance including details and owners' point of contact name and phone number.

In the last five (5) years has your firm been denied an award of a government agency or public works contract based on a finding that your company was not a responsible bidder? Yes / No (Circle One) if yes, attach a description of each instance including details and the owner's point of contact name and phone number.

At any time in the past five (5) years has your firm been assessed and paid liquidated damages after completion of a project, under a construction contract with either a public or private owner? Yes / No (Circle One) if yes, attach a description of each instance including details and the owner's name and phone number.

By signing and submitting this form you are attesting that the information provided is true and correct, to the best of your ability and knowledge. You also acknowledge that deliberate falsification of information submitted under this section can and will be used as grounds for disqualification as a responsible bidder for this project.

Signature of License Holder

Date: _____

Signature of Company Representative (if different)

Date: _____

SECTION 004505
STATEMENT OF QUALIFICATIONS
ALASKA NATIVE OR INDIAN OWNED ENTERPRISES

The undersigned certifies under oath the truth and correctness of all answers to questions made hereinafter:

Applicant wishes to qualify as an "Economic Enterprise" as defined in Section 3(e) of the Indian Financing Act of 1974 (P.L. 93-262); that is: "an Indian-Owned... commercial, industrial or business activity established or organized for the purpose of profit: Provided, that such Indian ownership shall constitute not less than fifty-one percent (51%) of the enterprise", or,

A "Tribal Organization" as defined in Section 4(c) of the Indian Self-Determination and Education Assistance Act (P.L. 93-638); that is: "the recognized governing body of any Indian Tribe; any legally established organization of Indians which is controlled, sanctioned or chartered by such governing body or which is democratically elected by the adult members of the Indian community to be served by such organization and which includes the maximum participation of Indians in all phases of its activities: Provided, that in any case where a contract is let or grant made to an organization to perform services benefiting more than one Indian Tribe, the approval of each such Indian Tribe shall be a prerequisite to the letting or making of such contract or grant..."

1. Legal Name of Enterprise or Organization:

Address:

Telephone No.: _____

Fax No.: _____

2. Check One:

_____ Corporation

_____ Joint Venture

_____ Partnership

_____ Sole Proprietorship

_____ Other (Specify) _____

#

3. If a Corporation, answer the following:

Date of incorporation: _____ State of Incorporation: _____

Give the names and addresses of the officers of the corporation and establish whether they are Indian (I) or Non- Indian (NI).

Name and SS#	I or NI	Title	Address	% of Stock Ownership
		President		
		Vice-President		
		Secretary/Clerk		
		Treasurer		

Complete the following information on any stockholder who is not listed in C above, owning 51% or more of the stock. Establish whether they are Indian (I) or Non-Indian (NI).

Name	Social Security #	I or NI	Address	% of Stock Ownership

Will any officer listed be engaged in outside employment? If yes please provide their name, title, and how many hours per week of outside employment they will be performing.

_____ Yes

_____ No

#

4. If a Sole Proprietorship or Partnership, answer the following:

Date Organization Formerly Created: _____

Give the following information on the individual or partners and establish whether they are Indian (I) or Non-Indian (NI).

Sole Proprietorship:

Name	Social Security #	I or NI	Address

Partnership:

[illegible]

Will any partner listed be engaged in outside employment? If yes please provide their name, title, and how many hours per week of outside employment they will be performing.

_____ Yes

_____ No

#

5. If a joint Venture, provide the following:

Date of Joint Venture Agreement: _____

Attach the following information for each member of the joint venture. Identify the Principal Spokesperson.

Name: _____

Address: _____

Telephone Number: _____

6. Does this enterprise have any subsidiaries or affiliates or is it a subsidiary or affiliate of another concern?

_____ Yes _____ No

If yes, complete the following:

Name and Address of subsidiary, affiliate or other concerns	Description of Relationship

7. Does this enterprise or any person listed above have or intend to enter into any type of agreement with any other concern or person which relates to or affects the on-going administration, management or operations of this enterprise? These include but are not limited to management, and joint venture agreements and any arrangement or contract involving the provision of such compensated services as administrative assistance, data processing, management consulting of all types, marketing, purchasing, production or other type of compensated assistance.

_____ Yes _____ No

If yes, attach a copy of any written agreement or an explanation of any oral or intended agreement.

#

8. Indicate the core crew employees in your work force, their job titles, and whether they are Indian or Non-Indian. Core crew is defined as an individual who is a current bona-fide individual who is regularly employed by the contractor in a supervisory or other key position when work is available.

Core Crew

[illegible]

9. Over the past three years, what has been the average number of employees? _____
10. Attach evidence showing membership in a tribe or other evidence of enrollment in a federally recognized tribe or qualification as a California Indian according to federal law.
11. Attach a certified copy of the charter, articles of incorporation, by-laws, partnership agreement, joint venture agreement and/or other pertinent organizational documentation.

#

Omission of any information may be cause for this statement not receiving timely and complete consideration.

The person(s) signing below certify that all information in the statement, including exhibits and attachments, is true and correct.

Print or type name with applicable signature(s).

If applicant is a Sole Proprietor, sign below:

_____ Name	_____ Signature	_____ Date

If applicant is in a Partnership or Joint Venture, all Partners must sign below, attached additional signature pages, if needed:

_____ Name	_____ Signature	_____ Date

_____ Name	_____ Signature	_____ Date

If applicant is a corporation, affix corporate seal:

_____ Name	_____ President's Signature	_____ Date

Attested by: _____
Corporate Officer Signature

SECTION 004519
NON-COLLUSIVE AFFIDAVIT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of _____

County of _____

_____,
being first duly sworn, deposes and states:

That s/he is, _____
the party making the foregoing proposal for bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not, in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Owner or any person interested in the proposed contract, and that all statements in said proposal for bid are true.

Project Name: _____

Location: _____

(Signature must be notarized)

(Name and title)

(Date)

Subscribed and Sworn (or affirmed) to before me on
this _____ day of _____, 20____
by _____ proved
to me on the basis of satisfactory evidence to be the
person who appeared before me.

Signature of Notary

Seal

SECTION 005100
LETTER OF INTENT TO AWARD
[EXAMPLE]

[Contractor Name and Address]

The **TRINIDAD RANCHERIA** conducted a formal Request for Bids for the **Interpretive Center** Project, in **Trinidad, California**. Proposals were received by **Trinidad Rancheria** until 2:00 PM (PST) on **Tuesday August 15, 2023**. Proposals are a matter of public information.

We are pleased to inform you that your proposal in the amount of:

and a total construction time of: **180** Calendar Days
has been selected by the **Trinidad Rancheria**.

Please prepare and submit by _____ the necessary documentation noted below and contained within the Bidding & Contracting Manual so that we may prepare the Construction Contract and issue a Notice to Proceed to you for this project:

1. Construction Contract Security
2. Certificate of Insurances
3. Tentative Construction Schedule

If you have any questions or need additional information, please feel free to contact

Leslie Sanders, Transportation Manager
Trinidad Rancheria 707 677-0211
lsanders@trinidadrancheria.com

Respectfully,

**SECTION 005200
CONSTRUCTION CONTRACT – Sample**

THIS CONTRACT AGREEMENT IS BETWEEN:

Trinidad Rancheria

Contractor Name

P.O. Box 630

Contractor Address

Trinidad, CA 95570

707-677-0211

Contractor Phone Number

EIN #

FOR THE TRINIDAD RANCHERIA TRIBAL COUNCIL

Department:

Contact Person:

Phone Number:

Brief Description of Contract:

Insert description of project

Contract Number

Fiscal Department

Date

Reviewed By These Departments:

CEO: _____

FISCAL: _____

dated: _____

dated: _____

Independent Contractor Agreement

CONTRACT FOR SERVICES

This Agreement, made this day, _____ between _____ hereinafter called Contractor, and the Trinidad Rancheria, hereinafter called the Tribe, witnesseth:

- 1. Effective Dates.** This Agreement shall become effective as of the date of execution by Tribe, and shall continue until _____, 20____, unless amended or terminated in accordance with the provisions in Articles 19, 20 or 21 of this agreement.
- 2. Independent Contractor.** It is the express intent of the parties that Contractor is an independent Contractor and not any employee, agent, joint venture or partner of the Tribe. Nothing in this Agreement shall be interpreted or construed as creating or establishing the relationship of employer and employee between Tribe and Contractor or any employee or agent of Contractor. All work product developed by Contractor shall be deemed owned and assigned to Tribe. This Agreement is not authority for Contractor to act for Tribe as its agent or make commitments for Tribe. Contractor retains the discretion in performing the tasks assigned within the scope of work specified. Both parties acknowledge that Contractor is not an employee for state or federal tax purposes. Contractor shall retain the right to perform services for others during the term of this Agreement so long as the performance of these services does not interfere or conflict with the completion of the Project.

3. **Taxpayer Identification Number.** Prior to commencing the Project, Contractor must provide Tribe with a valid Employer Identification Number (EIN) from the IRS. If Contractor does not have a valid EIN, Contractor must complete and submit a duly executed Form W-9 to the IRS and obtain an EIN before payment can be made.
4. **Tax Reporting and Filing.** Contractor acknowledges and agrees that he/she shall be responsible (as a self-employed individual) for filing all tax returns, tax declarations, and tax schedules, and for the payment of all taxes required, when due, with respect to any and all compensation earned by Contractor under this Agreement. Tribe will not withhold any employment taxes from compensation it pays Contractor. Rather, Tribe will report the amount it pays Contractor on IRS Forms 1099, to the extent required to do so under applicable Internal Revenue Code provisions and state or local law. Contractor is not the Tribe's employee, and Contractor is responsible for paying all required state and federal taxes.
5. **No Benefits.** None of the benefits, if any, which are provided by the Tribe to its employees, shall be available to Contractor (or his employees, or sub-Contractors, if any, which for purposes of this paragraph shall be included in the term "Contractor").

Contractor's exclusion from benefit programs maintained by Tribe is a material term of the terms of compensation negotiated by the Parties, and is not premised on Contractor's status as a non-employee with respect to Tribe. To the extent that Contractor may become eligible for any benefit programs maintained by Tribe (regardless of the timing of or reason for eligibility). Contractor hereby waives the right to participate in these programs. Contractor's waiver is not conditioned on any representation or assumption concerning Contractor's status under the common law test. Contractor agrees that, consistent with an independent Contractor status, Contractor will not apply for any government-sponsored benefits that are intended to apply to employees, including, but not limited to, unemployment benefits.

6. **Project Covered.** The Tribe hereby engages Contractor to provide the following services, hereinafter called the Project based on _____

Items of work to be provided by contractor will include, but not be limited to, the following:

o **Project Name,**
BIDDING AND CONSTRUCTION DOCUMENTS

7. **Method of Performing Services.** Contractor will determine the method, details and means of performing the above-described services in compliance with the terms of this contract. The Contractor shall provide all services in accordance with applicable, local, tribal, state, federal laws, and the terms and conditions of this agreement.
8. **No Training or Instructions.** Tribe enters into this Agreement based on Contractor's demonstrated ability to perform the type of services that it believes, and that Contractor

has represented, are needed to accomplish the Project. Consequently, the Tribe does not contemplate providing Contractor with any training or instructions with respect to the Project.

9. Employment of Assistants. Contractor may, at Contractor's own expense, employ such assistants, as Contractor deems necessary to perform the services required of Contractor by this Agreement. The Tribe may not control, direct, or supervise Contractor's assistants or employees in the performance of those services. Contractor assumes full and sole responsibility for the payment of all compensation and expenses of unemployment insurance, Social Security, disability insurance and other applicable withholdings. Contractor agrees to provide proof of workers' compensation insurance for assistants he/she engages. Contractor is responsible for acts or omissions of employees, sub-Contractors and other persons performing portions of work under the contract for the Contractor. Contractor agrees to hold Tribe harmless against any and all liabilities attributable to the obligations imposed on Contractor under this Paragraph.

10. Compensation. In consideration for the services to be performed by Contractor, Tribe agrees to pay Contractor a sum not to exceed:

See Contract Item List: Attachment A.

Payment for work rendered by Contractor shall be made payable to Account Number:

11. Method of Payment:

- a) Invoices: Contractor shall submit invoices by the 10th of each month, for all work rendered during the preceding month.
- b) Date for payment of compensation: Invoices received for work completed, and accepted according to terms, conditions, and specifications of this Contract will be processed and checks issued (not to exceed 60 days from the date the invoice is received) by the Trinidad Rancheria Fiscal Department

12. Expenses. Consultant shall be responsible for all costs and expenses incidental to the performance of services to the Tribe, including but not limited to; all costs of equipment provided by Consultant, all fees, fines, licenses, bonds or taxes required of or imposed against Consultant and all other of Consultant's costs of doing business. Tribe shall not be responsible for expenses incurred by Consultant in performing services for Tribe.

13. Equipment, Tools, Materials, or Supplies. Contractor shall provide all equipment, tools, materials, or supplies. Tribe shall not be responsible for expenses incurred by Contractor in performing services for Tribe.

14. Contractor's Business Activities

- (a) Contractor is an independent Contractor and may engage in other business activities at the same time service is provided to Tribe
- (b) Contractor shall not during the term of this Agreement solicit Tribe's employees or accounts on behalf of Contractor or another entity.
- (c) Contractor shall devote such time, attention, and energy to the business and affairs of Tribe as requested by Tribe, and in any event no less that the amount of time required to do a satisfactory completion of the required Project.

15. Confidential Information. Contractor shall not disclose, publish or authorize others to publish design data, trade secrets, drawings, specifications, reports or other information pertaining to the work assigned to Contractor by Tribe. Contractor agrees to refrain from disclosing, during the term of this agreement, or at any time thereafter, any of the information to any third person or persons, or business organizations without the prior written consent of the Tribe.

16. Representations and Warranties. Contractor represents and warrants

- (a) that Contractor has no obligations, legal or otherwise, inconsistent with the terms of this Agreement or with Contractor's undertaking this relationship with Tribe
- (b) that the performance of the services called for by this Agreement do not and will not violate any applicable law, rule or regulation or any proprietary or other right of any third party,
- (d) that Contractor has not entered into or will enter into any agreement (whether oral or written) in conflict with this Agreement.

17. Assignment. The rights of each party under this Agreement are personal to that party and may not be assigned or transferred to any other person, firm, corporation, or other entity without the prior, express, and written consent of the other party.

18. Cooperation of Tribe. Tribe agrees to comply with all reasonable requests of Contractor (and provide access to all documents) reasonably necessary to the performance of Contractor's duties under this Agreement.

19. Termination. Either party may terminate this Agreement upon ten (10) days written notice to the address of the other party contained in this Agreement.

20. Termination by Default or Material Breach. In the case of default or material breach of this Agreement by one Party, the other Party shall have the right to terminate this Agreement with no advance notice, only after providing the breaching Party with notice of the breach and the breaching Party fails to cure the breach within ten (10) days after receipt of the notice of breach. For the purposes of this section, a material breach of this Agreement shall include, but not be limited to the following: failure to provide services as specified, failure to complete project within the time specified in Section 1.

21. Termination for Failure to Make Agreed-Upon Payments. Should Tribe fail to pay Contractor all or any part of the compensation set forth in Article 4 of this Agreement as specified, Contractor may terminate this Agreement if Tribe does not remedy such failure within thirty (30) days of receipt of written notice from Contractor of the breach.

22. Notices. Any notice provided for or concerning this Agreement shall be in writing and be deemed sufficiently given when sent by certified or registered mail to the respective address as set forth in this section:

If to Contractor:

Attn:

If to Tribe:

Trinidad Rancheria

Attn: Chairperson

PO Box 630

Trinidad, CA 95570

Phone: 707-677-0211

23. Indemnification Agreement. The Contractor agrees to protect, defend, indemnify and hold harmless the Trinidad Rancheria, and its officers, employees and agents free and harmless from and against any and all losses, penalties, damages settlements, costs, charges, professional fees or other expenses or liability of every kind and character arising out of or relating to any and all claims, liens, demands, obligations, actions, proceeding or causes of action of every kind and character in connection with or arising directly or indirectly out of this Agreement and/or the performance hereof. Without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged infringement of any patent, trademark, copyright (or application for any therefore) or of any other tangible or intangible statute, ordinance, administrative order, rule or regulation, or decree of any court, shall be included in the indemnity hereunder. The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc., at his sole expense and agrees to bear all other costs and expenses related hereto, even if it (claims, etc.) is groundless, false or fraudulent.

24. Entire Agreement of the Parties. This Agreement supersedes any and all agreements, either oral or written, between the parties hereto with respect to the rendering of services by Contractor for Tribe and contains all the covenants and agreements between the parties with respect to the rendering of such services in any manner whatsoever. Each party to this Agreement acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which is not embodied herein.

25. Sovereign Immunity Not Waived. Notwithstanding any other provision in this Agreement to the contrary, nothing in this Agreement shall be deemed to be a general waiver of the Trinidad Rancheria's sovereign immunity, its officials, its entities, or employees acting within their official or individual capacity from suit, its officials, its which immunity is expressly asserted.

26. Termination for Convenience of the Tribe. The Chairman of the Tribe, by written notice, may terminate this contract subject to Section 20, in whole, or in part, when it is in the Tribe's interest. If this contract is terminated, the Tribe shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

27. Waivers. The failure of either party to this Agreement to insist upon the performance of any of the terms and conditions of this Agreement, or the waiver of any breach of any of the terms and conditions of this Agreement, shall not be construed as thereafter waiving any such terms and condition, but the same shall continue and remain in full force and effect as if no such forbearance or waiver had occurred.

28. Modification of Agreement. Any modification of this Agreement or additional obligation by either party in connection with this Agreement shall be binding only if placed in writing and signed by each party or an authorized representative of each party.

29. Governing Law. This Agreement shall be governed by, construed, and enforced in accordance with the laws and ordinances of the Trinidad Rancheria. The parties hereto agree that all actions and proceedings relating directly or indirectly hereto shall be litigated in the Humboldt County Superior, and the parties expressly consent to the jurisdiction of the Humboldt County Superior Court and to venue therein and consent to service of process in any such action or proceeding by certified registered mail of the summons and complaint therein directed to the parties at their respective addresses set forth in this Agreement. By agreeing to this venue, the Tribe does not waive its sovereign immunity, or its right to raise sovereign immunity as a defense.

30. Headings. The titles to the paragraphs of this Agreement are solely for the convenience of the parties and shall not be used to explain, modify, simplify, or aid in the interpretation of the provisions of this Agreement.

31. Independent Counsel. Contractor acknowledges that they have had the opportunity to consult legal counsel in regard to this Agreement. Contractor has read and understands this Agreement and is fully aware of its legal effect and that Contractor has entered into it freely and voluntarily and based on Contractor's own judgment, and not on any representations or promises other than those contained in this Agreement.

The Parties have duly executed this Agreement as of the date first written above.

Date

Date

END OF SECTION 005200

SECTION 005500
NOTICE TO PROCEED - EXAMPLE

Dated: _____

Project: _____
Owner: _____
Owner's Contract Number: _____
Engineer's Project Number: _____
Contractor: _____
Contractor's Address: _____

You are notified that the Contract times under the above contract are as follows:

Contract Start Date (on or Before)	_____
Contract Time (Calendar Days)	_____
Substantial Completion By	_____
Days to Substantial Completion	_____
Readiness for Final Payment By	_____
Calendar Days to Readiness for Final Payment	_____

Owner (please print or type)

Owner Signature

Date

CC: Trinity Valley Consulting Engineers

SECTION 006100 CONTRACT SECURITY

SECTION 1 GENERAL

1.1 Section Includes

- A. The Construction Contract Security provided by the Contractor is a financial guarantee that the project will be satisfactorily completed at the cost of the bid amount to the Owner.

1.2 Submittals

- A. A Contract Security will be required to be submitted to the Owner in concert with ratification of the Contract Agreement.

1.3 Measurement and Payment

- A. Payment for the Construction Contract Security shall be paid as a lump sum amount, to be billed as an item under the first partial payment request for the project. The amount paid shall reflect the price provided in the Bid Schedule.

SECTION 2 PRODUCTS

2.1 Construction Contract Security Types

- A. Contract Security must be provided at a minimum of 100% of the total amount of the contract including all costs itemized per section 004100 and the cost of the security, if not also itemized per section 004100. The following contract securities are required to meet the construction guarantee for this project:
 - a. A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
 - b. A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

SECTION 3 EXECUTION

- 3.1 Sample forms have been provided under this section, for convenience.

PERFORMANCE BOND FORM

KNOW ALL MEN BY THESE PRESENTS: that

(Name and Address of Contractor)

a _____, hereinafter called Principal, and _____
(Corporation Partnership or Individual) (Name and Address of Surety)

hereinafter called Surety, are held and firmly bound unto the **Trinidad Rancheria**, hereinafter called Owner, in the penal sum of

\$ _____, being one-hundred percent (100%) of the contract amount in lawful money of the United States, for the payment of which sum will and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a contract with the Owner, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the completion of the

including the work as described under Section 011000 of the Contract Manual, and all other appurtenant items in strict accordance with the contract documents, within the time set forth therein, and at the prices stated in the Bid Schedule.

NOW THEREFORE, if the Principal shall, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed there under or the TECHNICAL SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the TECHNICAL SPECIFICATIONS.

PROVIDED FURTHER, that no final settlement between the OWNER and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts one of which shall be deemed an original, this the _____ day of _____, 20____.

(Name of Principal)

(SEAL)

BY: _____
(Signature for Principal)

(Address)

ATTEST: _____
(Principal Secretary)

WITNESS: _____
(Witness as to Principal)

(Address)

BY: _____
(Attorney-in-Fact)

(SEAL)

(Address)

ATTEST: _____
(Surety Secretary)

WITNESS: _____
(Witness as to Principal)

(Address)

NOTE: Date of BOND must not be prior to date of Contract. If Principal is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must be authorized to transact business in the State where the PROJECT is located.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name and Address of Contractor)

a _____, hereinafter called Principal, and _____
(Corporation Partnership or Individual) (Name and Address of Surety)

hereinafter called Surety, are held and firmly bound unto the **Trinidad Rancheria**, hereinafter called Owner, in the penal sum of \$ _____ representing one-hundred percent (100%) of the contract amount, in lawful money of the United States, for the payment of which sum will and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____ 20____, a copy of which is hereto attached and made a part hereof for the completion of the _____ including the work as described under Section 011000 of the Contract Documents, and all other appurtenant items in strict accordance with the contract documents, within the time set forth therein, and at the prices stated in the Bid Schedule.

NOW THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed there under or the TECHNICAL SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the TECHNICAL SPECIFICATIONS.

PROVIDED FURTHER, that no final settlement between the OWNER and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterpart one of which shall be deemed an original, this the _____ day of _____, 20____.

(Name of Principle)

(SEAL)

BY: _____
(Signature for Principal)

(Address)

ATTEST: _____
(Principal Secretary)

WITNESS: _____
(Witness as to Principal)

(Address)

BY: _____
(Attorney-in-Fact)

(SEAL)

(Address)

ATTEST: _____
(Surety Secretary)

WITNESS: _____
(Witness as to Principal)

(Address)

NOTE: Date of BOND must not be prior to date of Contract. If Principal is a Partnership, all partners should execute the BOND.

IMPORTANT: Surety companies executing BONDS must be authorized to transact business in the State where the PROJECT is located.

**SECTION 007200
GENERAL CONDITIONS**

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1.0 DEFINITIONS

- 1.1 Wherever used in the contract documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:
- 1.2 Addenda - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the contract documents, drawings and technical provisions, by additions, deletions, clarifications, or corrections.
- 1.3 Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.
- 1.4 Bidder - Any person, firm or corporation submitting a bid for the work.
- 1.5 Bonds - Bid, Performance, and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the contract documents.
- 1.6 Change Order - A written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the contract documents, or authorizing an adjustment in the contract price or contract time.
- 1.7 Contract Documents - The contract, including Advertisement For Bids, Information For Bidders, Bid, Bid Bond, Agreement, General Provisions, Labor Provisions, Special Provisions, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Change Order(s), Drawings, Technical Specifications, Submittal Requirements, and Addenda.
- 1.8 Contract Price - The total monies payable to the Contractor under the terms and conditions of the Contract Documents.
- 1.9 Contract Time - The number of calendar days stated in the Contract Documents for the completion of the work.
- 1.10 Contract Manager - The person with the Owner's organization who is authorized to administer the contract for the Owner.
- 1.11 Contractor - The person, firm, or corporation with whom the Owner has executed the Agreement.
- 1.12 Contract Manager Representative - The representative of the Contract Manager authorized to deal with the Contractor at the site to administer the technical aspects of the Contract and to assure compliance with the Drawings and Specifications.
- 1.13 Drawings - The part of the contract documents which show the characteristics and scope of the work to be performed.
- 1.14 Engineer – The person, firm, or corporation named as such in the contract documents.
- 1.15 Field Order - A written order effecting a change in the work not involving an adjustment in the contract price or an extension of the contract time, issued by the Owner or Contract Manager to the Contractor during construction.
- 1.16 Notice Of Award - The written notice of the acceptance of the bid from the Owner to the successful Bidder.

- 1.17 Notice To Proceed - Written communication issued by the Owner to the Contractor authorizing him to proceed with the work and establishing the dates of commencement and conclusion of the work.
- 1.18 Owner –**Trinidad Rancheria**
- 1.19 Plans - The part of the contract documents which show the characteristics and scope of the work to be performed and which have been prepared or approved by the Contract Manager. In as far as these contract documents are concerned; the terms Drawings and Plans are synonymous.
- 1.20 Project - The undertaking to be performed as provided in the contract documents.
- 1.21 Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated or installed.
- 1.22 Specifications - A part of the contract documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship. In as far as these contract documents are concerned; the terms Technical Provisions and Specifications are synonymous.
- 1.23 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 at the site.
- 1.24 Substantial Completion - That date as certified by the Contract Manager when the construction of the project is sufficiently completed in accordance with the contract documents, so that the project or specified part can be utilized for the purposes for which it is intended.
- 1.25 Special Provisions - Modifications and additions to General Conditions which may be required by a federal agency for participation in the project, or such requirements that may be imposed by applicable state or local laws, or the Owner's contracting practices.
- 1.26 Supplier - Any person or organization who supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor at the site.
- 1.27 Technical Specifications - A part of the contract documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship. In as far as the contract documents are concerned, the terms Technical Specifications and Technical Provisions are synonymous.
- 1.28 Work - All labor necessary to produce the construction required by the contract documents and all materials and equipment incorporated or to be incorporated in the project.
- 1.29 Written Notice - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the work.

2.0 ADDITIONAL INSTRUCTIONS, DETAIL DRAWINGS ORDER OF PRECEDENCE

- 2.1 The Contractor may be furnished additional instructions and detail drawings, by the Contract Manager as necessary to carry out the work required by the contract documents.
- 2.2 The additional drawings and instruction thus supplied will become a part of the contract documents. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions.
- 2.3 In the event of an inconsistency between provisions of this contract, the inconsistency shall be resolved by giving precedence in the order given in the Special Provisions section of these documents.

3.0 REPORTS AND RECORDS

- 3.1 The Contractor shall submit to the Contract Manager such schedule of quantities and costs, payrolls, reports, estimates, records and other data where applicable as are required by the contract documents for the work to be performed.
- 3.2 The Contractor shall keep all records related to the contract for a minimum of three years after acceptance of the completed work.

4.0 DRAWINGS AND TECHNICAL SPECIFICATIONS

- 4.1 The intent of the drawings and technical provisions is that the Contractor shall furnish all labor, materials, tools, equipment, supervision, and transportation necessary for the proper execution of the work in accordance with the contract documents and all incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the Owner.
- 4.2 In case of conflict between the drawings and technical specifications, the technical specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings.
- 4.3 Any discrepancies found between the drawings and technical specifications and site conditions or any inconsistencies or ambiguities in the drawings or technical specifications shall be immediately reported to the Contract Manager, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

5.0 SITE INVESTIGATION AND CONDITIONS

- 5.1 The Contractor will take steps necessary to ascertain the nature and location of the work, and investigate the general and local conditions which can affect the work or its cost, including but not limited to:
- 5.2 Conditions bearing upon transportation, disposal, handling, and storage of materials;
- 5.3 The availability of labor, water, electric power, and roads;
- 5.4 Uncertainties of weather, river stages, tides, or similar physical conditions at the site;
- 5.5 The conformation and conditions of the ground; and
- 5.6 The character of equipment and facilities needed preliminary to and during work performance. The Contractor also will observe and determine the character, quality, and

quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from the drawings and technical specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Owner.

- 5.7 The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Owner. The Owner does not assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its representatives before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

6.0 SHOP DRAWINGS

- 6.1 The Contractor shall provide shop drawings as may be necessary for the evaluation of the work as required by the contract documents. The Contract Manager will have the drawings promptly reviewed and will recommend approval or disapproval of all shop drawings. Approval of any shop drawing shall not release the Contractor from responsibility for deviations from the contract documents. The approval of any shop drawing which substantially deviates from the requirement of the contract documents shall be evidenced by a change order.
- 6.2 When submitted for review and approval, shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the contract documents.
- 6.3 Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been approved by the Contract Manager. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Owner.

7.0 MATERIALS, SERVICES, AND FACILITIES

- 7.1 It is understood that, except as otherwise specifically stated in the contract documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time.
- 7.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.
- 7.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- 7.4 Materials, supplies, and equipment shall be in accordance with samples submitted by the Contractor and approved by the Contract Manager.

- 7.5 Materials, supplies, or equipment to be incorporated into the work shall not be purchased by the Contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
- 7.6 The Contractor shall promptly remove from the premises all materials rejected by the Contract Manager for failure to comply with the contract documents. The Contractor shall promptly replace the materials with acceptable materials without expense to the Owner.

8.0 SUBSTITUTIONS

- 8.1 Whenever a material, article, or piece of equipment is identified on the drawings or technical specifications by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the contract documents by reference to brand name or catalogue number, and if, in the opinion of the Contract Manager, such material, article, or piece of equipment is of equal substance and function to that specified, the Contract Manager may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the contract price and the contract documents shall be appropriately modified by change order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the contract price or contract time.

9.0 PATENTS

- 9.1 The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer(s) is/are specified. However, if the Contractor has reason to believe that the design, process, or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Contract Manager.

10.0 SURVEYS, PERMITS, REGULATIONS

- 10.1 The Owner shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the work together with a suitable number of bench marks adjacent to the work as shown in the contract documents.
- 10.2 The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.
- 10.3 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise specified in the contract documents. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that

the contract documents are at variance therewith, he shall promptly notify the Contract Manager in writing, and any necessary changes shall be adjusted as provided in Section 012657 -"Change Order Requests".

11.0 LAWS AND REGULATIONS AFFECTING WORK

- 11.1 The Contractor shall at all times observe and comply with Federal, State, Tribal, and County laws, ordinances and regulations which in any manner affect the conduct of the work; and all such orders and decrees as exist at the present and which may be enacted later by legislative bodies or tribunals having legal jurisdiction or authority over the work. No pleas of misunderstanding or ignorance thereof will be considered. The Contractor shall be wholly responsible for any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree.

12.0 TAXES

- 12.1 All materials incorporated into the work are subject to California state sales or use tax.
- 12.2 When materials are delivered to and consumed on Tribal Trust Land, such materials are exempt from state taxation given the Contractor is an Indian Owned organization. The Owner shall provide support to the contractor for exemption status, if and when claimed.

13.0 PROTECTION OF WORK, PROPERTY, AND PERSONS

- 13.1 The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He will take all necessary precautions for the safety of and will provide the necessary protection to prevent damage, injury, or loss to all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto.

14.0 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

- 14.1 The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work sites which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall remove trees only when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound.
- 14.2 The Contractor shall protect from damage all existing improvements and utilities: at or near the work site, and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor.
- 14.3 The existence and location of utilities are not guaranteed by the Owner and shall be investigated and verified in the field by the Contractor before commencing construction activities in any particular area. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the

work. If the Contractor fails or refuses to repair the damage promptly, the Contract Manager may have the necessary work performed and charge the cost to the Contractor.

15.0 OPERATIONS AND STORAGE AREAS

- 15.1 The Contractor shall confine all operations (including storage of materials) to areas authorized or approved by the Contract Manager. The Contractor shall hold and save the Owner and its representatives free and harmless from liability of any nature occasioned by the Contractor's performance.
- 15.2 Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contract Manager and shall be built with labor and materials furnished by the Contractor without expense to the Owner. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. Only with the written consent of the Contract Manager may the buildings and utilities be abandoned and not removed.
- 15.3 The Contractor shall use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contract Manager. In such case, the Contractor shall minimize disruption and delays to traffic in the affected areas. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

16.0 INSURANCE

- 16.1 The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's execution of the work, whether such execution be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
- 16.2 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;
- 16.3 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;
- 16.4 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
- 16.5 Claims for damages insured by usual personal injury liability coverage which are sustained
- 16.6 by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or
- 16.7 by any other person; and
- 16.8 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.
- 16.9 Certificates of Insurance acceptable to the Contract Manager shall be filed with the Contract Manager prior to commencement of the work. These Certificates shall contain a provision that coverage's afforded under the policies will not be canceled unless at least fifteen (15) calendar days prior written notice has been given to the Contract Manager.

- 16.10 The Contractor shall procure and maintain, at his own expense, during the contract time, liability insurance as hereinafter specified;
- 16.11 Contractor's General Public Liability and Property Damage Insurance including vehicle coverage issued to the Contractor and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to any property, arising out of or in connection with any operations under the contract documents, whether such operations be by himself or by any subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a subcontractor under him. Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting there from, sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$500,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 aggregate for any such damage sustained by two or more persons in any one accident.
- 16.12 The Contractor shall procure and maintain, at his own expense, during the contract time, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the project and in case any work is sublet, the Contractor shall require such subcontractor similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under Workmen's Compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.
- 16.13 The Contractor shall secure, if applicable, "All Risk" type Builder's Risk Insurance for work to be performed. Unless specifically authorized by the Contract Manager, the amount of such insurance shall not be less than the contract price totaled in the bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the contract time, and until the work is accepted by the Contract Manager. The policy shall name as the insured the Contractor and the Owner.

17.0 INDEMNIFICATION

- 17.1 The Contractor will indemnify and hold harmless the Owner, his agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting there from; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- 17.2 In any and all claims against the Owner or any of his agents, or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not

be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workmen's compensation acts, disability benefit acts or other employee benefits acts.

- 17.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Owner, his agents, or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or technical specifications.

18.0 CONTRACT SECURITY

- 18.1 If required in the contract documents, the Contractor shall within ten days after the receipt of the Notice of Award furnish the Contract Manager with a Performance Bond and a Payment Bond in penal sums equal to the amount of the contract price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the contract documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the contract documents. Such bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the state in which the work is to be performed. The expense of these bonds shall be borne by the Contractor.
- 18.2 If at any time a surety on any such bond is declared as bankrupt or loses its right to do business in the state in which the work is to be performed, the Contractor shall within ten days after notice from the Contract Manager to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Contract Manager. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Contract Manager.

19.0 ACCIDENT PREVENTION AND SAFETY PROGRAM

- 19.1 The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons, including employees, and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, the requirements set forth below, and any regulations that may be detailed in other parts of these documents. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth herein.
- 19.2 The Contract Manager will notify the Contractor of any observed non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, upon receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Contract Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claims for extension of time, or for excess costs or damages by the Contractor.
- 19.3 The Contractor shall develop and maintain for the duration of this contract, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor

- shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.
- 19.4 The Contractor as a part of his safety program, shall maintain at his office or other well-known place at the job site, safety equipment applicable to the work as prescribed by the aforementioned authorities, all articles necessary for giving first aid to the injured, and shall establish the procedure for the immediate removal to a hospital or a doctor's care of persons who may be injured on the job site.
- 19.5 If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Contract Manager. In addition, the Contractor must promptly report in writing to appropriate authorities and the Contract Manager's representative all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Contract Manager giving full details of the claim.
- 19.6 The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated during the hours of darkness. Suitable warning signs shall be provided to control and direct traffic properly. The Contractor shall erect warning signs in advance of any place on the project where operations may interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road.
- 19.7 Compliance with the requirements of this provision by subcontractors will be the responsibility of the Contractor.

20.0 TEMPORARY SANITARY FACILITIES

- 20.1 The Contractor shall provide and maintain necessary sanitary conveniences for the use of those employed on or about the work properly secluded from public observation in such a manner and at such points as shall be approved by the Contract Manager and their use shall be strictly enforced.

21.0 SUPERVISION BY CONTRACTOR

- 21.1 The Contractor will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

22.0 SUBCONTRACTING

- 22.1 The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, is performed by specialty subcontractors.

- 22.2 The Contractor shall not award work to subcontractor(s) in excess of 67% of the contract price, without prior written approval of the Contract Manager.
- 22.3 The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- 22.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the contract document insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Contract Manager may exercise over the Contractor under any provision of the contract documents.
- 22.5 Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

23.0 SEPARATE CONTRACTS

- 23.1 The Owner reserves the right to let other contracts in connection with this project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. If the proper execution or results of any part of the Contractor's work depends upon the work of any other Contractor, the Contractor shall inspect and promptly report to the Contract Manager any defects in such work that render it unsuitable for such proper execution and results.
- 23.2 The Owner may perform additional work related to the project by him, or he may let other contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such contracts (or the Owner, if he is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his work with theirs.
- 23.3 If the performance of additional work by other Contractors or the Owner is not noted in the contract documents prior to the execution of the contract, written notice thereof shall be given to the Contractor prior to starting any such additional work. If the Contractor believes that the performance of such additional work by the Owner or others involves him in additional expense or entitles him to an extension of the contract time, he may make a claim therefore as provided under the provisions of this bidding and contracting manual.

24.0 DAYS OF WORK, HOURS OF WORK

- 24.1 Regular work shifts shall be eight hours daily Monday through Friday, except on holidays indicated below. Time of beginning and ending the day's work shall be approved by the Contract Manager. The Contract Manager, when in his opinion it is justified, may grant the Contractor permission to work overtime upon written request by the Contractor. When for a good reason short periods of overtime work are required, the Contract Manager may give approval without advance written notice.
- 24.2 Construction work will not be permitted on Saturdays, Sundays, nor on New Year's Day, Martin Luther King's Day, President's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day, nor any other holidays declared by the federal government. When any of the above holidays falls on Saturday and the preceding

Friday is established as a holiday or when any of the holidays fall on Sunday and the following Monday is established as a holiday, no construction will be permitted on those days. The Contract Manager, when in his opinion it is justified, may grant the Contractor permission to work on any of the above days upon written application by the Contractor. Approval shall be required at least forty-eight (48) hours in advance.

25.0 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- 25.1 The time for completion of the work is an essential condition of the contract documents. The time for completion appears in the Agreement. The work embraced shall be commenced on a date specified in the notice to proceed.
- 25.2 The Contractor will proceed with the work at such rate of progress to insure full completion within the time for completion. It is expressly understood and agreed, by and between the Contractor and the Owner, that time for completion of the work under the contract is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.
- 25.3 If the Contractor shall fail to complete the work within the time for completion, or extension of time granted by the Contract Manager, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the contract documents for each calendar day that the work shall be incomplete after the date established by the time for completion. Liquidated Damages for this contract shall be one thousand dollars **(\$1,000.00) US Currency per calendar day.**
- 25.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the Contractor has promptly given written notice of such delay to the Contract Manager.
 - 25.4.1 To any preference, priority, or allocation order duly issued by the Contract Manager.
 - 25.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and
 - 25.4.3 To any delays of subcontractors occasioned by any of the causes specified in paragraphs 25.4.1 and 25.4.2 of this article.

26.0 PROGRESS SCHEDULES AND REQUIREMENTS FOR COMPLIANCE

- 26.1 The Contractor shall, within ten days of receipt of notice to proceed, submit to the Contract Manager for approval a practicable schedule, showing the order in which the Contractor proposes to carry on the work, the dates on which he will start the major items of work (including procurement of materials, plant and equipment) and the contemplated dates for completing the same.
- 26.2 If, in the opinion of the Contract Manager, the Contractor falls behind the progress schedule, the Contractor shall take such steps as may be necessary to assure performance within the allowable time for completion. The Contractor may propose for approval by the Contract Manager measures such as increasing the number of workers, number of shifts, or overtime operations, days of work, or the amount of construction plant, or all of them. The Contract Manager may require the Contractor to submit for approval such supplementary schedule or

schedules necessary to demonstrate that the work shall be performed within the allowable time for completion, all without additional cost to the Owner.

- 26.3 Failure of the Contractor to comply with the requirements of this provision shall be grounds for determination that the Contractor is not prosecuting the work with such diligence as will insure completion within the specified time for completion. Upon such determination the Contract Manager may terminate the Contractor's right to proceed with the work, or any separable part thereof in accordance with Section 28 entitled "Suspension of Work, Termination, and Delay".

27.0 LAND AND RIGHTS-OF-WAY

- 27.1 Prior to issuance of the notice to proceed, the Owner shall obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the contract documents, unless otherwise mutually agreed.
- 27.2 The Contract Manager shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.
- 27.3 The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

28.0 SUSPENSION OF WORK, TERMINATION, AND DELAY

- 28.1 The Contract Manager may suspend the work or any portion thereof for a period of not more than ninety (90) calendar days or such further time as agreed upon by the Contractor, by written notice to the Contractor which notice shall fix the date on which work shall be resumed. The Contractor will resume that work on the date so fixed. The Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to any suspension.
- 28.2 If the Contractor is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to subcontractors or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the work or if he disregards the authority of the Contract Manager, or if he otherwise violates any provision of the contract documents, then the Contract Manager may, without prejudice to any other right or remedy and after giving the Contractor and his surety a minimum of fourteen (14) calendar days from delivery of a written notice, terminate the services of the Contractor and take possession of the project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and finish the work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price exceeds the direct and indirect costs of completing the project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor will pay the difference

- to the Owner. Such costs incurred by the Owner will be determined by the Contract Manager and incorporated in a change order.
- 28.3 Where the Contractor's services have been so terminated by the Contract Manager, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies by the Owner due the Contractor will not release the Contractor from compliance with the contract documents.
- 28.4 After fourteen (14) calendar days from delivery of a written notice to the Contractor, the Contract Manager may without cause and without prejudice to any other right or remedy, elect to abandon the project and terminate the contract. In such case, the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit.
- 28.5 If, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) calendar days by the Contract Manager or under an order of court or other public authority, or the Contract Manager fails to act on any request for payment within thirty (30) calendar days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Contract Manager or awarded by arbitrators within thirty (30) calendar days of its approval and presentation, then the Contractor may, after fourteen (14) calendar days from delivery of a written notice to the Contract Manager, terminate the contract and recover from the Owner payment for all work executed and all expenses sustained. In addition and in lieu of terminating the contract, if the Contract Manager has failed to act on a request for payment or if the Owner has failed to make any payment as aforesaid, the Contractor may, upon fourteen (14) calendar days written notice to the Contract Manager, stop the work until he has been paid all amounts then due, in which event and upon resumption of the work, change orders shall be issued for adjusting the contract price or extending the contract time or both to compensate for the costs and delays attributable to the stoppage of the work.
- 28.6 If the performance of all or any portion of the work is suspended, delayed, or interrupted as a result of a failure of the Contract Manager to act within the time specified in the contract documents, or if no time is specified, within a reasonable time, an adjustment in the contract price or an extension of the contract time, or both, shall be made by change order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Contract Manager.

29.0 INSPECTION AND TESTING

- 29.1 All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the contract documents.
- 29.2 The Owner shall provide any inspection and testing services beyond those required by the contract documents.
- 29.3 The Contractor shall provide at his expense the testing and inspection services required by the contract documents.
- 29.4 If the contract documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will give the Contract Manager timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing, or approval.

- 29.5 Inspections, tests, or approvals by the Contract Manager or others are for the sole use of the Owner and shall not relieve the Contractor from his obligations to perform the work in accordance with the requirements of the contract documents.
- 29.6 The Contract Manager and his representatives will at all times have access to the work. In addition, authorized representatives and agents of any participating federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection, or testing thereof.
- 29.7 If any work is covered contrary to the written instructions of the Contract Manager it must, if requested by the Contract Manager, be uncovered for his observation and replaced at the Contractor's expense.
- 29.8 If the Contract Manager considers it necessary or advisable that covered work be inspected or tested by others, the Contractor, at the Contracting Manager's request, will uncover, expose or otherwise make available for observation, inspection or testing that portion of the work in question, furnishing all necessary labor, materials, tools and equipment. If it is found that such work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such work is not found to be defective, the Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.

30.0 CORRECTION OF WORK

- 30.1 The Contractor shall promptly remove from the premises all work rejected by the Contract Manager for failure to comply with the contract documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the Owner and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.
- 30.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within fourteen (14) calendar days after receipt of written notice, the Owner may remove such work and store the materials at the expense of the Contractor.

31.0 CHANGES IN THE WORK

- 31.1 The Contract Manager may at any time, as the need arises, order changes within the scope of the work without invalidating the Agreement. If such changes increase or decrease the amount due under the contract documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by change order.
- 31.2 The Contract Manager also may, at any time, by issuing a field order, make changes in the details of the work. The Contractor shall proceed with the performance of any changes in the work unless the Contractor believes that such field order entitles him to a change in contract price or time, or both, in which event he shall give the Contract Manager written notice thereof within seven (7) calendar days after the receipt of the ordered change. Thereafter the Contractor shall document the basis for the change in contract price or time within thirty (30)

calendar days. The Contractor shall not execute such changes pending the receipt of an executed change order or further instruction from the Contract Manager.

32.0 CHANGES IN CONTRACT PRICE

- 32.1 The contract price may be changed only by a contract change order. The value of any work covered by a change order or of any claim for increase or decrease in the contract price shall be determined by one or more of the following methods in the order of precedence listed below:
 - 32.2 Unit prices previously approved.
 - 32.3 An agreed lump sum.
 - 32.4 The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed 15% of the actual cost of the work to cover the cost of general overhead and profit.

33.0 DIFFERING SITE CONDITIONS

- 33.1 The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Contract Manager by written notice of:
 - 32.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the contract documents; or
 - 32.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract documents.
- 33.2 The Contract Manager shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment shall be made and the contract documents shall be modified by a change order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given the required written notice; provided that the Contract Manager may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

34.0 USE AND POSSESSION PRIOR TO COMPLETION

- 34.1 The Owner shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contract Manager shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the Owner intends to take possession of or use. However, failure of the Contract Manager to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The Owner's possession or use shall not be deemed an acceptance of any work under the contract.
- 34.2 While the Owner has such possession or use, the Contractor shall be relieved of the responsibility for the loss of or damage to the work resulting directly from the Owner's possession or use. If prior possession or use by the Owner delays the progress of the work or causes additional expense to the Contractor, an adjustment shall be made in the contract price, the time of completion or both, and the contract shall be modified in writing accordingly.

35.0 RECORD DRAWINGS

- 35.1 Record Drawings shall be prepared by the contractor and shall include: all information shown on the Contractors drawings and all deviations, modifications or changes from those drawings, however minor, which were incorporated in the work; all additional work not appearing on the contract drawings; and any changes made after the final inspection.
- 35.2 Record drawing shall be kept current and available on the job site at all times. No construction work shall be concealed until the necessary data has been recorded.
- 35.3 Record drawings will be jointly inspected for accuracy and completeness by the Contract Manager or his representative at, or just prior to, the contractor submitting requests for payment. Incomplete drawings will be corrected before payment approval is recommended (Reference section 40, "Payments to Contractor")
- 35.4 Record drawings shall accurately show, using details, notes, etc., the following information:
- a. The project number, contract number, community name, and other relevant general information.
 - b. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.
 - c. The location and dimensions of any changes from the contract drawings.
 - d. Changes in design details or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans, and placing details, pipe sizes, insulation materials, dimensions, or equipment foundations, etc.
 - e. The location and description of all buried facilities installed by the contractor including at least two ties to permanent features and bury depth of major components, fittings, appurtenances, and change of direction of pipelines.
 - f. All changes or modification which results from the final inspection.
 - g. All information as required in the technical specifications.
- 35.5 One copy of the Record Drawings shall be delivered to the Contract Manager with the Contractor's written request for final inspection. The Contract Manager will expedite drawings review and will provide written approval or disapproval prior to the final inspection. If the Record Drawings are disapproved, they will be returned to the Contractor for further work and re-submittal. Final payment will not occur until an approved set of drawings is received.

36.0 CLEANUP AND FINISH GRADING

- 36.1 The Contractor shall restore all areas disturbed by construction to a condition at least equal to that existing prior to construction. Excess construction materials, equipment, tools, waste excavation, and rubbish shall be removed. Excavated areas shall be finish graded to provide drainage as required by the drawings and technical specifications, or in the absence of specific requirements, to provide drainage away from the facilities constructed and to restore original drainage patterns in existence prior to construction and to provide drainage away from excavated areas and installed facilities.

37.0 MEASUREMENT AND PAYMENT

- 37.1 Completed items of work shall be measured and paid for in accordance with the requirements listed in the bid schedule and any subsequent approved change orders. Payment shall be based on the actual quantities completed and shall represent full compensation under the contract. The price paid for the completed item of work shall include full compensation for furnishing all labor, materials, (other than that furnished by the Owner), tools, equipment, and performing all work required by the provisions of the contract to furnish and install the item of work, complete in place. In all cases, the finished product shall be a complete, operational system or component.

38.0 VARIATION IN ESTIMATED QUANTITIES

- 38.1 If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 25% above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 125% or below 75% of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Contract Manager within fourteen (14) calendar days from the beginning of the delay, or within such further period as may be granted by the Contract Manager before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Contract Manager shall ascertain the facts and make any appropriate adjustment for extending the completion date.

39.0 FINAL INSPECTION

- 39.1 Final inspection will be made by the Owner when the Contractor advises that all materials have been furnished, all the work has been performed, and all the construction provided for by the contract has been completed in accordance with its terms. The Contractor shall submit a written request to the Owner at least seven (7) calendar days before the requested final inspection date.
- 39.2 If a re-inspection or re-test is required because of uncompleted work, the Owner may charge the Contractor for re-inspection costs.
- 39.3 The Owner will provide written acceptance when all materials, work or other requirements of the drawings, specifications and contract are furnished or completed. The written acceptance will include the date the work is determined to be complete, and until such acceptance, the Contractor will be responsible for all work performed and materials delivered.

40.0 PAYMENTS TO CONTRACTOR –

PER TRINIDAD RANCERIA PROCUREMENT POLICY AND CONTRACT

- ~~40.1 The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved breakdown of the contract price. Such estimates shall be submitted no later than fourteen (14) calendar days in~~

~~advance of the date set for payment. Submittals are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Engineer prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each project. The PHA will retain five (5) percent of the amount of progress payments in accordance with SB293 Section 7201 and three (3) percent of the amount of progress payments per TERO making the total retention deductions from each payment request eight (8) percent until completion and acceptance of all work under the contract; except, that if upon completion of fifty (50) percent of the work, the Contracting Officer, after consulting with the Engineer, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed (minus the 3% TERO tax which is to remain in effect for the duration of the project and for the contract amount in its entirety, including any change orders). If the Contracting Officer subsequently determines that the Contractor's performance and progress become unsatisfactory, the PHA shall reinstate the five (5) percent retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.~~

- ~~40.2 The Owner reserves the right to withhold 2.5% of the total Contract Amount as retention for the twelve (12) month warranty period from completion of the project as indicated as the date of the letter of Substantial Completion."~~
- 40.3 Upon completion and acceptance of the work, the Contract Manager shall issue a certificate attached to the final payment request that the work has been accepted by him under the conditions of the contract documents. Within thirty (30) calendar days of completion and acceptance of the work, the Owner shall pay the entire balance found to be due the Contractor including the retained percentages, but except such sums as may be lawfully retained by the Owner, shall pay the entire balance found to be due the Contractor including the retained percentages, but except such sums as may be lawfully retained by the Owner.
- 40.4 The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the work. The Contractor shall, at the Contract Manager's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so the Contract Manager may, after having notified the Contractor, either arrange payment for unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the contract documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the contract documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.
- 40.5 If the Owner fails to make payment in forty-five (45) calendar days after approval by the Contract Manager, in addition to other remedies available to the Contractor, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the Contractor.

41.0 ASSIGNMENTS

- 41.1 Neither the Contractor nor the Owner shall sell, transfer, assign or otherwise dispose of the contract or any portion thereof, or of his right, title or interest therein, or his obligations there under, without written consent of the other party.

42.0 GUARANTY

- 42.1 The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the systems resulting from such defects. The Contract Manager will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The performance bond, if required, shall remain in full force and effect through the guarantee period.

43.0 ACCEPTANCE OF FINAL PAYMENT AS RELEASE

- 43.1 The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically accepted by the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the contract documents or the performance and payment bonds.

44.0 CONTRACT MANAGER'S ROLE AND AUTHORITY

- 44.1 The Contract Manager or his designee shall act as the Owner's representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and work performed. He shall interpret the intent of the contract documents in a fair and unbiased manner. The Contract Manager will make visits to the site and determine if the work is proceeding in accordance with the contract documents.
- 44.2 The Contractor will be held strictly to the intent of the contract documents in regard to the quality of materials, workmanship and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.
- 44.3 The Contract Manager will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.
- 44.4 The Contract Manager does not have authority to obligate the Owner to change in the terms of the contract without the approval of the Owner.

45.0 RESOLUTION OF DISPUTES

- 45.1 All claims, disputes and other matters in question arising out of, or relating to, the contract documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 43, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.
- 45.2 Notice of the demand for arbitration shall be filed in writing with the other party to the contract documents and with the American Arbitration Association. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.
- 45.3 The Contractor will carry on the work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

46.0 EQUAL EMPLOYMENT OPPORTUNITY

- 46.1 During the performance of this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
- 46.2 The Contractor shall take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeships.
- 46.3 The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- 46.4 The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants shall receive consideration for employment without regard to race, color, religion, sex, or national origin.
- 46.5 The Contractor shall send, to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the Contractor's commitment under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- 46.6 The Contractor shall comply with all provisions of Executive Order No. 11246, as amended, and the rules, regulations, and relevant orders of the Secretary of Labor.
- 46.7 The Contractor shall furnish to the Contract Manager, all information required by Executive Order No. 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. Standard Form 100 (EEO - 1), or any successor form, is the prescribed form to be filed within thirty (30) calendar days following the award, unless filed within 12 months preceding the date of award.
- 46.8 The Contractor shall permit access to its books, records, and accounts by the Owner, Owner's representatives or the Office of Federal Contract Programs (OFCCP) for the purposes of investigation to ascertain compliance with the applicable rules, regulations, and orders.
- 46.9 If the OFCCP determines that the Contractor is not in compliance with this clause or any rules, regulations, and orders of the Secretary of Labor, this contract may be canceled,

terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further contracts.

- 46.10 The Contractor shall include the terms and conditions of this section in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order No. 12246, as amended, so that such provisions will be binding upon each subcontractor or vendor.
- 46.11 The Contractor shall take such action with respect to any subcontract or purchase order as the Contract Manager may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Contract Manager, the Contractor may request the Owner and the United States to enter into such litigation to protect the interests of the United States.

47.0 CLEAN AIR AND WATER

- 47.1 The Contractor agrees to comply with all the requirements of section 114 of the Clean Air Act (42 U.S.C. 7414) and section 308 of the Clean Water Act (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Clean Air Act and the Clean Water Act, and all regulations and guidelines issued to implement those acts before the award of this contract.
- 47.2 The Contractor agrees that no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of the facility from the listing.
- 47.3 The Contractor agrees to use best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed.
- 47.4 The Contractor agrees to insert the substance of this clause into any nonexempt subcontract.

48.0 INDIAN PREFERENCE

- 48.1 The Contractor agrees:
- 48.5.1 To give preference in employment opportunities under this contract to the greatest extent feasible to Indians who can perform the required work, regardless of age (subject to existing laws and regulations), sex, religion, or Tribal affiliation. To the maximum extent feasible and consistent with the efficient performance of this contract, the Contractor further agrees to give preference to the greatest extent feasible in employment and training opportunities under this contract to Indians who are not fully qualified to perform regardless of age (subject to existing laws and regulations), sex, religion, or tribal affiliation.
- 48.5.2 The Contractor also agrees to give preference to Indian Organizations and Indian-owners economic enterprises in the awarding of any subcontracts to the greatest extent feasible and consistent with the efficient performance of this contract. The Contractor shall maintain statistical records as are necessary to indicate compliance with this paragraph.
- 48.2 In connection with the Indian employment preference requirements of this clause, the Contractor shall provide opportunities for on-the-job training incident to such employment that will increase the vocational effectiveness of an Indian employee.

- 48.3 If the Contractor is unable to fill its employment and training opportunities after giving full consideration to Indians as required by this clause, those needs may be satisfied by selection of persons other than Indian in accordance with applicable fair employment practices.
- 48.4 If no Indian organizations or Indian-owned economic enterprises are available under reasonable terms and conditions, including price, for awarding of subcontracts in connection with the work performed under this contract, the Contractor agrees to comply with the provisions of this contract by applying fair, competitive contracting practices.
- 48.5 As used in this clause:
- 48.5.1 The term "Indian" means a person who is a member of an Indian Tribe or qualifies as a California Indian according to federal law. If the Contractor has reason to doubt that a person seeking employment preference is an Indian, the Contractor shall grant the preference but shall require the individual to provide evidence within 30 days from start of employment.
- 48.5.2 The term "Indian Tribe" means an Indian Tribe, pueblo, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688; 43 U.S.C. 16311) which is recognized as eligible for the special programs and services provided by the United States to Indian because of their status as Indians.
- 48.5.3 The term "Indian Organization" means the governing body of any Indian Tribe or entity established or recognized by such governing body in accordance with the Indian Financing Act of 1974 (88 Stat. 77; 25 U.S.C. 1451); and,
- 48.5.4 The term "Indian-owned Economic Enterprise" means any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, provided that such Indian ownership shall constitute not less than 51% of the enterprise, and that ownership shall encompass active operation and control of the enterprise.

END OF SECTION 007200

SECTION 007343
WAGE RATE REQUIREMENTS

SECTION 1 GENERAL

- 1.1 Federal Department of Labor prevailing wages are applicable for this project per the Davis-Bacon Act of 1931.
- 1.2 The wage determination of the Secretary of Labor will need to be administered for this project. The Contractor will be required to provide a Wage Rate Schedule just prior to the signing of the contract for work.
- 1.3 The Contractor can obtain the current minimum prevailing wage rates at www.wdol.gov. Applicable rates are for:

State:	California
County:	Humboldt
Construction Type:	Building
WD Number:	CA20230005

SECTION 2 PRODUCTS

- 2.1 Not used.

SECTION 3 EXECUTION

- 3.1 Not used.

End of Section 007343

SECTION 009100 ADDENDA

PART 1: GENERAL

1.1 Description

- A. Addenda shall be defined as a document that provides supplement, appendix, clarification, or addition to the bidding and contracting documents.
- B. Addenda will be the only official modification means to be implemented during the pre-bid timeframe of the project.
- C. All potential bidder submitted requests for clarification and interpretation during the pre-bid time of the project, including submissions provided during the pre-bid conference will be addressed via addenda.
- D. The final addenda will be released no less than three (3) business days prior to the date of bid. All requests submitted following the official date of release of the final addenda will be collected by the Owner with the intention of address following bidding and prior to issuance of a contract.
- E. If a request is received following release of the final addenda that warrants clarification prior to bidding then the due date for bids can be postponed at the Owner's discretion. All other requests received following release of the final addenda will be addressed with the successful bidder prior to ratification of the contract.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

- 3.1 The following is an example Addendum form similar to the one that will be provided for this contract.

Addendum Number _____

Date: _____

Project: _____

Owner: _____

This addendum provides changes and/or clarifications, to the Contract Documents. These modifications pertain to the sections referenced below and to all other referenced or applicable sections in the Contract Documents.

Please sign the addendum receipt acknowledgment form and return to the Owner with your cost proposal and other required forms and documents.

Changes and/or clarifications to the bidding and contracting documents are as follows:

1.

Addendum Receipt Acknowledgement Form

Receipt of Acknowledgement:

My firm received Addendum No. _____, consisting of _____ pages, for the

Project on _____, 20____.

Name of Firm _____

Name (Print) _____

Name (Signature) _____

Date: _____

END OF SECTION 009100

DIVISION 01
GENERAL REQUIREMENTS

**SECTION 011000
SUMMARY OF WORK**

PART 1 GENERAL

1.1 CONTRACTOR RESPONSIBILITY

- 1.** Contractor responsibility for each item of work for the project includes provision of all labor, equipment, materials, supervision, and all other pertinent items of interest required to competently and satisfactorily complete each task.

1.2 Item Pricing

- 1.** Contractor to include total cost for labor, equipment, materials, project superintendent, **supervision, incidentals, general conditions, overhead, and profit in each item of the Bid Schedule as is applicable.**

1.3 MEASUREMENT AND PAYMENT

- 1.** Measurement and payment for all work to be in accordance with the contract Bid Schedule (refer to Section 004100) and actual work as field measured and verified. All payments to be made following field verification by the Engineer of completed work, and submittal of:
 1. Periodic Estimate for Partial Payment,
 2. Contractor Certification for Partial Payment,
 3. Revised Construction Schedule,
 4. Subcontractor and Major Suppliers Un/conditional Releases.
- 2. The owner may increase, decrease or eliminate any item due to available funding.**

1.4 WORK ITEMS BRIEF DESCRIPTION

1. Mobilization/Demobilization

1. Measurement and payment for mobilization/demobilization will be determined based on the percentage of all other completed tasks. Payment for this item will be in the same percentage as the invoiced percentage of the total original contract amount, as determined per invoice.
2. Final invoice and payment to include no less than ten percent (10%) of the total amount of this bid item.
3. Item to cover cost of mobilizing and demobilizing of all equipment, personnel, and materials to/from the site for the duration of the project and as needed in order to complete the project.
4. Mobilization/Demobilization cost is to be for primary activities. Subsequent mobilizations to the site not expressly caused by alterations or modifications to the contract Scope of Work, or otherwise justified by unforeseen causes will not be considered for additional compensation or extension of contract time.

2. Erosion Control

1. Prior to conducting any work incorporating the use or application of Concrete or mortar for the site the Contractor will need to install a concrete washout. The washout will need to be inspected and approved by the Engineer prior to concrete work beginning.

Alternate methods of concrete containment may be entertained but any such system will need to be presented as Value Engineering per Section 012400 and approved prior to implementation.

2. **Street Sweeping and Cleaning:** The Contractor is to implement a street sweeping and cleaning schedule for the duration of the project. The existing frontage improvements, including but not limited to existing curb & gutter, and paved roadways are to be kept free of debris. Material tracked onto the frontage improvements during construction activities, such as moving vehicles and equipment on and off the site, are to be cleaned at the end of each workday. Hand broom sweeping and washing will be acceptable for minor material removal. Street sweeping with mechanical equipment will need to be conducted at least once a week to address any materials tracked onto existing improvements.
3. Existing storm water drain inlets are to be protected with gravel bags as shown on plan set or alternate system as submitted by the Contractor and approved by the Engineer.
4. **Item to include final erosion control consisting of seeding and straw mulching of all exposed soils.**

3. Demolition

1. Demolition work to include but not limited to the following. Removal of existing sheds, removal of existing concrete and asphalt surfaces.
2. Utility locations as shown on the plans are to be used as a reference. Contractor is responsible for the location and protection of all existing utilities (above or below ground).
3. **Existing buildings sheds to be relocated on Rancheria Property.**

4. Temporary Facilities

1. The project location on the property of the Trinidad Rancheria. Access to the project site is limited to existing travel ways.
2. Restroom facilities will need to be provided and maintained for the duration of the project.
3. Temporary fencing will need to be implemented for the site including the area for stockpiled materials and equipment.
4. Securable containers for tools and security fencing to remain on site are highly recommended.
5. Electricity will need to be provided by the Contractor via portable generators or, temporary construction service from Pacific Gas and Electric (PG&E). It is the Contractor's responsibility to coordinate with PG&E for temporary electricity.
6. Water will need to be provided by the Contractor. Watering of soils for compaction and dust control will need to be provided by the Contractor.
7. Additional temporary facilities, as determined to be necessary by the Contractor must also be provided and paid for under this bid item. No allowance will be made for additional temporary facilities' cost following bidding unless such facilities are directly caused by a change in the contract scope and identified as such under an official change order approved by both the Contractor and the Owner.

5. Building Pad/Slab and Foundation System

1. Building pad will need to be cleared of all conflicts, shaped and compacted to accommodate the proposed foundation system. All over-excavated areas of the building pad scheduled to receive concrete will need to be backfilled with Class 2 AB and compacted to a minimum of ninety-five percent as field verified per ASTM D1557.
2. The building pad is to span no less than five feet beyond the exterior wall of the proposed foundation system for conformity and compaction. Foundation system footprint to include entry PCC pad areas.
3. Item to include all excavation, forming, reinforcing bars, anchors, aggregate base, concrete, and incidentals necessary for the slab-on-grade foundation, per plan. Foundation installer to coordinate with other trades to have all necessary mechanical and plumbing equipment and conduits in place prior to PCC install.
4. Aggregate base for foundation will need to be tested for compaction and moisture prior to PCC install. Testing will be provided by the Owner and performed by the Engineer in strict compliance with ASTM D1557. Repeat testing for failed compaction and/or moisture will be at the expense of the Contractor with no additional cost to the Owner and no allowance for additional contract time.
5. Reinforcing bar inspection to occur prior to scheduling PCC delivery. Owner will provide and Engineer will perform reinforcing bar inspection.

6. Misc Concrete

1. Item to include all concrete work required for the three entries (main, employee, and service) for the building. All concrete work to have #4 reinforcing bar at twenty-four inches on center maximum spacing unless otherwise detailed in the development plans.
2. Entry PCC decks to be a minimum of 5.5" thick. All entry PCC decks to have 12" wide and deep thickened edges on all sides accept the side that abuts the building.
3. All concrete work to be placed over six inches (minimum) of Class 2, ¾"- aggregate base.
4. All exposed concrete to be broom finished.
5. All exposed edges to be chamfered ½" typical.
6. Simpson Column Bases to be wet set.
7. Entry concrete work to also include all flat work around the entries not expressly included as PCC sidewalk under other bid items.
8. Item includes all work and materials to build all PCC sidewalks for the project per plans.
9. All sidewalks are to be built over Class 2 aggregate base (AB depths per plan). All sidewalk AB will need to be mechanically compacted. Compaction and moisture testing to occur prior to reinforcing bar and PCC placement.
10. All sidewalks to be broom finished. All exposed corner edges of sidewalks to be chamfered ½" radius typical.
11. Sidewalks to be built with deep expansion joints at five foot on center maximum spacing.

12. Utility crossings under sidewalks are to be marked either in the top of the vertical curb (when present) or in the top of the sidewalk near the edge closest to the origin of the utility. Utility markings are to be as follows:
 - i. "S" : Sanitary Sewer
 - ii. "W": Water (Domestic and Fire Suppression)
 - iii. "I" : Water - Irrigation
 - iv. "E": Electric
 - v. "T": Telecommunications
 - vi. "E/T": Electric & Telecommunications joint trench

7. Cultured Stone Veneer (CSV)

1. This item to include cultured stone veneer (CSV) as manufactured by Owens Corning Cultured Stone to match surrounding buildings.
2. Main Stone – Bucks Country Dressed Fieldstone (CSV-2030)
3. Architectural Stone Trim / Cap Stones to be Taupe
4. CSV exterior siding to be installed for the building and the main entrance columns. CSV to include all required layers, sublayers, and underlayment. Drainage Mat to be provided over weather barrier and under metal lath.
5. Work and payment for sealing (water protection) CSV to be included under the Stain and Seal bid item.
6. Installer to coordinate CSV install with other impacted or effected trades including coordination for install of all anchors, substrates, underlayment, moisture barriers, lintels, weeps and vents, and all other items not expressly itemized but generally required for such work.

8. Framing

1. Item to cover all rough framing and sheathing for the total building system including all of the entrances.
2. All walls, interior and exterior to be 2x4 at 16" on center. All walls to be installed with single bottom plate and two (2) top plates. Wall heights per plan. Include all fire blocking, opening framing, seismic connections, temporary framing/bracing, and all other carpentry work necessary for the project. Roof framing to include all work needed to complete roof system incorporating shop fabricated wood trusses.

9. Shop Fabricated Wood Trusses

1. Building roof system to be built using Shop fabricated wood trusses.
2. Contractor to procure, deliver, and install all needed trusses.
3. All trusses to be procured from a single source new for this project.
4. Contractor to provide submittals and receive Owner approval for trusses prior to ordering.
5. Cost for blocking, bracing, rake framing, and all other onsite carpentry work to install trusses to be included under Framing Bid Item.

10. Wood Base and Shoe Molding

1. No MDF is to be used on this project.

2. Pine baseboard is to be provided throughout. Pine baseboard is to be Colonial O.G. or similar style (as approved by the Owner) and be the same throughout all rooms.
3. All baseboard will need to be primed and painted following installation. All cuts and areas removed of manufacturer applied primer to be replaced prior to painting. All board to receive no less than two coats of paint. Note: priming and painting board cost to be included in "Paint, Stain, & Seal" bid item. All baseboard and trim will need to be caulked and sealed around all edges prior to painting. Baseboard corner transitions to match corner type (i.e.: bull nose corners to have bull nose base transitions, square corners to have baseboard squared at corner angle).
4. Trim to be for all trim, both inside and outside of building. Interior trim to be finger-jointed pine, pre-primed Colonial O.G. or similar style (as approved by the Owner). Exterior trim to be cement fiber board. Exterior trim to be a minimum of ¾"x6".
5. Sub-fascia boards are to be included under this item. Fascia boards are to be cement fiber board (included under Siding and Soffit bid item) over 2x6 pine. Pine is to be primed and painted prior to cement fiber board install. Cement fiber board to be primed and painted prior to gutter install. Cement fiber board fascia to be cut to size to cover the 2x6 sub-fascia and overlap the edge of the cement fiber soffit.

11. Insulation

1. All insulation to be bat or approved equal alternate. Insulation R factors to be per plan (minimum R21 in all exterior walls, R30 in ceiling, & acoustic board in all interior walls) unless otherwise noted on the plans.
2. Baffles are to be installed in all locations that insulation runs in conflict with vents. Ceiling baffles are to be 2x6" and provide a minimum of 12" clear space at vented block.

12. Moisture Protection

1. Building wrap to be Tyvek/Tygar or approved equal alternate. Wrap to be installed following sheathing inspection/verification. Wraps install per manufacturer recommendations and in compliance with stucco and natural stone veneer manufacturers' recommendations.
2. Moisture barrier to be installed with double coverage (two layers minimum) for all areas scheduled to receive stone veneer. Moisture barrier to be approved product for use for stucco and stone veneer, as approved by the stucco/veneer manufacturers.

13. Siding and Soffit

1. The Contractor is to procure new, provide, and install cement fiber siding and soffit as indicated on the building plans. Siding to be installed for all locations not scheduled to receive stucco or stone veneer. Soffit to be vented under all eaves and solid under rakes and entry covers.
2. Lap siding butt ends to be equipped with 15# felt underlayment strip 6" wide that spans 3" minimum above the butt joint on the wall and overlaps onto the top of the board below the butt joint (while still concealed by the fiber board finish install) to promote any water penetration through butt joints to be transported to the board face surface below.

14. Seamless Gutters & Downspouts

1. Contractor to provide and install seamless gutters and downspouts for the building. Gutters to capture 100% of rainwater shed from the roof system. Gutters are to be fitted with leaf/debris guards specifically manufactured for the gutters. Downspouts to be provided as shown on plans to transfer rainwater shed from the roof system to the underground drain system.

15. Metal Roof System

1. A complete roof system is to be provided for the building. Typical roof system components include 5/8" CDX deck (price under framing), 15# underlayment, and concealed seam continuous panel metal roof.
2. All sheathing nailing will require inspection. Failure to secure Owner inspection and acceptance prior to felt or roofing installation will result in the Contractor removing roofing and felt for inspection. All removed and replaced roofing will be at the sole expense of the Contractor. No allowances will be made for such replacement for the cost of the demolition and replacement nor for the additional time for such activities.

16. Sun Tunnels

1. Sun Tunnels to be 22" Velux or approved equal.
2. Placement of Sun Tunnels to be determined in the field by the owner and/or the owner's representatives.
3. Installation of sun tunnels shall be installed concurrently with metal roofing.

17. Windows & Doors

1. Windows and doors to be per plan schedules. All windows and doors to meet Wildland Urban Interface (WUI) requirements and energy efficiency requirements.
2. Windows to be tempered, double pane, argon filled, and metal framed.
3. All doors to be solid core, unless otherwise specified.
4. General public access doors to be equipped with panic bars and auto closers.
5. Cost of door placards to also be included under this item.

18. Sheetrock System

1. Gypsum board to be installed per plans. All board to be installed using screws (no nails are to be used).
2. All board within wet zones of the building (ie: restroom, kitchenette) to be moisture, mold, and mildew resistant. Green/purple board to be installed on full wall height and ceiling.
3. All ceiling board to be 5/8". All walls to be 1/2".
4. All corners and edges to be **round** and equipped with **corner guards**.
5. Screws to be installed at 8" on-center for perimeter and 12" on-center through the field.
6. Texture type to be "orange peel". Contractor to submit example of texture and receive approval from the Owner prior to beginning work.

19. Ceramic Tile System

1. Ceramic tile is to be installed for all restrooms. Tile is to be installed for restroom walls. Tile to extend from the PCC floor to the height as shown on plan sheets **and in coffee bar area to 12" above the back splash.**
2. Tile look to be a simulated slate. Slate pattern to be impregnated through ceramic tile (not a surface glaze). Typical tile dimension to be 12" square (nominal).
3. Contractor to provide submittal of tile pattern/layout to Owner for approval prior to beginning work.
4. Tile installer to coordinate with other trades for bathroom hardware install such as wall mounted sinks, mirrors, towel and soap dispensers, grab bars, and any other items not expressly listed but required to complete the restrooms.
5. Tile connection to floor and top to receive flexible caulking and seal compliant with tile, flooring, and gypsum manufacturers.

20. Epoxy Fluid Applied Flooring

1. Color and style to be approved by owner prior to ordering or placement of flooring.
2. Contractor to provide 48" by 48" finished sample for owner's approval.
3. Finished flooring to be smooth and free of defects. Finished floor shall receive a topcoat (protective coat) with manufacturers recommended material.

21. Paint, Stain, & Seal

1. Exterior painting to include one coat of primer and two coats of paint (minimum). All exposed exterior components of the building to receive paint including, but not limited to: siding, trim, soffit, fascia, doors, and all other pertinent components typically painted. Exterior paint to include alternate sheens and colors for body, trim, and soffit.
2. Interior paint to include two coats primer and two coats paint (minimum). Interior paint to include alternate sheens and colors for wall, ceiling, and trim.
3. All exterior, exposed wood will need to be stained and sealed to protect against the elements.
4. Interior ornamental woods and cladding to be clear coat sealed to complement natural wood character and provide a protective layer.
5. Baseboard and trim to receive a minimum of one coat primer and two coats paint.
6. Stone veneer to receive a minimum of two coats of sealer and enhancer.
7. Contractor will need to provide submittals for paint and stain and receive color selection and approval from the Owner/Engineer prior to ordering.
8. Contractor to procure all paint and stain new from a single source.
9. Contractor to provide attic stock of all paint and stain used. Attic stock to include a minimum of One gallon of each used.

22. Casework

1. Item shall include but not limited to Shelving, Display Cabinets, Cabinets, Entertainment Center, Service Center.
2. All casework to be constructed of solid wood. No particle, OSB, melamine, or alternate composite or compressed systems are to be used. Cabinets to be "cabinet grade" CDX. Cabinet doors to be solid wood panel and frame.
3. All drawer and door hinges to be moderate to severe use rated. All hardware to be safety close systems.

4. Cabinet installer to coordinate with carpentry contractor for all blocking install in wall for cabinets. All blocking to be inspected prior to sheetrock/wall cladding install.
5. Cabinet installer to coordinate with all other trades as required for casework completion.
6. All casework to be procured new from a single source for this project. Contractor to provide submittal to the Owner and secure approval prior to cabinet order.

23. Countertops

1. Item to include all “built in” countertops for the building.
2. Countertops to be solid surface with bull nose or ogee edge for all exposed edges. Countertops to have a monolithic backsplash (4” minimum height).
3. Countertop pattern and color to be selected by Owner under submittal process.
4. Sales countertop to be equipped with grommets for computer/communication wires (two minimum per countertop or as indicted per plans).

24. Fire Suppression System

1. Contractor to coordinate connection of fire sprinkler supply line with water company and to include any and all cost for connection within this item.
2. Item to include Double Detector Check Valve and Fire department connection point.
3. Item to include Fire Alarm System (including “California Fire Marshall approved Carbon Monoxide Detector Alarm system” and smoke detectors)
4. **See Plan Sheets for additional details.**

25. Plumbing Rough In

1. Procure, provide, and install all domestic and wastewater rough plumbing under this item.
2. All plumbing materials to be procured new for this project.
3. All plumbing installed to be per California Plumbing Code, 2022 edition unless otherwise noted.
4. Contractor to coordinate plumbing inspection and testing with Engineer prior to installation of insulation and sheetrock. Domestic supply pressure test to be minimum two hour at one-hundred fifty percent of operating pressure (60 psi typical). Wastewater test to be minimum two hour at full pipe to elevation of lowest breather pipe stubbed above roof. Retesting, if required, of failed system to be at the Contractor’s expense and at no additional cost to the Owner. No additional time will be considered for the contract to accommodate failed system repairs or repeat testing.
5. **See Plan Sheets for additional details.**

26. Plumbing Finish

1. Contractor to procure, provide, and install all finish plumbing under this item. Finish plumbing to include, but not be limited to all sinks, toilets, faucets, water heaters, and any and all other plumbing components not included under rough plumbing and not expressly itemized hereunder but typically included as finish plumbing work.
2. **See Plan Sheets for additional details.**

27. HVAC

1. Item to include complete install of the HVAC system (per plans). Heat pump PCC pad cost to be included in misc. concrete bid item. All other costs for the HVAC system to be included under this item including testing and balancing.
2. All equipment and component install to be per manufacturers' recommendations.
3. **See Plan Sheets for additional details.**

28. Electrical Rough In

1. Item to include all rough electrical work for the project.
2. Site trench work and connection to existing facilities.
3. **See Plan Sheets for additional details.**

29. Electrical Finish

1. Electrical finish to include all electrical work not included and installed under electrical rough-in. Finish, at a minimum to include all light fixtures, switches, outlets, plates, and all other electrical work typically installed following cladding install and painting.
2. Item to include exterior security lighting, landscape lighting, and all other electrical work required for lighting not specifically included under other electrical work bid items.
3. **See Plan Sheets for additional details.**

30. ½" Type A Hot Mix Asphalt Concrete

1. Contractor to procure, provide, and install AC for areas of asphalt replacement. AC to be procured from a single source. AC to be installed in a single day. All AC termination to PCC and existing AC to be tack coated just prior to AC install.
2. **Class 2 ¾- Aggregate Base (AB)** AB to be provided for areas of asphalt replacement. AB to be procured, provided, installed, and compacted by the contractor. All AB to be procured from a single source. Compaction to be field verified per Cal 216 by the Engineer prior to AC install.

31. Utilities Connections

1. Item to include all materials and work necessary to connect new building to existing utilities.
2. Domestic Water supply line shall be 1 inch connected to existing water meter.
3. Fire Suppression Water shall be a 4" line as shown on the Project Plans.
4. Waste lines to be connected to existing grease interceptor and septic system.
5. Electrical to be connected to existing electrical sub panel.

32. Caltrans Type G1 Drop Inlets

1. Item to include all costs associated drop inlets as shown on civil plans.

33. 18" HDPE Storm Drain

1. Item to include all costs associated 18" HDPE Storm Drain as shown on civil plans.

34. 6" Drain Pipe (Downspout to DI)

1. Item to include all costs associated installation of 6" drain line connecting down spouts (capture of 100% of rain water) to storm drain system as shown on the civil plan sheets.

35. Connect (N) 18" SD to (E) Drain System

1. Item to include all costs associated with the connection of the 18" HDPE to existing 24" HDPE storm drain infiltration system.

36. Kitchen Equipment

1. All Items listed in Kitchen Equipment Schedule

37. Fixtures

Shelfing, Display Cabinets, Cabinets, Entertainment Center, Service Center shall be in casework item.

Item includes the supply of the following fixtures

1. (3) Office Desk 60"
2. (4) Office Chair
3. (1) Cash Register
4. (3) Service tables 48"
5. (12) Chairs for Service tables
6. (8) 52" File Cabinets
7. (10) Window Blinds 4' by 5'
8. (2) Window Blinds 3' by 5'
9. (1) Display Refrigerator
10. (1) Display Freezer

* Fixtures are to be approved by owner prior to purchase.

END OF SECTION 011000

**SECTION 011400
WORK RESTRICTIONS**

PART 1 GENERAL

1.1 Related Documents

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions.

1.2 Use of Premises

- A. Use of Property: Limit use of premises to work in areas indicated and for the purpose of this specific project. Do not disturb portions of the property beyond the areas in which the Work is indicated. If disturbed, repair and restore to a condition equal to or greater than existed prior to impact.
- B. Owner Occupancy: Allow for Owner and public occupancy of the site(s) and surrounding areas.
- C. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.3 Occupancy Requirements

- A. Occupancy: neighbors and the Owner will occupy existing adjacent properties during the entire construction period. Cooperate with neighbors during construction operations to minimize conflicts and facilitate use and access to businesses. Perform the Work, so as not to interfere with the neighbors' operations.
- B. Construction work shall not interfere with existing Harbor operations, including the boat launch, pier, and Seascape Restaurant.

1.4 Special Work Restrictions

- A. All work shall be in conformance with requirements from the Coastal Development Permit (CDP) issued by the California Coastal Commission, and the Building Permit by City of Trinidad.
- B. The following will not be tolerated or permitted on site.
 - a. Loud or objectionable music or language.
 - b. Visually explicit or profane clothing, language, and/or gestures.
 - c. Smoking.
- C. All products, adhesives, sealers, and chemicals associated with installation of materials and construction activities shall be low VOC content.

1.5 Utilities

- A. Work requiring shutdown of utilities serving occupied areas must be scheduled in writing a minimum of seventy-two (72) hours in advance of shutdown or the minimum amount of time as required by the utility purveyor, whichever is greater.

PART 2:PRODUCTS (Not Used)
PART 3:EXECUTION (Not Used)

END OF SECTION 011400

SECTION 012400 VALUE ENGINEERING

PART 1 - GENERAL

1.1 Description

- A. The Contractor may submit to the Owner value-engineering (VE) proposals that change the Contract Documents resulting in Construction Cost Savings and Time Savings. The Owner will share with the Contractor any cost savings that result from an approved VE proposal.

1.2 Requirements

- A. The VE proposal must maintain the essential functions and characteristics of the facility including but not limited to safety, service life, ease of maintenance, and appearance.
- B. The Contractor's Conceptual VE proposal will be reviewed by the Owner, and if approved, the Contractor shall submit a formal VE proposal including revised drawings prepared and stamped by a California licensed Professional Engineer, specifications, distribution of quantities and cost savings, which reflect the work required to complete the VE proposal.

1.3 Conditions

- A. The Owner will be the sole judge of the VE proposal in determining the following:
 - a. Approval or Disapproval
 - b. Construction Cost Savings
 - c. Time Savings
 - d. Advantages and/or Disadvantages
- B. The Owner reserves the right to disregard the contract unit bid prices if, in the judgment of the Engineer, such prices do not represent fair value for the work to be performed or deleted. The Engineer will adjust the contract unit bid prices in evaluating the Construction Cost Savings of the VE proposal. If the Owner approves the VE proposal, the Owner will order changes to the Contract Documents that reflect the VE proposal in accordance with the contract documents.

1.4 Measurement and Payment

- A. If the Owner approves the VE proposal, the Owner will provide measurements and payments in accordance with the contract documents.
- B. The Owner and the Contractor shall equally share the Construction Cost Savings amount resulting from the VE proposal. The Contractor shall receive twenty-five percent (25%) of the Contractor's share when the VE proposal is approved. The Contractor shall receive seventy five percent (75%) of the Contractor's share when the Engineer has accepted the work related to the VE Scope.

1.5 Reimbursement

- A. The Owner will not reimburse the Contractor for any engineering or preparation expenditures of the VE proposal.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

END OF SECTION 012400

SECTION 012500
PRODUCT SUBSTITUTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - a. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - b. Divisions 02 through 48 for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by the Contractor.
 - a. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - b. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantages to the Contractor and/or the Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit two (2) 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.
 - a. Substitution Request Form: Use CSI Form 13.1A or approved alternate.
 - b. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - i. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - ii. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - iii. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- iv. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
- v. Samples, where applicable or requested.
- vi. Certificates and qualification data, where applicable or requested.
- vii. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and Owners.
- viii. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
- ix. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
- x. 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 date of receipt of purchase order, lack of availability, or delays in delivery.
- xi. Cost information, including a proposal of change, if any, in the Contract Sum.
- xii. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
- xiii. 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.
- c. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within fourteen (14) calendar days of receipt of request, or seven (7) calendar days of receipt of additional information or documentation, whichever is later.
 - i. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - ii. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 – PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fourteen (14) calendar days prior to time required for preparation and review of related submittals.
- a. 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:
 - i. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - ii. Requested substitution provides sustainable design characteristics that specified product provided.
 - iii. Substitution request is fully documented and properly submitted.
 - iv. Requested substitution will not adversely affect Contractor's construction schedule.
 - v. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - vi. Requested substitution is compatible with other portions of the Work.
 - vii. Requested substitution has been coordinated with other portions of the Work.
 - viii. Requested substitution provides specified warranty.
 - ix. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Engineer will consider requests for substitution if received within thirty (30) calendar days of issuance of the Notice to Proceed. Requests received after that time may be considered or rejected at the discretion of the Engineer.
- a. 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:
 - i. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - ii. Requested substitution does not require extensive revisions to the Contract Documents.
 - iii. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - iv. Requested substitution provides sustainable design characteristics that specified product provided.

- v. Substitution request is fully documented and properly submitted.
- vi. Requested substitution will not adversely affect Contractor's construction schedule.
- vii. Requested substitution has received necessary approvals of authorities having jurisdiction.
- viii. Requested substitution is compatible with other portions of the Work.
- ix. Requested substitution has been coordinated with other portions of the Work.
- x. Requested substitution provides specified warranty.
- xi. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012613
REQUESTS FOR INTERPRETATION (RFI)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Administrative and procedural requirements for handling and processing RFI.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for handling and processing RFI.

1.3 DEFINITIONS

- A. Definitions used in this article are not intended to change or modify the meaning of other terms in the Contract Documents.
- B. Request for Interpretation (RFI): A request for information by the Contractor to the Owner/Engineer for clarification of intent of any portion of the Contract Documents after the Award of Contract and during the construction of the Project.
- C. The following are NOT Requests for Interpretation.
 - a. Change Orders.
 - b. Construction Change Directives.
 - c. Substitution Request.
 - d. Bulletin.
 - e. Field Order.
 - f. Shop Drawings.
 - g. Normal questions contained in a typical shop drawing submittal.
 - h. Clarifications during Bidding.

1.4 REQUESTS FOR INTERPRETATION (RFI's) DURING CONSTRUCTION

- A. RFI's are logged-in at the Engineer's Office, not necessarily with same date as indicated by the Contractor on RFI form. The response time will commence upon the date of receipt by the Engineer.
 - a. E-mail copies of RFI's sent by the Contractor and received on or after a Friday after 2:00 PM are to be dated the following Monday, holidays excepted.
- B. RFI: If clarification of any portion of Construction Documents is required, submit a RFI to the Engineer and the Owner's Representative in accordance with the following procedures:
 - a. RFI Format:
 - i. Submit on a standard form developed by the Contractor.
 - ii. RFI's shall be sequentially numbered; and include the following:
 - 1. Date
 - 2. Project name and number
 - 3. Contractor's name, address, telephone number and fax number.
 - 4. Description of subject and discipline (trade) in question.
 - 5. Adequate space for Engineer to respond, sign, and date.
 - iii. Contractor shall submit a copy of the format to the Engineer and Owner's Representative at start of Project for review, comment, and acceptance.

C. RFI Inquiry:

- a. Clearly state and completely define the issue requiring interpretation. Provide drawing and detail numbers, specification section numbers and paragraphs, sketches and other reference information.
- b. Provide potential solutions to issues when possible.
- c. Provide cost and schedule implications, if any.
- d. Ambiguous RFI's will be returned to Contractor without formal action.

D. RFI Submission Process:

- a. The Contractor shall submit an RFI, in writing, to Engineer immediately with a copy to the Owner's Representative when any issue requiring clarification arises.
 - i. Unless specifically stated on RFI, the Engineer and the Owner will assume adjustment to the Contract Amount and the Project Schedule is not required.
 - ii. The Engineer will review and respond only to RFI's received in writing from the Contractor. When possible, email RFI's can be accepted given the Owner, Engineer, and Contractor agree and Contractor is able to verify delivery of RFI either email receipt, follow up phone call or alternate method.
 - iii. For paper RFI; submit one (1) copy of each RFI and Engineer response, including any supplemental drawings and additional instructions, to the Owner's Representative for recording purposes.
 - iv. Review and response of RFI by Owner/Engineer will be accomplished within seven (7) calendar days from the date of receipt.
 - v. RFI's submitted to the Engineer without following these submission procedures will result in rejection of the submission without review and comment.

E. RFI Log:

- a. Contractor must maintain an RFI log indicating the RFI number, subject, date, response date and impact, if any on schedule, and cost.
- b. Contractor is to provide the updated log, at least once a month, to the Engineer and Owner's Representative and at the request of the Engineer and/or Owner's Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012613

SECTION 012657
CHANGE ORDER REQUEST

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Administrative and procedural requirements for proposing, processing, and securing Change Orders.

1.2 COST COMPUTATION

- A. The cost of change orders to the contract will be computed as follows:
- a. In all cases, regardless of the method used to determine values of changes, estimated or actual cost shall be submitted in detailed breakdown form, giving quantity and unit costs of each item, labor costs, allowable overhead and profit.
 - b. Where unit prices have not been established for the contract, the work shall be based on a lump sum adjustment determined by criteria outlined under Section 007200. The allowances including all overhead, commission, profit, and bond to be allowed for increase shall in no case exceed the percentages of net extra costs as itemized in Sections 007200 and 007210.
 - i. For change orders these percentages shall include, but not be limited to:
 - 1. Insurance (other than mentioned herein),
 - 2. Bonds,
 - 3. Field and office supervisors and assistants,
 - 4. Use of small, portable tools and equipment, whether manual or automatic generally designed for individual use by a tradesman.
 - 5. Use of any manual tools and equipment, regardless of size, portability or end use,
 - 6. Average job engineering, stakeout, and layout.
 - 7. Incidental job burdens.
 - 8. General administrative costs required by reasonable extension of contract time if necessary as directly caused by the change.
 - ii. Cost shall be computed to include actual cost of:
 - 1. Labor, including pro-rated charges for foremen.
 - 2. Materials entering permanently into the work.
 - 3. Ownership or rental cost of construction equipment during time of use for the extra work.
 - 4. Power and consumable supplies for the operation of power equipment.
 - 5. Insurance related to labor benefits required under union agreements.
 - 6. Social Security and unemployment insurance.
 - 7. Applicable taxes.
- B. Estimates for materials shall be based on reasonable, current prices at which materials are available to the Contractor and subcontractor(s). Satisfactory evidence of such costs shall be submitted with proposed change order.

- C. When additions and credits are involved in any one change order, the allowance for overhead and profit shall be figured on the basis of net increase, if any. Full credit, not including allowances for Contractor's overhead, profit, or commission shall be given the Owner for deductions. Values of taxes shall be included in deductions.
- D. No work on proposed changes shall be started until the proposed changes have been approved by the Engineer and Owner.
 - a. Exception: Where an emergency or a situation requires that changes in contract work be done prior to formal approval of the Change Order, the Authority shall issue a proceed order to the Contractor who must maintain an accurate account of all labor and material involved in the change. All proceed orders shall be followed by change order(s) in the approved manner prior to contract settlement, final payment, and release of retention.
 - i. All Proceed Order time and material costs are subject to verification. Contractor must notify the Engineer, Owner, and/or Owner Representative when work on such changes is to start and when complete. All appropriate documentation itemizing time and materials must be provided to the Engineer/Owner.
 - ii. To receive full recognition, labor assigned to contract changes via Proceed Order must, insofar as possible, work continuously on the change rather than interchanging between contract work and the change work.
- E. In order that proposed changes in work, if they should occur, can be processed without undue delay, the Contractor shall indicate in each separate proposal requesting a change in the contract supporting information in detailed breakdown form including, at a minimum, the following:
 - a. The exact location of the change requested.
 - b. The square feet, square yards, cubic yards, linear measure, or any other unit of measure applicable to the work involved, together with the unit cost of labor and material by trades. Labor unit cost shall include associated insurance. Other types of protection are assumed to be covered by overall job insurance with no additional changes assigned to unit costs.
 - c. Justification/clarification of the need for the change.
 - d. Viable options for completing the proposed change with support documentation and associated costs.
 - e. Valued engineering, when possible.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012657

**SECTION 012900
PAYMENT PROCEDURES**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - a. Division 01 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.03 DEFINITIONS

- A. Schedule of Values: A statement furnished by the Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing the Contractor's Applications for Payment.

Schedule of Values for this project to match section 004100 Bid Schedule

1.04 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - a. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - i. Application for Payment forms with Continuation Sheets.
 - ii. Submittals Schedule.
 - iii. Contractor's Construction Schedule.
 - b. Submit the Schedule of Values to the Engineer at the earliest possible date but no later than seven (7) calendar days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the bid schedule as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - a. Identification: Include the following Project identification on the Schedule of Values:
 - i. Project name and location.
 - ii. Name of Engineer.
 - iii. Name of Construction Manager
 - iv. Project Number.
 - v. Contractor's name and address.
 - vi. Date of submittal.
 - b. Submit draft of HUD-51000 for HUD projects or AIA Document G703 Continuation Sheets for all other projects.

- c. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - i. Related Specification Section or Division.
 - ii. Description of the Work.
 - iii. Name of subcontractor.
 - iv. Name of manufacturer or fabricator.
 - v. Name of supplier.
 - vi. Change Orders (numbers) that affect value.
 - vii. Dollar value.
 - 1. Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- d. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Bidding & Contracting Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
- e. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- f. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - i. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
- g. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- h. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - i. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
- i. Schedule Updating: Update and resubmit the Schedule of Values before the next Application for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.05 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
 - a. Initial Application for Payment, Application for Payment at time of Substantial Completion, and Final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between the Owner and the Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use forms provided by the Owner.

- D. Application Preparation: Complete every entry on the form. Notarize and execute by a person authorized to sign legal documents on behalf of the Contractor. The Engineer will return incomplete applications without action.
 - a. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions are made.
 - b. Include amounts of Change Orders and Construction Change Directives issued before the last day of the construction period covered by the application.
- E. Transmittal: Submit the signed original Application for Payment electronically (email, download website, or USB memory stick) to the Engineer. Obtain confirmation of receipt by the Engineer for your records.
 - a. Transmit each copy with a transmittal form listing all attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien or conditional releases from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 - a. Submit partial waivers on each item for the amounts requested in previous applications, after deduction for retention, on each item.
 - b. When an application shows completion of an item, submit final or full waivers.
 - c. The Engineer reserves the right to designate which entities involved in the Work must submit waivers.
 - d. Waiver Forms: Submit waivers of lien or conditional releases on forms, executed in a manner acceptable to the Engineer.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for the construction period covered by the previous application.
 - a. Submit partial waivers on each item for amounts requested in previous applications, after deduction for retention, on each item.
 - b. When an application shows completion of an item, submit final or full waivers.
 - c. The Engineer reserves the right to designate which entities involved in the Work must submit waivers.
 - d. Submit final Application for Payment with or proceeded by final waivers or Unconditional Releases from every entity involved with performance of the Work covered by the application whom is lawfully entitled to a lien.
 - e. Waiver Forms: Submit waivers of lien or Unconditional Releases on forms, executed in a manner acceptable to the Engineer.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
 - a. Subcontractor Schedule.
 - b. Schedule of Values.
 - c. Contractor's Construction Schedule.
 - d. Products list.
 - e. Schedule of unit prices.
 - f. Submittals Schedule.
 - g. List of Contractor's staff assignments.
 - h. List of Contractor's principal consultants.

- i. Copies of building permits (if applicable).
- j. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
- k. Initial progress report.
- l. Report of preconstruction conference.
- m. Certificates of insurance and insurance policies.
- n. Construction Contract Security.
- o. Data needed to acquire Owner's insurance.
- p. Initial settlement survey and damage report, if required.
- I. Application for Payment at Substantial Completion: After issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include documentation supporting the claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - b. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - a. Evidence of completion of Project closeout requirements.
 - b. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - c. Updated final statement, accounting for final changes to the Contract Sum.
 - d. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 - e. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 - f. AIA Document G707, "Consent of Surety to Final Payment."
 - g. Evidence that claims have been settled.
 - h. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 - i. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100
PROJECT MANAGEMENT AND COORDINATION

PART 1: GENERAL

1.1 DESCRIPTION

- A This section details the Contractor and the Owners' responsibilities in coordinating efforts for this project

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

3.1 CONTRACT DOCUMENTS

- A The Contractor and all subcontractors shall become completely familiar with the requirements of the contract documents.
- B In the event discrepancies or conflicts are encountered, notify the Engineer immediately. Where there is a discrepancy, including referenced Codes, the documents requiring the strictest interpretation, higher quality, the greater quantity, or the more difficult work shall govern, unless otherwise determined by the Engineer.

3.2 REQUEST FOR INFORMATION/INTERPRETATION

- A Refer to Section 012613.
- B The Contractor will need to coordinate the sequencing of work so that Requests for Interpretation (RFI's) be submitted to the Engineer in a timely manner so as not to delay work.

3.3 SCHEDULE

- A The contractor must submit a Schedule of Work prior to commencing work.
- B The Schedule of Work shall be updated monthly at a minimum, and MUST BE submitted with all Requests for Payment.

3.4 UTILITIES

- A The Contractor will need to coordinate with all utility companies that must be relocated or have connection to in the project area. Coordination should include scheduling with utility companies when various stages of work may be performed and when potential shutdowns may occur.

3.5 PERMITS

- A The Contractor will need to coordinate with all permitting agencies with jurisdiction over this project. The Contractor shall coordinate any inspections necessary and schedule work around requirements of the permits. The Contractor shall be required to adhere to all of the requirements including all mitigation which may be required in these permits.

3.6 OWNER

A The Contractor shall coordinate with the Owner for all work to be performed.

3.7 INSTALLATION

A Coordination methods at the Project Site are the responsibility of the Contractor. The Engineer may disapprove Work completed by the Contractor or data submitted by the Contractor, when in the Engineer's judgment coordination has been inadequate to ensure the highest quality.

END OF SECTION 013100

SECTION 013200 CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 GENERAL

- A. The intent of the progress schedule is to assist the Contractor, Engineer, and Owner in planning and executing Work and to assist the Project Coordinator and Owner in monitoring the construction progress for the purpose of coordination, communication, evaluation of Applications and Certificates for Payment, and evaluation of time extension requests.
- B. The Project Coordinator's review of the schedule will be to ensure that it conforms to the requirements of the contract documents. The construction means, methods, sequence and scheduling of the work is the Contractor's responsibility and is not reviewed by the Project Coordinator or Owner. Contract completion date(s) is as specified in the Notice to Proceed and subsequent adjustments as ratified per Sections 007200 and 012613. The Project Coordinator's review of the schedule does not change, revise, or amend that date(s), nor does it constitute an approval of the Contractor's ability to complete the work within the Contract Time.
- C. If the Contractor submits a schedule which indicates a construction completion date prior to the advertised contract completion date, it is understood that the Owner shall not be obligated for any costs associated with any extensions of the Contractor's schedule which is still within the stipulated contract completion period. No contract time extension shall be granted until the contractor demonstrates that the Critical Path is directly impacted, and the construction completion date must be extended past the stipulated contract completion date.

1.2 FORMAT

- A. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with the applicable Specification section number.
- B. Diagram Sheet Size: must be legible.

1.3 SCHEDULES

- A. Provide a time scaled CPM precedence diagram with a separate activity bar for each work activity. Network diagram to illustrate order and interdependence of activities and sequences of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities. Indicate early and late start, early and late finish, float time, duration, manpower loading and description of each activity. Indicate critical path.
- B. Provide as many activities as necessary to clearly show how the project will be constructed within the time allowed. As a minimum, every item on the schedule of values must be shown on the progress schedule. Provide sub-net schedules where necessary to enhance clarity.
- C. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities.

- D. Show accumulated percentage of completion of each item of Work at time of each Application for Progress Payment.
- E. As a sub-net show dates including specified Project Coordinator's review time for shop drawings, product data, and samples. Indicate decision date for selection of finishes.
- F. Show product delivery dates, including those furnished and/or installed by Owner.
- G. Show dates when application for separate permits (i.e., fire alarm, fire sprinkler, etc.) will be made and when the permit will be received.
- H. Show dates when application for warranties/guarantees will be made and when warranties will be delivered. Final payment will not be made until all warranties/guarantees have been received and determined to be acceptable.
- I. Include dates for Project Coordinator's punch list review and completion of punch list items.
- J. Include dates for submission of operation and maintenance manuals and project record drawings (minimum of thirty days before final completion). Show Project Coordinator's review time and re-submittal of corrected manuals and drawings.

1.4 UPDATING SCHEDULES

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity at the time of the revision date. Update diagrams to graphically depict current status of Work.
- C. Indicate revision date on revised schedule.
- D. Show changes occurring since previous Schedule submission such as:
 - a. Any major changes in scope;
 - b. Activities modified since previous submission;
 - c. Revised projections for progress and completion, as applicable;
 - d. Any other identifiable changes.
- E. Provide narrative report as needed to define:
 - a. Problem areas; anticipated delays; and impact of these on the project schedule.
 - b. Corrective action recommended, and its effect.
- F. The periodic Applications and Certificates for Payment will not be processed until the progress schedule is updated and submitted as specified.

1.5 SUBMITTALS

- A. Within fourteen (14) calendar days after date of Owner-Contractor Agreement, submit proposed network diagram defining planned operations for the Work.
- B. If required by Project Coordinator, participate in review of network diagrams jointly with General Contractor.
- C. Submit updated network schedules with each Application for Payment or more frequent if directed by Project Coordinator.
- D. Submit the number of opaque reproductions the Contractor requires, plus two (2) copies which will be retained by Project Coordinator.

1.6 DISTRIBUTION

- A. Distribute copies of reviewed schedules to the project site file, Sub-Contractors, suppliers, Factory/Engineering Firm, Project Coordinator, and other concerned parties.

- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 PRODUCTS (Not Used)
PART 3 EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTAL PROCEDURES

- A. Schedule submittals to expedite the Project. Transmit submittals in accordance with the currently approved Progress Schedule and in such a sequence as to avoid delays in the Work. Coordinate submission of related items with the progress schedule. Submit a Schedule of Submittals to the Project Coordinator prior to initial Application for Payment.
- B. Make and deliver all submittals to the Engineer Point of Contact.
- C. Provide space for General Contractor to review stamps.
- D. General Contractor must review and certify each submittal prior to submission to the Engineer. Mark certification on each submittal with permanent marking ink.
- E. Reproduce and distribute copies of reviewed submittals to all concerned/impacted parties. Instruct parties to promptly report any inability to comply with provisions. Pay all costs for reproduction, distribution, and materials.
- F. Submit items requiring color selection within thirty (30) calendar days of contract award. Colors will be selected after all color submittals are received by the Project Coordinator.
- G. Coordinate submittals into groupings containing all associated items to facilitate review of inter-related items:
 - a. Finishes, selection of colors, textures, or patterns.
 - b. Associated items which require correlation for efficient function or for installation.
 - c. Submit all Division 2 submittals at the same time. Failure to do so will delay processing and review by the Project Coordinator or Owner's Consulting Engineer. Review will not occur until submittal is complete.
- H. Identify, in writing, variations from Contract Documents. Identify, in writing, product or system limitations detrimental to successful performance of the completed Work.
- I. Accompany submittals with transmittal letter containing:
 - a. Date.
 - b. Project title and number.
 - c. Contractor's name and address.
 - d. Number of copies of Shop Drawings, Product Data, and Samples submitted.
 - e. Identification of submittal as it relates to:
 - i. Contractor/Supplier/Manufacturer.
 - 1. Name.
 - 2. Address.
 - 3. Telephone number.
 - 4. Representative's name.
 - f. Detail number and location in Construction Documents.
 - g. Specifications reference number and paragraph.
 - h. Applicable Standards.
 - i. Finishes.
 - j. Identification of deviations from Contract Documents.
- J. Additional Information Required:

- a. Relation to adjacent structure or materials.
 - b. Fabrication methods, assembly, special installation requirements, accessories, fasteners, and other pertinent information.
 - c. Field dimensions, clearly identified.
 - d. Coordination with other trades. Stamped and signed by affected trades.
- K. Distribution of Submittals:
- a. Project Coordinator will retain a minimum of two (2) copies of all submittals, with one (1) set of reviewed submittals retained as "Record Documents". Mark up with as-built information and provide to Owner as part of Project Record Documents.
 - b. General Contractor to maintain one (1) set of reviewed submittals at project site.

1.2 PROPOSED PRODUCTS LIST AND CONTRACTORS LIST

- A. Prior to submission of First Application for Payment, submit complete list of Contractors and suppliers to be used for the Work. Provide specification section identification number, addresses, and telephone numbers for each listed Contractor and supplier.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.3 SHOP DRAWINGS

- A. Prior to submission of First Application for payment, submit complete list of all shop drawings, product data and/or sample submittals as required by these specifications. List to include date columns showing anticipated and actual Submittal dates to General Contractor and Project Coordinator as well as return dates from General Contractor and Project Coordinator. Update this list for use at the Progress Meetings.
- B. Present in clear and thorough manner. Title each drawing with Project name and number; identify each element of drawings by reference to sheet number and detail, schedule, or room number of Contract Documents.
- C. Identify field dimensions; show relation to adjacent or critical features or Work or products.
- D. Minimum Sheet Size: 8½ x 11 inches.
- E. Do not submit freehand drawings.
- F. On shop drawings requiring Code Agency approval, submit on format and media required by Approval Agency. Include information required by Project Documents and Approval Agency.
- G. Submit four (4) copies to General Contractor for review. The General Contractor will return two (2) reviewed copies with comments. After review and correction the Contractor shall reproduce and distribute copies of the shop drawings as required for Contractor use and contractor's needs. Provide the copy of final Submittal to Owner for the Project records.
- H. Do not provide Submittals not required by these specifications. They will be returned to the Contractor and/or Factory/Engineering Firm without review.

1.4 PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Paragraph number.

Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

- B. Do not submit Material Safety Data Sheets (MSDS). MSDS are Contractor and Factory/Engineering Firm safety, means and methods responsibilities. MSDS will not be reviewed.
- C. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.
- D. Submit four (4) copies of product data and manufacturer's instructions to General Contractor for review. The General Contractor will return two (2) reviewed copies with comments. After review and correction, the Contractor shall reproduce and distribute copies as required for Contractor use and contractor's needs. Provide the copy of final submittal to Owner and Project Coordinator for their records.

1.5 SAMPLES

- A. Submit full range of manufacturer's standard and special finishes except when more restrictive requirements are specified, indicating colors, textures, and patterns, for Project Coordinator's selection.
- B. Submit samples which may be used in the Work as indicated in the Specification section.
- C. Label each sample with identification required for transmittal letter.
- D. Submit two (2) samples of each product requiring color or texture/finish selection unless specified otherwise in individual specification sections: one (1) sample will be retained by Project Coordinator, one (1) sample will be returned to the Contractor to be retained at the job site.
- E. Field samples are to be maintained at the site of the Work and are to be removed after substantial completion unless directed otherwise.
- F. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.6 MANUFACTURER'S CERTIFICATES AND WARRANTIES

- A. When specified in individual specification Sections, submit manufacturer's certificate and/or warranty to Project Coordinator for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Project Coordinator.
- D. Provide certificate and/or warranty by manufacturer on company letterhead paper or forms signed by an officer of the manufacturer. On document name the Owner, project, project location, Contractor, and Contractor's address. Indicate product furnished, quantity furnished, and date of delivery.

1.7 CONTRACTOR REVIEW

- A. Coordinate submittals with requirements of Work and of Contract Documents.
- B. Apply Contractor's stamp with signature. The submittal signed by the Contractor certifies that the Contractor has reviewed the submittal for accuracy, completeness, and compliance in accordance with the General Conditions. It also certifies that the

Contractor has verified product required, field dimensions, adjacent construction Work and Contract Documents. Submittals without Contractor's stamp and signature will be rejected. Notify Project Coordinator in writing at time of submittal of any deviations from requirements of Contract Documents.

1.8 RESUBMITTALS

- A. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- B. Shop Drawings and Product Data:
 - a. Revise initial drawings or data, and resubmit as specified for the initial submittal.
 - b. Indicate any changes which have been made including those requested by the Project Coordinator.
- C. Samples: Submit new samples as required.

1.9 PROJECT COORDINATOR REVIEW

- A. Project Coordinator will review shop drawings, product data, and samples and return submittals within twenty-one (21) calendar days.
- B. For Project Coordinator's color selection, allow thirty (30) calendar days from time all color samples for the Work have been delivered to the Project Coordinator.
- C. Project Coordinator review is only for general conformance and compliance with Project design concept and Contract Documents. Any action shown is subject to Contract Document's requirements. Contractor is responsible for dimensions (confirm and correlate at job site); fabrication processes; construction techniques; quantities; space requirements; coordination of work with that of all other trades; union jurisdiction; infringements of patent rights; possible cause of injury to persons or property; and satisfactory performance of the work.
- D. Project Coordinator's review of separate items does not constitute review of assembly in which it functions.

END OF SECTION 013300

SECTION 013591
CONSTRAINTS AND MITIGATIONS

PART 1: GENERAL

1.1 Description

- A. The following requirements supplement the General Conditions, 007200.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

3.1 Constraints and Mitigations

- A. The Owner has completed a Coastal Development Permit (CDP) from the California Coastal Commission. In compliance with the CDP, the Contractor's operations are subject to the conditions within the permit. In addition to these, the Contractor is also responsible for compliance with any and all constraints or environmental protection measures that may be noted in other sections of the Technical Specifications.
- B. The Contractor's operations are subject to the following constraints and mitigations:
1. If buried materials are encountered, all soil disturbing work should be halted at the location of any discovery until a qualified archaeologist completes a significance evaluation of the find(s) pursuant to Section 106 of the national Historic Preservation Act (36CFR60.4). The Owner should be contacted immediately. Prehistoric archaeological site indicators expected within the general area include: chipped chert and obsidian tools and tool manufacture waste flakes; grinding and hammering implements that look like fist-size river tumbled stones, and for some rare sites, locally darkened soil that generally contains abundant archaeological specimens. Historic remains expected in the general area commonly include items of ceramic, glass, and metal. Features that might be present include structure remains (e.g., cabins or their foundations) and pits containing historic artifacts.

3.2 Site Conditions

- A. Coordination with the Engineer:
1. Contact the Engineer at least five (5) working days in advance of any planned removal of historic fabric, demolition, or ground disturbance work. The Engineer will, in turn, notify the Archaeologist/Cultural/Natural Resource Specialist when such work is planned.
 2. The Contractor will need to coordinate directly with the Engineer regarding archaeological/cultural/natural specialist monitoring. Any ensuing directives from the archaeologist/cultural/natural specialist in relation to need for interruption of specific contractor work will be made through the Engineer.
- B. Limit of Work

1. The Contractor will need to layout all planned removal, demolition, or ground disturbance work for review and approval prior to such work commencing.
 2. The Contractor will need to avoid all removal, demolition, ground disturbance, and other destructive activities that may disturb historic fabric, artifacts, archaeological, cultural or natural resources until the Engineer gives approval to proceed.
- C. Role of Archaeologist/Cultural/Natural Specialist
1. Prior to the construction start date, but during the submittal period, archaeologist/cultural/natural specialist(s) will attempt to mark or identify, where certain historical fabric, cultural resources are to be documented, salvaged, or left in situ place on the building/structure/feature/site as identified in the construction documents. This by no means is meant to indicate that during the course of demolition, ground disturbance, or destructive activities; that the contractor is free to move forward without first obtaining permission to proceed from the Engineer, or that during the course of such actions, new or previously unknown areas will not be marked or identified by the archaeologist/cultural specialist.
 2. During construction, archaeologist/cultural/natural specialist reserve the right to monitor all demolition, ground disturbance, and destructive activities.
 3. Archaeologist/cultural/natural specialist will determine whether appropriate treatments such as handwork, will be necessary for certain demolition, ground disturbance, or destructive activities. Directives in relation to need for alteration of technique or interruption of specific contractor work will be given by the Engineer.
- D. Down Time
1. If unforeseen cultural/natural resources are uncovered during execution of the work, the Engineer will put work on hold at that specific location, and the Contractor will be redirected to other tasks. The archaeologist/cultural/natural specialist will record and evaluate the find and implement avoidance, preservation, or recovery measures as appropriate compliance with environmental law and department resource directives prior to the Engineer directing resumption of work at that specific location.
 2. The Contractor shall include in the project schedule, consideration of up to (not less than) five (5) calendar days down time for unforeseen conditions uncovered during execution of work that may require further resource analysis. Down time days must be approved by the Engineer.

3.3 Protection of Existing Resources

- A. Provide required protection, in areas identified on drawings, or as directed by the Engineer to maintain integrity of the resources to be protected during the course of the project.

END OF SECTION 013591

014000
BEST MANAGEMENT PRACTICES

The Following - Construction Best Management Practices (BMPs) were selected from the California Stormwater Quality Association (CASQA) are listed for the contractor's convenience. All practices contained in the BMP Handbook shall be reviewed by the contractor and implemented if applicable.

WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-8	Concrete Waste Management
NS-9	Vehicle and Equipment Fueling

WM-1 Material Delivery and Storage

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Prevent or reduce or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2 Material Use, or WM-4, Spill Prevention and Control.

Applications:

- Delivery and storage of concrete components
- Delivery and storage of petroleum products such as fuel, oil, and grease .
- Hazardous chemical acids, lime, glues, adhesives, paints, solvents, and curing compounds.
- Concrete compounds
- Other materials that may be detrimental if released to the environment.

Limitations: Space limitations may preclude indoor storage.

Storage sheds often must meet building and fire code requirements.

Implementation: The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored. The Spill Prevention and Control Plan shall include all MSDS.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located near the construction entrances, away from waterways, if possible. Avoid transport near drainage paths or waterway.

- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30
- An up to date inventory of materials delivered and stored onsite should be kept.
- Hazardous materials should be handled as infrequently as possible.
- During the rainy season, consider materials in a covered area. Store materials in secondary containments such as earthen dike, horse trough, for non-reactive materials such as detergents, oil, grease, and paints. Non-reactive materials such as detergents, oil, grease, and paints shall be contained in a watertight container
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and when possible, in secondary containment with the same. See WM-3 Stockpile Management.
- All chemicals shall be labeled and stored in a closed container.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquids chemicals are unloaded.

Material Storage Area and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response to access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Throughout the rainy season, each temporary containment facility should be covered during non-working days, prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.
- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the

rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.

- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or sheds when available.
- An ample supply of appropriate spill clean-up material should be kept near storage areas.

Material Storage Area and Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep an ample supply of spill cleanup materials near the storage area.
- Keep storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

WM-2 Material Use

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Description and Purpose: Apply for the following materials used onsite:

- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete compounds
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds.
- Concrete compounds

- Other materials that may be detrimental to the environment

Implementation: The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instruction regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train employee and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoor or in containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse into a concrete washout pit located in the staging area. For oil based, paint, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.
- Keep an ample supply of spill clean-up material near use areas. Train employees in spill clean-up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Maintenance of this best management practice is minimal
- Spot check employees and subcontractors throughout the job to ensure appropriate practices are being employed.

WM-3 Stockpile Management

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials and pressure- treated wood.

Implementation: Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 feet away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater run on using a temporary perimeter sediment barrier.
- Use sandbags as a temporary perimeter sediment barrier.
- Implement wind erosion control practices as appropriate on all stockpiled material including Wind Erosion Control.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase

- During the rainy season, the stockpiles should be covered or protected with a temporary sediment perimeter barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpile of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with sandbags prior to the onset of precipitation.
- Stockpile of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly. weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Repair and/or replace perimeter controls and covers as needed to keep them

functioning properly.

WM-4 Spill Prevention and Control

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information particularly on spill prevention.

Applications:

- Soil stabilizers/binders
- Dust palliatives
- Fuels
- Lubricants
- Other petroleum distillates

Limitations:

- This BMP applies to spills caused by contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored on site. This BMP has been specifically written to address this project. The contractor will include additional information when hired.

Implementation: The following steps will help reduce the stormwater impacts of leaks and spills.

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows that a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriated disposal procedures (incorporate into regular safety meetings). The project Manager and/or Engineer shall hold weekly meeting with the contractor and all employees at the staging area to discuss construction activities and BMPs.
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spill of oils, petroleum products, substances listed under 40 CDF parts 110, 107, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spill should be covered and protected from stormwater run on during rainfall to the extent that it doesn't compromise clean-up activities.
- Do not bury or wash spill with water.
- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored
 - or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter control, containment structures, covers, and liners should be respired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the applied material is hazardous, the used cleanup materials are also hazardous and must be sent to either a certified laundry (rag) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
 - Contain the spread of the spill
 - Recover spilled materials.
 - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Spills should be cleaned up immediately
 - Contain spread of the spill
 - Notify the project foreman immediately.
 - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
 - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
 - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
 - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the following local Fire Department and the Office of Emergency Services for the location of the project. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
- Notification should first be made by telephone and followed up with a written report.
 - The services of spill contractor or a Haz-Mat team should be obtained immediately.
 - Construction personnel should not attempt to clean up until the appropriate and qualified staff have arrived at the job site.
 - Other agencies which may need to be consulted, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, CALIOSHA, etc.

Reporting

- Report significant spills to local agencies, such as Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.

- Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fuel. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as drain pan to catch spills or leaks when removing or changing fluids.
- Place drips pans under construction equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place
- the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal.
- Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked .
- batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designated area, located away from drainage course, to prevent the run on of stormwater and the runoff of spills.
- Discourage “topping off” of fuel tanks.
- Always use secondary containment, such as drain pan, when fueling to catch spill/leaks.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.
- Keep supplies of spill control and cleanup materials onsite, near storage, unloading and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

WM-5 Solid Waste Management

Description and Purpose: Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste

by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Applications:

- Solid waste generated from packaging materials including wood, paper, and plastic.
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products.
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes.
- Construction waste including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam and other materials used to transport and package construction materials.

Implementation:

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition of construction. Container filled with solid waste shall be transported to the Eureka transfer center daily during dock demolition.
- Collect site trash each day, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpsters cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractor on solid waste storage and disposal procedures.
- Require that employees and subcontractors follow solid waste handling and storage procedures.

- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage graters, trash racks, and ditch lines should be priority.
- Trash receptacles should be provided in the staging area where workers also congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly.
- Stormwater run on should be prevented from contacting stored solid waste. All solid waste shall be stored in watertight dumpsters.
- Solid waste storage areas should be located at least 50 feet from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Have hazardous waste hauled to an appropriate disposal site and/or recycling facility.
- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and brush from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Inspection and Maintenance:

- Inspect and verify that activity-based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.
- Inspect construction waste areas regularly
- Arrange for regular waste collection.

WM-8 Concrete Waste Management

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Prevent or reduce the discharge of pollutants to stormwater from concrete waste by performing onsite washout in designated area and training employee and subcontractors.

Applications:

- Concrete is used as a construction material.
- Concrete trucks and other concrete-coated equipment are washed onsite.

Limitations: Offsite washout of concrete waste may not be possible.

Implementation: The following steps will help reduce stormwater pollution from concrete waste:

- Discuss the concrete management techniques described in the BMP (such as handling of concrete waste and washout) with ready-mix concrete supplier before any deliveries are made.
- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas
- Avoid mixing excess amount of fresh concrete
- Perform washout of concrete trucks offsite or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped on site.
- For onsite washout:
 - Locate washout area at least 50 feet from storm drains, open ditches, or water bodies.
 - The designated concrete washout area shall be located in the staging area or as shown plans.
 - Do not allow runoff from this area.

Education:

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in temporary concrete washout facility.
- A sign should be installed adjacent to the temporary concrete washout facility to inform

concrete equipment operators to utilize the proper facility.

- The contractor shall utilize a below grade washout facility. The sediment is primarily composed of sand at the staging area. If excavation is not practical (i.e., pit collapses due to high fraction of sand in the sediment), then above temporary washout facility may be constructed.
- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding, and grooving to ensure proper methods are implemented.
- Slurry residue should be vacuumed and disposed in a temporary pit (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Procedures below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility. Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Temporary washout facilities should have a temporary pit or berm areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Washout of concrete trucks shall be performed in designated areas only.
- Only concrete from mixer truck chutes should be washed into concrete wash out.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed offsite.
- Once concrete wastes area washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed per WM-5, Solid Waste Management. Dispose of hardened concrete on a regular basis.
- Temporary Concrete Washout Facility (Type Above Grade)
 - Temporary concrete washout facility (type above grade) should be constructed with a recommended minimum length and minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
 - Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
- Temporary Concrete Washout Facility (Type Below Grade)
 - Temporary concrete washout facilities (type below grade) should be constructed with recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated

by washout operations.

- o Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of.
- Holes, depressions or other ground disturbance caused by removal of the temporary concrete
- washout facility should be backfilled and repaired.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Temporary concrete washout facility should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12in for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and disposed of.
- Washout facilities must be clean, or new facilities must be constructed and ready for use once the washout is 75% full.

WM-9 Sanitary/Septic Waste Management

Primary objective: Waste Management and Materials Pollution Control

Description and Purpose: Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well maintained facilities, and arranging for regular service and disposal.

Applications:

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Implementation:

Sanitary and septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes re properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- Sanitary facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.

Education

- Educate employees and subcontractors and suppliers on sanitary waste storage and disposal procedures.
- Educate employees and subcontractors and suppliers in identification of sanitary waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meeting).
- Establish a continuing education program to indoctrinate new employees.

Inspection and Maintenance:

- Inspect and verify that activity based BMPs are in place prior to commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Arrange for regular waste collection
- Portable sanitary facilities must be secured with spikes down to prevent over turning.

NS-9 Vehicle and Equipment Fueling

Objectives:

- Non-Stormwater Management Control

Description and Purpose: Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementation spill control, and training employees and subcontractors in proper fueling procedures.

Application: These procedures are suitable on all construction sites where vehicle and equipment take place.

Implementation:

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.

- Discourage "topping off" fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas on fueling trucks and should be disposed of properly after use. All absorbent pads will be placed in the hazardous material dumpster for later disposal at an approved disposal site.
- Drip pans should be used during vehicle and equipment fueling.
- Avoid mobile fueling of mobile construction equipment around the site, rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time. All construction equipment will be transported back to the staging area at the end of each working day.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used.
- Dedicate fueling areas should be protected from stormwater run on and run off and should be located at least 50 feet away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts. The contractor shall determine if recovery nozzles are need at the project site.
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks. There will be no fuel storage tanks at the project site. A fuel delivery truck shall deliver the fuel once a day to the staging area and fuel the equipment before leaving the site.

Inspection and Maintenance:

- Vehicle and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately, or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.
- Should contaminated soil be collected at the staging area, then it shall be stockpiled separately from non-contaminated sediment stockpile and disposed appropriately.

Additional Best Management Practices

- Dust Control / Wind Erosion Control
 - Contractor shall implement appropriate control measures such as spraying of water or covering of material.
 - Street and site cleaning and sweeping.
- Saw Cutting and Pavement removal
 - Contractor shall contain all materials created during these activities such as dust or slurry
- Protect and establish vegetation. The root structures of plants and trees help keep soil in place while leaves and canopies help dissipate rainfall energy to prevent dislodging and transporting of soil.
- Stabilize construction entrances and exits to prevent tracking onto roadways. As vehicles enter and leave construction sites, pollutants such as sediment, gravel and other loose particles are spread onto adjacent roads. Those pollutants can get washed into roadside ditches and are a nuisance to drivers when damage to vehicle paint or windshields occurs. Protect exposed slopes from erosion through preventative measures. Cover the slopes to avoid contact with storm water by hydroseeding, applying mulch or using plastic sheeting.
- Install straw wattles (fiber rolls) and silt fences on contour to prevent concentrated flow. Straw wattles should be buried 3 to 4 inches into the soil, staked every 4 feet, and limited to use on slopes that are no steeper than 3 units horizontal to 1 unit vertical. Silt fences should be trenched 6 inches by 6 inches into the soil, staked every 6 feet, and placed 2 to 5 feet from any toe of slope. Avoid the use of hay bales as sediment control devices. They have high failure rates and the hay is better suited as ground cover.
- Use brooms and shovels whenever possible to maintain a clean site instead of a hose. Introducing more water than necessary only adds to water pollution.
- Designate a concrete washout area to avoid wash water from concrete tools or trucks from entering gutters, inlets or storm drains. Maintain washout area and dispose concrete waste on a regular basis.
- Establish a vehicle storage, maintenance and refueling area to minimize the spread of oil, gas and engine fluids. The use of oil pans under stationary vehicles is strongly recommended.
- Protect drainage inlets from receiving polluted storm water through the use of filters such as fabrics, gravel bags or straw wattles.
- Check the weather forecast and be prepared for rain by having necessary materials onsite before the rainy season.
- Inspect all BMPs before and after a storm event. Maintain BMPs on a regular basis and replace as necessary.
- Street Sweeping and Cleaning: The Contractor is to implement a street sweeping and cleaning schedule for the duration of the project. The existing frontage improvements, including but not limited to existing curb & gutter, and paved roadways are to be kept free of debris. Material tracked onto the frontage improvements during construction activities, such as moving vehicles and equipment on and off the site, are to be cleaned at the end of each workday. Hand broom sweeping and washing will be acceptable for minor material removal. Street sweeping with mechanical equipment will need to be conducted at least once a week to address any materials tracked onto existing improvements.

Additional requirements listed in section 011000 Summary of Work

SECTION 014500 QUALITY CONTROL

PART 1: GENERAL

1.1 SUMMARY

- A. This section includes administrative and procedural requirements for quality assurance and quality control.
- B. Contractor reserves the right to arrange and pay for a qualified independent testing agency to perform required testing for the project. Test reports shall be submitted to the Owner within forty-eight (48) hours of receipt by Contractor.
- C. Owner will retain its own third party independent firm to conduct field testing/inspections and provide for all necessary laboratory tests and reports.
- D. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of the responsibility for compliance with the contract Documents.
 - 1. Specified test, inspections, and related actions do not limit the Contractor's quality-control efforts as necessary to provide compliance with the Contract Document requirements.
 - 2. Requirements for the Contractor to provide quality-control services required by the Designer, the Owner, or authorities having jurisdiction are not limited by the provisions of this section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: activities, actions, and procedures performed before and during execution of the work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: tests, inspections, procedures, and related actions before, during, and after execution of the work to evaluate completed construction complies with contract and construction industry requirements. Quality control services do not include contract enforcement activities performed by the Owner or the Designer of record.
- C. Testing Agency: an entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.3 DELEGATED DESIGN

- A. Performance and Design Criteria: where professional design services or certifications by a design professional are specifically required of the Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Owner.

1.4 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. Delegated-Design Submittal: in addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- C. Contractor’s Daily quality Control reports: the contractor shall designate an individual responsible for maintaining control over the quality of the work. For each day on which work is scheduled to be performed, the Contractor’s Quality Control Representative shall prepare and submit certified written reports that include the following:
 - 1. Date of report preparation and date work was performed.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples, tests, or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the work performed that day, and the reasons for non-work.
 - 7. Item of work tested or inspected. Test and inspection methods.
 - 8. Identification of products delivered/installed and corresponding specification sections.
 - 9. Complete test or inspection data.
 - 10. Test and inspection results and an interpretation of test results.
 - 11. Weather conditions. Ambient conditions at time of sample taking, testing and inspecting.
 - 12. Comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
 - 13. Name and signature of Quality Control Representative, and laboratory inspector.
 - 14. Recommendations on retesting and re-inspecting.
- D. Permits, licenses, and certificates: for the Owner’s records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, documents, established for compliance with standards and regulations bearing on performance of the work.

1.5 QUALITY ASSURANCE

- A. 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.
- B. 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.

- C. 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.
- D. 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.
- E. Professional Engineer Qualifications: a professional engineer who is legally qualified to practice in jurisdiction where project is located 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 similar regulations governing the work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- G. Testing Agency Qualifications: an agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in the types of tests and inspections to be performed.

1.6 QUALITY CONTROL

- A. Owner Responsibilities: the Owner may engage a qualified testing agency to perform additional testing services.
 - 1. The Owner will furnish the Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the 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 the Contractor, and the Contractor shall cover the expense of such retesting and re-inspection at no additional cost to the Owner.
 - 3. The presence or absence of the Owner's inspector or testing agency does not relieve the Contractor of the sole responsibility for compliance with the Contract Documents.
- B. Contractor Responsibilities: the Contractor is solely responsible for controlling the work to comply with the Contract Documents. Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
 - 1. Where testing or inspection services are not indicated the Owner's responsibility, engage a qualified testing agency to perform these quality-control services.
 - i. The Contractor shall not employ the same entity engaged by the Owner, unless agreed to in writing by the Owner.

2. Notify the Owner's testing agencies, Inspector of Record, and Contractor's testing agencies at least forty-eight (48) hours in advance of time when work that requires testing or inspecting will be performed.
 3. Where testing or inspection services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each testing or inspection service.
 4. Testing and inspecting requested by the Contractor and not required by the Contract Documents are the Contractor's responsibility.
- C. Special Tests and Inspections: the Contractor will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction.
1. The testing agency will notify the Owner and the Contractor promptly of irregularities and deficiencies observed in the work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to the Owner with a copy to the Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at substantial completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and re-inspect corrected work.
- D. 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.
- E. Re-testing/Re-inspecting: regardless of whether original tests or inspections were the Contractor's responsibility, provide quality-control services, including re-testing and re-inspecting, for construction that revised or replaced work that failed to comply with requirements established by the Contract Documents.
- F. Testing Agency Responsibilities: cooperate with the Owner and the Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify the Owner and the Contractor promptly of irregularities or deficiencies observed in the work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through the Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the work.
 5. Do not perform any duties of the Contractor.
- G. 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 the project site.
- H. Coordination: coordinate sequence of activities to accommodate required quality-assurance and quality-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.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

3.1 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 sections of these specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014500

SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Documents, Drawings and Individual Specification Sections; apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections:
 - a. Section 011000: Summary of Work.

1.3 USE CHARGES

- A. General: Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the Owner, the Design Professionals, occupants of the Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Contractor is responsible for payment of sewer service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Contractor is responsible for payment of water service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Contractor is responsible for payment of electric power service use charges for electricity used by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel (if applicable).
- B. Erosion and Sedimentation Control Plan: Show compliance with requirements of stormwater erosion and sediment control including Storm Water Pollution Prevention Plan (if applicable).
- C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage; including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.
 - a. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- D. Dust-Control and HVAC-Control Plan: For all enclosed construction activities, submit coordination drawing and narrative that indicates the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their

operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

- a. Locations of dust-control partitions at each phase of the work.
- b. HVAC system isolation schematic drawing.
- c. Location of proposed air filtration system discharge.
- d. Other dust-control measures.
- e. Waste management plan.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations and requirements of authority having jurisdiction for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ANSI A117.1.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before the Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 0.148-inch thick, galvanized steel, chain-link fabric fencing; minimum 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails.
- B. Portable Chain-Link Fencing: Minimum 0.148-inch thick, galvanized steel, chain-link fabric fencing; minimum 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized steel bases for supporting posts.
- C. Wood Enclosure Fence: Plywood, 8 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.
- D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.
- E. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.
- F. Insulation: Un-faced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices (when required), General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

- B. Owner's-Use Field Office (when required): Of sufficient size to accommodate needs of the Owner and construction personnel office activities and to accommodate project meetings. Keep office clean and orderly. Furnish and equip offices as follows:
 - a. Furniture required for the Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - b. Conference room of sufficient size to accommodate meetings of 20 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 and marker boards.
 - c. Drinking water and private toilet.
 - d. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 - e. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - a. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless the Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - a. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - b. 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.
 - c. Permanent HVAC System: If the Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. 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 by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - a. Arrange with utility company, the Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - a. Connect temporary sewers to municipal system as directed by authorities having jurisdiction. Obtain all required permits.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction. Obtain all required permits.
- D. Water Service: Connect to the Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - a. Toilets: Use of the Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - a. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.
 - i. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - ii. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 - b. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.
 - c. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- H. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - a. Provide dehumidification systems to maintain the facilities RH when required to reduce substrate moisture levels to level required to allow installation or application of finishes per manufacturer's requirements and recommendations.
- I. Electric Power Service: Connect to the Owner's existing electric power service. Maintain equipment in a condition acceptable to the Owner. Obtain all required permits.

- J. Electric Power Service: Provide electric power service and distribution system of sufficient size, number of phases, capacity, and power characteristics required for construction operations and testing of all installed equipment.
 - a. Install electric power service underground, unless otherwise indicated.
 - b. Connect temporary service to the Owner's existing power source, as directed by the Owner.
- K. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - b. Install lighting for the Project identification sign.
- L. Telephone Service: Provide temporary telephone service in Owner's-use facilities for use by all construction personnel. Install two telephone lines for each field office.
 - a. Provide additional telephone lines for the following:
 - i. Provide a dedicated telephone line for each facsimile machine in each field office.
 - b. At each telephone, post a list of important telephone numbers.
 - i. Police and fire departments.
 - ii. Ambulance service.
 - iii. Contractor's home office.
 - iv. Design Professional's office.
 - v. Testing Consultant's offices.
 - vi. Owner's office.
 - vii. Principal subcontractors' field and home offices.
 - c. Provide superintendent with cellular telephone for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - a. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 - b. Maintain support facilities until Substantial Completion inspection date is scheduled. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
 - a. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 - b. Prepare subgrade and install sub-base and base for temporary roads and paved areas specified in Individual Specification Sections.

- c. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - a. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - b. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: Provide temporary parking areas for construction personnel.
- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain the Project site, excavations, and construction free of water.
 - a. Dispose of rainwater in a lawful manner that will not result in flooding the Project or adjoining properties nor endanger permanent Work or temporary facilities.
 - b. Remove snow and ice as required to minimize accumulations.
- F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - a. Identification Signs: Provide Project identification signs as specified in the Contract Documents.
 - b. Temporary Signs: Provide other signs as required to inform public and individuals seeking entrance to the Project.
 - i. Provide temporary, directional signs for construction personnel and visitors.
 - c. Maintain and touchup signs so they are legible at all times.
- G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
- H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - a. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- I. Temporary Elevator Use: Use of elevators is not permitted.
- J. Existing Elevator Use: Use of the Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - a. Do not load elevators beyond their rated weight capacity.
 - b. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- K. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- L. Existing Stair Usage: Use of the Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore stairs to condition existing before initial use.

- a. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- M. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to authorities having jurisdiction.
 - a. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - b. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - c. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
 - d. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Site Enclosure Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - a. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - b. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to the Owner.
- F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- H. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

- I. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
 - a. Construct covered walkways using scaffold or shoring framing.
 - b. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 - c. Paint and maintain appearance of walkway for duration of the Work.
- J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
 - a. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by the Owner from fumes and noise.
 - a. Construct dustproof partitions with fire rated gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 - b. Where fire-resistance-rated temporary partitions are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - c. Insulate partitions to control noise transmission to occupied areas.
 - d. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - e. Protect air-handling equipment.
 - f. Provide walk-off mats at each entrance through temporary partition.
- L. Fire Safety During Construction: Comply with all requirements identified herein as well as the more stringent requirements of the applicable codes (New York State Building and Fire Codes or New York City Building and Fire Codes).
 - a. No smoking: Smoking shall be prohibited throughout the project/construction site. "No Smoking" signs shall be conspicuously posted at all entrances and throughout the site.
 - b. The Contractor shall designate a Fire Prevention Program Superintendent/ Fire Safety Manager who shall be responsible for all fire safety efforts until completion and acceptance of the Work described in the Contract Documents that include but are not limited to the following:
 - i. Prefire Plans. Develop in cooperation with the local Fire Chief and Fire Code Official. Any changes affecting the utilization of information contained in the plan shall result in notification to the local Fire Chief and Fire Code Official.
 - ii. Training. Job site personnel shall be trained in fire safety practices and procedures and the proper use of fire protection equipment, including hand-held fire extinguishers, hose lines, fire alarm and sprinkler systems.
 - iii. Fire Protection Devices. Fire protection and detection equipment shall be maintained and serviced.
 - iv. Hot Work Operations. Welding, cutting, open torches, torch-applied roof system activities, and other hot work operations shall be conducted under a permit system. A fire watch and fire extinguishers shall be provided.

- v. Impairment of Fire Protection Systems. Coordinate planned, emergency or accidental impairments of fire protection systems to include tagging of impaired systems and notification of Fire Department, Alarm Company, Building Owner/Operator, and Contractors.
 - vi. Temporary Covering of Fire Protection Devices. Coverings placed on or over fire protection devices for protection from damage shall be immediately removed upon the completion of the Work in the room or area in which the devices are installed.
- c. Provide readily accessible telephone service for fire calls at a location or locations approved by the Owner.
 - i. The Contractor shall pay all costs thereof until completion and acceptance of the Work or as otherwise directed by the Owner.
 - ii. Provide/post the street address of the construction site and the emergency telephone number of the Fire Department adjacent to the telephone.
- d. Provide or maintain a Temporary or Permanent Standpipe system for Fire Department use in accordance with the following:
 - i. Buildings subject to the New York State Building Code: In buildings that require a standpipe system, such standpipe shall be installed when the progress of construction reaches a height of 40 feet.
 - ii. Buildings subject to the New York City Building Code: In buildings that require a standpipe system, such standpipe shall be installed when the progress of construction reaches a height of 75 feet. The standpipe shall be equipped with an air pressurized alarm system.
 - iii. Buildings being demolished: An existing standpipe system shall be maintained in operation on all floors, starting one floor directly below the floor being demolished. The existing standpipe can be converted to a dry standpipe if freezing conditions exist.

3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - a. Protect porous materials from water damage.
 - b. Protect stored and installed material from flowing or standing water.
 - c. Keep porous and organic materials from coming into prolonged contact with concrete.
 - d. Remove standing water from decks.
 - e. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - a. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - b. Keep interior spaces reasonably clean and protected from water damage.
 - c. Periodically collect and remove waste containing cellulose or other organic matter.

- d. Discard or replace water-damaged material.
 - e. Do not install material that is wet.
 - f. Discard, replace or clean stored or installed material that begins to grow mold.
 - g. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
- a. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - b. Use permanent HVAC system to control humidity.
 - c. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - i. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - ii. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record daily readings over a forty-eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to the Design Professional.
 - iii. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - a. 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. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been 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 temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - a. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves right to take possession of the Project identification signs.
 - b. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. 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 temporary entrances, as required by authorities having jurisdiction.

- c. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 – Contract Closeout Requirements.

END OF SECTION 015000

SECTION 017100
MOBILIZATION & DE-MOBILIZATION

PART 1: GENERAL

1.1 Description

- A. This section includes mobilization and demobilization to and from the jobsite.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

3.1 PREPARATION

- A. Make arrangements to contact all public works departments prior to mobilizing to the job site and secure all necessary permits prior to performing work.
- B. Notify Owner a minimum of forty-eight (48) hours in advance of mobilization to job site location.
- C. Secure all required bonds and insurance and submit to the owner prior to mobilization.
- D. The Contractor shall not mobilize until after the Owner has issued the Notice to Proceed.

3.2 MOBILIZATION

- A. Move materials, equipment, and laborers as necessary to job site location with minimal disturbance. No separate payment will be made for subsequent mobilizations to the jobsite.

3.3 DE-MOBILIZATION

- A. Remove all materials, equipment, laborers, solid waste and debris created by construction activities from job site location.
- B. Maintain minimal disturbance to site upon departure.

END OF SECTION 017100

SECTION 017400
CLEANING AND WASTE MANAGEMENT

PART 1: GENERAL

1.1 Summary

- A. Includes administrative and procedural requirements for Cleaning and Waste Management as described in the Contract Documents.

1.2 Description

- A. Dispose of waste, debris, and rubbish resulting from the construction of the project.
- B. If excess excavation spoils cannot be suitably disposed of on site, as directed by the Engineer, it shall be hauled away at the Contractor's expense.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

3.1 Requirements

- A. Remove waste materials, debris, and rubbish from the site and legally dispose of at a public or private dumping area(s) off of site property. Use of private disposal facilities will require prior authorization by the Owner and provision of a signed release of liability by the facility Owner/Representative for the project Owner.
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - a. Do not burn or bury rubbish or waste materials on the project site.
 - b. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - c. Do not dispose of wastes into streams or waterways.

3.2 Progress Cleaning

- A. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.
- B. Keep premises broom clean during progress of the Work.
- C. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Completion.
- D. Supervise construction activities to ensure that no part of construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- E. Clean exposed surfaces and protect as necessary to avoid damage and deterioration.

3.3 Final Cleaning

- A. Immediately before Substantial Completion, thoroughly clean the area where The Work was performed.
- B. Comply with individual manufacturer's cleaning instructions.
- C. Property is to be completely cleaned and ready for Owner occupancy.
- D. Final cleaning to occur following removal of any and all tools and equipment that may otherwise pose a potential damage to the completed project.

END OF SECTION 017400

**SECTION 017800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Individual Product Sections: Specific requirements for operation and maintenance data.
- B. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - i. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - b. Advise Owner of pending insurance change-over requirements.
 - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - d. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - e. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
 - f. Deliver tools, spare parts, extra stock, and similar items.
 - g. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
 - h. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities, from the site, along with construction tools, mock-ups, and similar elements.
 - i. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

- B. Inspection Procedures: On receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Engineer will prepare:
 - a. The Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 - b. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
 - c. Results of the completed inspection will form the basis of requirements for final acceptance.
- C. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations, where required.
 - b. Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and the list has been endorsed and dated by the Engineer.
 - c. Submit consent of surety to final payment.

1.04 SUBMITTALS

- A. Project Record Documents: Submit documents to Owner with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - a. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner will review draft and return one copy with comments, if needed.
 - b. For equipment, or component parts of equipment put into service during construction and operated by the Owner, submit completed documents within fourteen (14) calendar days after acceptance.
 - c. Submit one copy of completed documents fourteen (14) calendar days prior to final inspection. This copy will be reviewed and returned after final inspection, with Owner comments, if needed. Revise content of all document sets as required prior to final submission.
 - d. Submit two sets of revised final documents in final form within fourteen (14) calendar days after final inspection.
- C. Warranties and Bonds:
 - a. For equipment or component parts of equipment put into service during construction with the Owner's permission, submit documents within fourteen (14) calendar days after acceptance.
 - b. Make other submittals within fourteen (14) calendar days after Date of Substantial Completion and prior to final Application for Payment.
 - c. For items of Work for which acceptance is delayed beyond the Date of Substantial Completion, submit within fourteen (14) calendar days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - a. Drawings.
 - b. Specifications.
 - c. Addenda.
 - d. Change Orders and other modifications to the Contract.
 - e. Reviewed shop drawings, product data, and samples.
 - f. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by the Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - a. Changes made by Addenda, change order, substitution, and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - a. Measured depths of foundations in relation to finish first floor datum.
 - b. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - c. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - d. Field changes of dimension and detail.
 - e. Details not on original Contract drawings.

3.2 OPERATION AND MAINTENANCE DATA

- A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:

- a. Product data, with catalog number, size, composition, and color and texture designations.
 - b. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - a. Description of unit or system, and component parts.
 - b. Identify function, normal operating characteristics, and limiting conditions.
 - c. Include performance curves, with engineering data and tests.
 - d. Complete nomenclature and model number of replaceable parts.
- B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- D. Provide servicing and lubrication schedule, and list of lubricants required.
- E. Include manufacturer's printed operation and maintenance instructions.
- F. Include sequence of operation by controls' manufacturer.
- G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- H. Additional Requirements: As specified in individual product specification sections.

3.5 OPERATION AND MAINTENANCE MANUALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Prepare data in the form of an instructional manual.
- C. Binders: Commercial quality, 8-1/2 by 11 inch (216 by 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- F. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 - a. Part 1: Directory, listing names, addresses, and telephone numbers of Owner, Contractor, Subcontractors, and major equipment suppliers.

- b. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - i. Significant design criteria.
 - ii. List of equipment.
 - iii. Parts list for each component.
 - iv. Operating instructions.
 - v. Maintenance instructions for equipment and systems.
 - vi. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
- c. Part 3: Project documents and certificates, including the following:
 - i. Shop drawings and product data.

3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within fourteen (14) calendar days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION 017800

DIVISION 02
EXISTING CONDITIONS

**SECTION 022100
SURVEY CONSTRUCTION STAKING**

PART 1: GENERAL

1.1 Description

- A. The work to be done under this section shall be by an agent of the Owner and shall consist of furnishing and setting construction stakes and marks by the Owner to establish the lines and grades required for completion of the work as shown on the plans and specified in the project specifications. Staking shall be limited to four (4) trips provided by the owner.
- B. The Contractor shall provide or procure surveying services as necessary for the successful completion of the work for all work required beyond that initially provided by the Owner.
- C. The Contractor is responsible for all day-to-day grade-setting (using Owner provided survey and grade control) and field measurement needed to build all proposed developments.

PART 2: PRODUCTS (not used)

PART 3: EXECUTION

- A. Construction staking shall be performed under the direction of a licensed land surveyor or registered professional engineer familiar with construction surveying and staking.
- B. Construction staking shall be performed, as necessary, to control the work. Construction stakes and marks shall be furnished and set with accuracy adequate to assure that the completed work conforms to the lines, grades, and sections shown on the plans.
- C. The Owner will provide the following construction staking:
 - 1. Benchmark and reference control.
 - 2. Clearing and Grubbing limits including all horizontal transition points. Limit to be marked at fifty foot intervals along straight runs unless otherwise requested by the Contractor in writing prior to mobilization for marking.
 - 3. Road centerline horizontal and vertical control at fifty foot intervals for straight runs, curve (vertical and horizontal) beginning; ending; and radii center (for horizontal only), and super-elevation transitions in compliance with Caltrans requirements.
 - 4. All buried utility beginning, transition (horizontal/vertical), and ending elevation and locations. Note: if buried utility is consistent in alignment w/ roadway centerline alignment then such will be provided as a cross-section in the civil plan set and site staking will reflect the plan set in reference.
 - 5. All overhead utility pole, guy, and overhead-to-underground transition.
 - 6. Cut and fill hinge and toe locations in fifty-foot intervals for straight runs and all transitions of grade and direction.
 - 7. All earth retaining system alignments based on face batter at leveling course and leveling course and finish elevations. Alignment to include all horizontal transitions.
 - 8. Building batter based on one major wall (minimum) at beginning and end, and finish floor elevation (first story).
- D. Additional construction staking requested by the Contractor, not specifically itemized under standard Owner provided staking above will be at the Contractor's expense. Owner will provide original staking of the above items at no charge to the Contractor. Subsequent or

replacement staking of the items will be at the Contractor's expense and be at no additional cost to the Owner.

- E. The Contractor shall provide a construction staking request in writing to the Owner and Engineer no less than seventy-two (72) hours prior to the desired time for construction staking to be performed.
- F. Construction stakes shall be removed from the site by the Contractor when no longer needed. Removal and disposal of construction staking materials is the sole responsibility of the Contractor.
- G. In the event the Contractor's operations destroy any of the Owner's survey control points, the Contractor shall either replace such control points at his expense, subject to verification by the Engineer, or request the Owner to replace the destroyed control points. If requested to replace the control points, the Owner will do so within fourteen (14) calendar days. The cost of any such verification or replacement of the Owner's control surveys will be the sole responsibility of the Contractor with no additional cost to the Owner. The Contractor will not be allowed any adjustment in contract time for such verification or replacement of survey control points.
- H. The Contractor must preserve all Geographic Reference Stations, section corners, and all other legal property monuments of any kind during all construction and related activities. It is the Contractor's responsibility to become familiar with the survey control and monumentation of the site and surrounding property prior to conducting activities on the site that may potentially jeopardize such facilities.
- I. The Contractor shall give written notice to the Owner and Engineer at least five (5) working days in advance of any need to disturb or destroy any of the monuments of the site. Contractor must receive approval for such destruction or disturbance from the Owner and Engineer prior to conducting the work.
- J. Only a Professional Land Surveyor registered in the State of California will be permitted to perform surveying to reset or replace destroyed monuments. The Professional Land Surveyor shall follow all rules, regulations, provisions, and laws of the State of California, as applicable for such work.
- K. The cost of replacement of monuments destroyed or disturbed by the Contractor will be the sole responsibility of the Contractor and be at no additional cost to the Owner.

PART 4: MEASUREMENT

- A. The Owner will provide construction staking including benchmarks and layout. No payment will be made to the Contractor for these items.

END SECTION 022100

SECTION 024000 DEMOLITION

PART 1 GENERAL

1.1 Description

- A. Includes demolition of existing developments, facilities, and improvements as required to accommodate new construction. Also includes supplementary clearing and grubbing requirements.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 Infrastructure Removal

- A. Existing infrastructure, developments, and site improvements scheduled for removal must be addressed in strict compliance with applicable laws and regulations.
- B. Contractor to secure authorized facility(ies) for disposal of generated rubble and demolition debris. Facility authorization must be submitted to the Owner and approved for use prior to beginning work.
- C. Dust and other airborne particles generated by demolition activities must be controlled and reduced to acceptable air quality levels. Airborne particle retardant practices in strict accordance with erosion and pollution requirements are to be administered.
- D. Noise pollution is to be minimized during demolition activities. Excessive noise generating activities are to be scheduled between 0900 and 1600 hours, Monday through Friday to reduce the potential impact to adjacent property owners and occupants.

3.2 Protection

- A. Locate, identify, and protect existing facilities (scheduled to remain) from damage.
- B. Identify and protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect benchmarks from damage and displacement.

3.2 Clearing

- A. Clear only those areas required for access to site and execution of Work as depicted in construction plans and described in scope of work.

3.3 Removal

- A. Remove paving, brush, trees, and other debris as required and dispose of off-site in strict accordance with applicable laws and regulations and only at facilities approved and authorized for such disposal.

END OF SECTION 024000

DIVISION 03
CONCRETE

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section specifies Cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 SUBMITTALS

- A. Product Data: for each type of product indicated.
- B. Design Mixtures: for each concrete mixture.
- C. Shop Drawings: For steel reinforcement.
- D. Material test reports.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: a firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - a. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities".
- B. ACI Publications: comply with the following unless modified by requirements in the Contract Documents:
 - a. ACI 301: "Specification for Structural Concrete," Sections 1 through 5.
 - b. ACI 117: "Specifications for Tolerances for Concrete Construction and Materials".
- C. Pre-installation conference: conduct a conference at the project site.

1.4 MEASUREMENT

- A. Measurement and payment is per bid schedule Section 004100.

1.5 RELATED SECTIONS

- A. Divisions 31, 32, and 33.

1.6 REFERENCES

- A. ACI 304: Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- B. ASTM C94: Ready-Mixed Concrete.

PART 2: PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-formed finished concrete: form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize the number of joints.
- B. Rough-formed finished concrete: plywood, lumber, metal, or other approved materials. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M. Grade 60 (grade 420), deformed.
- B. Galvanized-steel welded wire reinforcement: ASTM A 185, plain, fabricated from galvanized steel wire into flat sheets.
- C. Bar supports: bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or pre-cast concrete according to CRSI's "Manual of Standard Practice".

2.3 CONCRETE MATERIALS

- A. Cementitious Material: use the following cementitious materials, of the same type, brand, and source, throughout the project:
 - a. Portland Cement: ASTM C150, Type III
- B. Normal-weight aggregates: ASTM C33, graded, $\frac{3}{4}$ inch (19 mm) nominal maximum coarse-aggregate size.
 - a. Fine and Coarse Aggregates: free of materials with deleterious reactivity to alkali in cement.
- C. Water: Clean (not detrimental to concrete). ASTM C94/C94M and potable.

2.4 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Chemical Admixtures: provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - a. Water reducing admixture: ASTM C494/C494M, Type A.
 - b. Retarding admixture: ASTM C494/C494M, Type B.
 - c. Water reducing and retarding admixture: ASTM C494/C494M, Type D.
 - d. High range, water reducing admixture: ASTM C494/C494M, Type F.
 - e. High range, water reducing and retarding admixture: ASTM C494/C494M, Type G.
 - f. Plasticizing and retarding admixture: ASTM C1017/C1017M, Type II.

2.5 VAPOR RETARDERS

- A. Plastic vapor retarder: ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397 not

less than 6 mil thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

- B. Joint seams to overlap a minimum of twelve inches and be secured in place with manufacturer recommended and Engineer approved joint tape.

2.6 CURING MATERIALS

- A. Evaporation retarder: waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz/sq. yd. (305 g/sq. m) when dry.
- C. Moisture-retaining cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: potable.
- E. Clear, waterborne, membrane-forming curing compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- F. Clear, waterborne, membrane-forming curing compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, solvent-borne, membrane-forming curing and sealing compound: ASTM C 1315, Type 1, Class A.
- H. Clear, waterborne, membrane-forming curing and sealing compound: ASTM C 1315, Type 1, Class A.

2.7 RELATED MATERIALS

- A. Expansion and isolation joint filler strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Provide concrete to the following criteria:
 - a. Minimum compressive strength: 3,000 psi at 28 days.
 - b. Maximum water-cementitious materials ratio: 0.45.
 - c. Slump limit: 4 inches (100 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
 - d. Air content: 6 percent, plus or minus 1.5 percent at point of delivery for $\frac{3}{4}$ inch (19 mm) nominal maximum aggregate size.

2.9 CONCRETE MIXING

- A. Ready mix concrete: measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.

- a. When air temperature is between 85 and 90 degrees F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.10 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "manual of Standard Practice".

PART 3: EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

- A. Plastic vapor retarders: place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 - a. Lap joints twelve inches minimum and seal with manufacturer's recommended tape.
 - b. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 STEEL REINFORCEMENT

- A. General: comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

3.5 JOINTS

- A. General: construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction joints: install so strength and appearance of concrete are not impaired, at locations indicated or as approved by the Engineer.
- C. Contraction joints in slabs-on-grade: form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - a. Grooved joints: form contraction joints after initial floating by grooving and

finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

- b. Sawed joints: form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8 inch (3.2 mm) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation joints in slabs-on-grade: after removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

3.6 EXAMINATION

- A. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed and positioned securely and will not cause hardship in placing concrete.

3.7 PREPARATION

- A. Thoroughly compact concrete bearing area to a minimum depth of 6 inches. Compaction shall be a minimum of ninety-five percent (95%) relative compaction beneath all foundations.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - a. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-weather placement: comply with ACI 306.1.
- D. Hot-weather placement: comply with ACI 301.

3.8 FINISHING FORMED SURFACES

- A. Rough-formed finish: as cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - a. Apply to concrete surfaces.
- B. Smooth-formed finish: as cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - a. Apply to concrete surfaces exposed to public view.

- C. Related unformed surfaces: at tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

- A. General: comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float finish: consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
 - a. Apply a trowel finish to surfaces indicated.
 - b. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10 foot (3.05 m) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed ¼ inch (6 mm).
- C. Trowel finish: after applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
- D. Trowel and fine-broom finish: apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
 - a. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
- E. Broom finish: apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

3.10 CONCRETE PROTECTING AND CURING

- A. General: protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation retarder: apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m 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.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - a. Moisture curing: keep surfaces continuously moist for not less than seven days.
 - b. Moisture-retaining-cover curing: cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - c. Curing compound: apply uniformly in continuous operation by power spray or heavy rainfall within three hours after initial application maintain continuity of

coating and repair damage during curing period.

- i. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
- d. Curing and sealing compound: apply uniformly to floors and slabs indicated in a 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.

3.11 FIELD QUALITY CONTROL

- A. Testing and inspection: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
 - a. Testing services: tests shall be performed according to ACI 301.

END OF SECTION 033000

DIVISION 05
METALS

SECTION 055500
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.

1.02 RELATED REQUIREMENTS

- A. Section 099100 - Paints and Coatings: Paint finish.

1.03 SUBMITTALS

- A. See Section 013300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
- C. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36 / A36M.
- B. Steel Tubing: ASTM A500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A283.
- D. Pipe: ASTM A53 / A53M, Grade B Schedule 40, hot-dip galvanized finish.
- E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153 / A153M when connecting galvanized components.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practicable sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured, per AISC specifications.
- C. Continuously seal joined members by intermittent welds and plastic filler.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FINISHES - STEEL

- A. Prime paint all steel items.
 - 1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Finish Painting: Two coats flat black.
- F. Steel fabrications are to be Galvanized steel as indicated on the drawings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated.
- D. Perform field welding in accordance with AWS D1.1 / D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

END OF SECTION 055000

SECTION 055510
METAL HANDRAILS AND RAILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.

1.02 RELATED REQUIREMENTS

- ~~A. Section 099100 - Paints and Coatings: Paint finish.~~

1.03 SUBMITTALS

- A. See Section 013300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
- C. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36 / A36M.
- B. Steel Tubing: ASTM A500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A283.
- D. Pipe: ASTM A53 / A53M, Grade B Schedule 40, hot-dip galvanized finish.
- E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153 / A153M when connecting galvanized components.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practicable sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured, per AISC specifications.
- C. Continuously seal joined members by intermittent welds and plastic filler.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FINISHES - STEEL

~~A. Prime paint all steel items.~~

- ~~1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.~~

~~B. Prepare surfaces to be primed in accordance with SSPC SP2.~~

~~C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.~~

~~D. Prime Painting: One coat.~~

~~E. Finish Painting: Two coats flat black.~~

F. Steel fabrications are to be Galvanized steel as indicated on the drawings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated.
- D. Perform field welding in accordance with AWS D1.1 / D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

PART 4 PERFORMANCE REQUIREMENTS

4.01 GENERAL:

- A. Handrails and railings shall withstand structural loading as determined by allowable design working stresses of materials based on the following standards.
- B. Cold-Formed Structural Steel: AISI SG-673, Part 2.

4.02 STRUCTURAL PERFORMANCE:

- A. Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections:
 1. Top Rail: must withstand the following loads:
 - a. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
 - b. Uniform load of 50 lbf-ft. (0.07 kN-m) applied horizontally and concurrently with uniform load of 100 lbf-ft. (0.14 kN-m) applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 2. Handrails Not Serving as Top Rails: must withstand the following loads:
 - a. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.

- b. Uniform load of 50 lbf-ft. (0.07 kN-m) applied in any direction.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
- 3. Guard Infill Area: must withstand the following loads:
 - a. Concentrated horizontal load of 200 lbf (0.89 kN) applied to 1 square foot (0.09 m²) at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Loads need not be assumed to act concurrently with loads on top rails in determining stress on guard.
- 4.03 THERMAL MOVEMENTS:
 - 1. Handrails and railings are to allow for movements resulting from 120 deg F (49 deg C) changes in ambient and 180 deg F (82 deg C) surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
- 4.04 Corrosion Resistance:
 - 1. Separate incompatible materials to prevent galvanic corrosion.

PART 5 SUBMITTALS

5.01 GENERAL:

- A. Submit under provisions of Section 013300 - Submittal Procedures.

5.02 PRODUCT DATA:

- A. Submit manufacturer's data sheets on each product to be used, including, but not limited to, the following:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Grout, anchoring cements, and paint products.

5.03 SHOP DRAWINGS:

- A. Submit shop drawings showing fabrication and installation of handrails and railings. Include plans, elevations, sections, details, and attachments to other work.

END OF SECTION 055000

DIVISION 06
WOOD, PLASTICS, AND COMPOSITES

SECTION 061000 ROUGH CARPENTRY

PART 1 GENERAL

1.1 REFERENCES

- A. MIL-L-1914-C Lumber and Plywood, Fire Retardant Treated.
- B. MIL-V-13518C(1) Wood Preservative, Surface Sealing Compound.
- C. ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- D. ASTM A563 – Standard Specification for Carbon and Alloy Steel Nuts.
- E. ASTM F1667 – Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- F. ASME B18.2.1 – Square and Hex Bolts and Screws (Inch Series).
- G. ASTM B18.6.1 – Wood Screws (Inch Series).
- H. PS 1 - Construction and Industrial Plywood.
- I. PS 20 - American Softwood Lumber Standard.
- J. PS 58 - Basic Hardwood.
- K. NFPA - National Design Specification for Wood Construction.
- L. WWPA - Western Wood Products Association
- M. AWWA C27 - American Wood Preservers Standard.
- N. California Building Code – 2016 Edition.
- O. APA – American Plywood Association.
- P. WCLIB – West Coast Lumber Inspection Bureau: Standard Grading Rules for West Coast Lumber.
- Q. WRCLA – Western Red Cedar Lumber Association
- R. Structural General Notes on Structural Drawings.

1.2 QUALITY ASSURANCE

- A. Rough Carpentry Lumber: Visible grade stamp, of agency certified by National Forest Products Association (NFPA). Install in accordance with the California Building Code - 2001 Edition.
- B. When applicable, fabricate site made finish carpentry items in accordance with recommendations of Quality Standards of Architectural Woodwork Institute (AWI).
- C. Lumber grading Agency: Certified by WCLIB or WWPA.
- D. Plywood Grading Agency: Certified by APA.
- E. Each piece of lumber and plywood shall be stamped with grade by grading agency.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver shop fabricated carpentry items until site conditions are adequate to receive the work. Protect items from weather while in transit. Do not allow uneven exposure to sunlight.
- B. Store indoors, in ventilated areas with a constant, minimum temperature of 60°F, maximum relative humidity of 55 percent.

1.4 SUBMITTALS

- A. Submit shop drawings under provisions of Section 013300.
- B. Indicate dimensions, wood grades, component profiles, drilled holes, fasteners, connectors, erection details and sequence.

1.5 COORDINATION

- A. Coordinate and provide solid backing for wall and ceiling mounted items.

PART 2 PRODUCTS

2.1 ROUGH CARPENTRY MATERIALS

- A. Lumber: PS 20, graded in accordance with established Grading rules, maximum moisture content of nineteen (19) percent, of following species and grades:
 - 1. Non-structural Light Framing: Stress group Western Woods construction grade.
 - 2. Structural Lumber: See Structural General Notes
- B. Preservative Wood Treatment: Pressure-treat above-ground items with water-borne preservatives to a minimum retention of 0.25 pcf. For interior uses, after treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of nineteen (19) percent and fifteen (15) percent. Pressure-treat wood members in contact with the ground with water-borne preservatives to a minimum retention of 0.40 pcf. Complete fabrication of treated items prior to treatment where possible. If cut after treatment, coat cut surfaces. Refer to Structural General Notes for fastener requirements.
- C. Plywood: Douglas Fir Plywood, C-C, exterior glue, thickness as required, each piece shall bear an Underwriter's Laboratories, Inc., label; plywood shall be dried to an average moisture content of fifteen (15) percent. See Structural General Notes.
- D. Oriented Strand Board (OSB): DOC PS2.
 - 1. Wall Sheathing: Exposure I, Structural I Sheathing.
 - a. Span Rating: sixteen inch (16") centers or less
 - b. Nominal Thickness: not less than 3/8-inch OSB
 - 2. Roof Sheathing: Exposure I, Structural I.
 - a. Span Rating: sixteen inch (16") centers or less
 - b. Nominal Thickness: not less than 15/32 inch
 - 3. Floor Sheathing: 3/4 inch T&G
- E. Nails, Screws, Spikes, and Staples: Galvanized for exterior locations, high humidity locations and treated wood, plain finish for other interior locations, size and type to suit application. Refer to Structural General Notes for fastener requirements in treated wood.
- F. Bolts, Nuts, Washers, Lags, Pins, and Screws: Medium carbon steel, sized to suit application galvanized for exterior locations, high humidity locations and treated wood, plain finish for other interior locations. Refer to Structural General Notes for fastener requirements in treated wood.
- G. Fasteners:

1. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - a. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating per ASTM A 153 or AISI Type 304 stainless steel. Refer to Structural General Notes for additional requirements for fasteners in treated wood.
2. Nails, Wire, Brads, and Staples: ASTM F1667.
3. Power Driven Fasteners: National Evaluation Report NER-272.
4. Wood Screws: ANSI B18.6.1
5. Lag Bolts: ANSI B 18.2.1
6. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.
- H. Posts: Premium grade Douglas Fir, see Structural General Notes.
- I. Post Bases: Simpson Strong Tie EPB (elevated post base) mode EPB66ga, galvanized finished.
- J. Glued Laminated Beams (as applicable):
 1. Lumber: Comply with ANSI / AITC A190.1 and applicable lumber association standards cited herein for grades required to achieve glu-lam requirements for design values, appearance, fabrication limitations, and species.
 2. Stress Values for Beams, Purlins, and Arches: Provide glues laminated members, sized as shown on drawings.
 3. Lumber Species: Douglas Fir-Larch,
 4. Adhesive: ANSI / AITC A190.1 wet-use type.
 5. End Sealer: Manufacturer's standard, transparent, colorless wood lealer, effective in retarding transmission of moisture at cross-grain cuts.
 6. Penetrating Sealer: Manufacturer's standard, translucent, penetrating wood sealer that will not interfere with application of wood stain and transparent finish or paint finish.
- K. Prefabricated Structural Wood (as applicable):
 1. Manufacturer: Trus Joist Weyerhaeuser, Louisiana-Pacific, Boise Cascade or approved. Trus Joist Weyerhaeuser is specified for type, quality, and construction required. See Structural Notes on drawings.
 - a. Prefabricated Parallel Strand Lumber Materials: Parallam PSL materials manufactured from strands of wood fiber in continuous process with strands oriented to length of member. Adhesives to be waterproof type per ASTM D2559.
 - b. Prefabricated Laminated Veneer Lumber Member: Microlam LVL materials manufactured from sheets of thin veneer structurally bonded together with adhesive. Adhesives to be waterproof type per ASTM D2559.
 - c. Prefabricated Laminated Strand Lumber Member: TiberStrand LSL materials manufactured from strands of wood fiber structurally bonded together with adhesive. Adhesives to be waterproof type per ASTM D2559.
- L. Miscellaneous Lumber: Provide lumber for support or attachment of other construction including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- M. Miscellaneous Materials:

1. Sill Sealer Gaskets: ¼ inch thick, ribbed, closed cell polyethylene foam in continuous roll; match width of sill plate.
2. Insect Screen: Galvanized hardware cloth.

2.2 FINISH CARPENTRY MATERIALS

- A. Graded in accordance with the requirements of WCLB, WRCLA, or AWI.
- B. Nails: Size and type to suit application. #7 Trim head screws. black oxide at interior use, for installation of cedar paneling/ceiling boards.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Size and type to suit application; non-corrosive plain finish in concealed location.
- D. Interior Cedar Paneling/Ceiling Boards: Western Red Cedar, 1x12, A & Better, KD, S1S2E, smooth side exposed.
- E. Interior Cedar Trim: Western Red Cedar, C & Better, clear, S1S2E, smooth side exposed, sizes as indicated on the drawings.
- F. Interior Hardwood Trim: Premium grade Alder.
- G. Fiber glass out looker “poles” (exterior, at eaves): custom fabricate from fiber glass tube, with applied texture and paint to match image provided by Project Coordinator, Reference Sunbacker, Fiberglass Inc, Phone 1-877-851-9052, Alfred Lewis.
- H. Alternate Interior Redwood Paneling: Clear grade, vertical grain, kiln dried 1x10 tongue and groove, smooth planed faced.

2.3 FABRICATION OF FINISH CARPENTRY ITEMS

- A. Fabricate finish carpentry items in accordance with recommendations of AWI. Shop-fabricate items where possible.
- B. Use exposed fastening devices or nails only when unavoidable.
- C. Shop-assemble finish carpentry items for delivery to site in sizes easily handled and to ensure passage through building openings.

2.4 PREPARATION OF FINISH CARPENTRY ITEMS

- A. Sand work smooth and set exposed nails and screws. Apply wood filler in exposed nail and screw indentations of hardwood leaving ready to receive site applied finishes.
- B. Preservation treat surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.1 INSTALLATION OF CARPENTRY ITEMS

- A. Install blocking to provide secure fastening. Blocking for vertical siding shall be installed between framing members @ 24” on center max.
- B. Scribe joints for tight fit.
- C. Set and secure carpentry items in place rigid, plumb, and square.
- D. Use purpose designed fixture attachments for mounted components.

- E. When necessary to cut and fit on site, make material with ample allowance for cutting. Provide trim for scribing and site cutting.
- F. Counter-sink concealed anchorage devices used to mount components and conceal with solid plugs of species to match surrounding wood. Place flush with surrounding surfaces.
- G. Install Cedar paneling / siding / trim in accordance with Western Red Cedar Lumber Association guidelines.
- H. Secure Cedar paneling to plywood with trim head screws, 16" on center providing a uniform pattern. Countersink screws 1/16".
- I. Framing shall comply with N.F.P.A. "Manual for Wood Frame Construction", unless otherwise indicated.
- J. Anchor and nail as shown, and to comply with the following:
 - 1. National Evaluation Report No. NER 272 for pneumatic or mechanical driven staples, P-nails, and allied fasteners.
 - 2. Published requirements of manufacturer of metal framing anchors.
 - 3. "Recommended Nailing Schedule" of referenced framing standard and with N.F.P.A. "National Design Specifications for Wood Construction."
 - 4. Table No. 25 – Q "Nailing Schedule" of the California Building Code.
- K. Firestop concealed spaces of wood framed walls and partitions at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely fitted wood blocks of nominal 2-inch-thick lumber of the same width as framing members.

3.2 STUD FRAMING

- A. General: Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Install single bottom plate and double top plates using 2-inch-thick members unless noted otherwise on Structural Drawings whose widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction.
 - 1. For exterior walls install wood studs spaced 16 inches on center unless noted otherwise.
 - 2. For interior partitions and walls install studs spaced 16 inches on center unless noted otherwise.
- B. Construct corners and intersections with not less than 3 studs. Install miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim.
 - 1. Install continuous horizontal blocking row at mid-height of single-story partitions over 8 feet high, using 2-inch thick members of same width as wall or partitions.
- C. Frame openings with multiple studs and headers. Install nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.
 - 1. For nonbearing partitions, install double-jamb studs and headers not less than 4 inches deep for openings 3 feet and less in width, and not less than 6 inches deep for wider openings.
 - 2. For load-bearing partitions, install double-jamb studs for openings 6 feet and less in width, and triple-jamb studs for wider openings unless noted otherwise. See

Structural Drawings for additional information. Install headers of depth shown, or if not shown, as recommended by N.F.P.A. “Manual for House Framing.”

3.3 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling Joists: Install ceiling joists with crown up. Face nail to ends of parallel rafters.
- B. Rafters: Notch to fit exterior wall plates and toe nail or use special metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing (if any), and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

3.4 TIMBER FRAMING

- A. Install timber framing with crown edge up and provide not less than 4 inches of bearing on supports. Install continuous members unless shown; tie together over supports if not continuous.
- B. Where beams or girders are framed into pockets of exterior concrete walls, provide ½-inch air space between sides and ends of wood members and supporting wall.
- C. Where built-up beams or girders of nominal 2-inch dimension lumber on edge are shown, fasten together with 2 rows of 20d nails spaced not less than 32 inches on center. Locate one row near top edge and other near bottom edge. Locate end joints in members over supports; for continuous members, stagger ends at quarter points between supports.
- D. Seal ends of timber beams and posts exposed to weather with a water-repellent preservative.

3.5 INSTALLATION OF CONTRUCTION PANELS

- A. General: Comply with applicable recommendations contained in Form No. E30, “APA Design/Construction Guide – Residential & Commercial,” for types of construction panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Sheathing: Nail to framing in accordance with structural notes and shear wall schedule.

3.6 SILL GASKET

- A. Install continuously, on concrete wherever exterior wall wood framing members abut concrete (wall bottom plates, at end of framed walls, etc.).
- B. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

END OF SECTION 061000

SECTION 061753
SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood roof trusses.
2. Wood floor trusses.
3. Wood girder trusses.
4. Wood truss bracing.
5. Metal truss accessories.

1.2 DEFINITIONS

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.
- B. TPI: Truss Plate Institute, Inc.
- C. Lumber grading agencies, and the abbreviations used to reference them, include the following:
1. NeLMA: Northeastern Lumber Manufacturers' Association.
 2. NLGA: National Lumber Grades Authority.
 3. SPIB: The Southern Pine Inspection Bureau.
 4. WCLIB: West Coast Lumber Inspection Bureau.
 5. WWPA: Western Wood Products Association.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
1. Design Loads: As indicated.
 2. Maximum Deflection Under Design Loads:
 - a. Roof Trusses: Vertical deflection of 1/240 of span.
 - b. Floor Trusses: Vertical deflection of 1/480 of span.

1.4 SUBMITTALS

- A. Product Data: For fire-retardant treated lumber, metal-plate connectors, metal truss accessories, and fasteners.
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 specified to be High-Temperature (HT) type, 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 D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.
 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Shop Drawings: Prepared by or under the supervision of a qualified professional engineer. Show fabrication and installation details for trusses.
1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
 2. Indicate sizes, stress grades, and species of lumber.
 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
 4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
 5. Show splice details and bearing details.
 6. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.
- D. Qualification Data: For metal-plate manufacturer, fabricator, and Installer.
- E. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- F. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
1. Wood-preserved-treated lumber.
 2. Fire-retardant-treated wood.
 3. Metal-plate connectors.
 4. Metal truss accessories.

1.5 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Source Limitations for Connector Plates: Obtain metal connector plates from a single manufacturer.
- D. Comply with applicable requirements and recommendations of the following publications:
 1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
 2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
 3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
- E. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."
- F. Forest Certification: Provide metal-plate-connected wood trusses produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with recommendations of TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
 1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
 2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
 3. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.7 SEQUENCING

- A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 3. Provide dressed lumber, S4S.
 - 4. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."
- C. Grade and Species: Provide visually graded dimension lumber for truss chord and web members, of not less than the following grade and any of the following species:
 - 1. Grade for Chord Members: No. 1 minimum.
 - 2. Grade for Web Members: Same grade as indicated for chord members
 - 3. Species: Douglas fir-larch; WCLIB or WWPA.
- D. Grade and Species: Provide dimension lumber of any species for truss chord and web members, graded as follows and of the following minimum design values for size of member required according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement":
 - 1. Grading Method: Visual
 - 2. Design Values: As indicated on Drawings.
 - 3. Design Values: See structural plans for product requirements
- E. Minimum Chord Size For Roof Trusses: 2 by 6 inches nominal (38 by 140 mm actual).
- F. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Division 06 Section "Rough Carpentry".

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP C2, except that trusses that are not in contact with the ground and are continuously protected from liquid water may be made from lumber treated according to AWP C31 with inorganic boron (SBX).
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 2. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- 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.

1. For exposed trusses indicated to receive a stained or natural finish, mark end or back of each piece.
- D. Application: Treat trusses where indicated on Drawings.

2.3 FIRE-RETARDANT-TREATED WOOD

- A. General: Comply with performance requirements in AWP C20.
1. Use Exterior type for exterior locations and where indicated.
 2. Use Interior Type A, High Temperature (HT) for enclosed roof trusses and where indicated.
 3. Use Interior Type A, unless otherwise indicated.
- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
1. For exposed trusses and bracing indicated to receive a stained or natural finish, mark end or back of each piece.
- C. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- D. Application: Treat items indicated on Drawings, and the following:
1. Floor trusses for bowling lanes and raised platforms.
 2. Roof trusses.

2.4 METAL CONNECTOR PLATES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Alpine Engineered Products, Inc.
 2. Cherokee Metal Products, Inc.; Masengill Machinery Company.
 3. CompuTrus, Inc.
 4. Eagle Metal Products.
 5. Jager Building Systems, Inc.
 6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.
 7. Robbins Engineering, Inc.
 8. TEE-LOK Corporation; a subsidiary of Berkshire Hathaway Inc.
 9. Truswal Systems Corporation.
- C. General: Fabricate connector plates to comply with TPI 1.
- D. Hot-Dip Galvanized Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), highstrength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.
1. Use for interior locations where stainless steel is not indicated.

- E. Stainless-Steel Sheet: ASTM A 666, Type 316, and not less than 0.035 inch (0.88 mm) thick.
 - 1. Use for exterior locations and where indicated.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where trusses are exposed to weather, in ground contact, made from pressure preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.6 METAL TRUSS ACCESSORIES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:
 - 1. KC Metals Products, Inc.
 - 2. Simpson Strong-Tie Co., Inc.
 - 3. USP Structural Connectors.
- D. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- E. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
 - 1. Use for interior locations where stainless steel is not indicated.
- F. Stainless-Steel Sheet: ASTM A 666, Type 316.
 - 1. Use for exterior locations and where indicated.
- G. Truss Tie-Downs: Bent strap tie for fastening roof trusses to wall studs below, 1-1/2 inches (38 mm) wide by 0.050 inch (1.3 mm) thick. Tie fastens to one side of truss, top plates, and side of stud below.
- H. Truss Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening roof trusses to wall studs below, 2-1/4 inches (57 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of truss and fastens to both sides of truss, top plates, and one side of stud below.
- I. Truss Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening roof trusses to wall studs below, 2-1/2 inches (63 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of truss and fastens to both sides of truss, inside face of top plates, and both sides of stud below.
- J. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load bearing walls, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick. Clip is fastened to truss through slotted holes to allow for truss deflection.
- K. Floor Truss Hangers: U-shaped hangers, full depth of floor truss, with 1-3/4-inch- (44-mm-) long seat; formed from metal strap 0.062 inch (1.6 mm) thick with tabs bent to extend over and be fastened to supporting member.
- L. Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2 inches (38 mm) wide by 1 inch (25 mm) deep by 0.040 inch (1.0 mm) thick, made to fit between 2 adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

2.7 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 94 percent zinc dust by weight.
- B. Protective Coatings: SSPC-Paint 22, epoxy-polyamide primer or SSPCPaint 16, coal-tar epoxy-polyamide paint.

2.8 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
 - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in truss accessories according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.
 - 1. Anchor trusses to girder trusses as indicated.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install bracing to comply with Division 06 Section "Rough Carpentry".
 - 2. Install and fasten strongback bracing vertically against vertical web of parallel chord floor trusses at centers indicated.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not cut or remove truss members.
- L. Replace wood trusses that are damaged or do not meet requirements.
 - 1. Do not alter trusses in field.

3.2 REPAIRS AND PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- C. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- D. Protective Coating: Clean and prepare exposed surfaces of metal connector plates. Brush-apply primer, when part of coating system, and one coat of protective coating.
 - 1. Apply materials to provide minimum dry film thickness recommended by coating system manufacturer.

END OF SECTION 061753

SECTION 064400
ORNAMENTAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior ornamental woodwork.
 - a. Interior standing and running trim.
 - b. Ornamental railings, bolsters, and borders.
 - 2. Wood furring, blocking, shims, and hanging strips for installing ornamental work items unless concealed within other construction before woodwork installation.
 - 3. Shop finishing of interior ornamental woodwork.
- B. Related Requirements:
 - 1. Division 06 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing ornamental woodwork and concealed within other construction before ornamental woodwork installation.

1.3 SUBMITTALS

- A. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
- B. Samples for Verification: Lumber for transparent finish, not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.
- C. Quality Assurance/Control/Information Submittals:
 - 1. Product Data: For each type of product, including finishing materials and processes.

1.4 QUALITY ASSURANCE

- A. Quality Standards: Except as otherwise shown or specified, comply with specified provisions of the Architectural Woodwork Institute (AWI) "Architectural Woodwork Standards".
 - 1. Provide custom grade, unless otherwise noted.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in- service performance.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver interior ornamental woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If ornamental woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in the "Field Conditions" Article.

1.6 FIELD CONDITIONS

- A. Environmental Limitations for Interior Work: Do not deliver or install interior

ornamental woodwork until the building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

- B. Field Measurements: Where ornamental woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where ornamental woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that ornamental woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 ORNAMENTAL WOODWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of ornamental woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.2 INTERIOR ORNAMENTAL WORK FOR TRANSPARENT FINISH

- A. Interior ornamental work for transparent finish includes the following:
 - 1. Interior standing and running trim, rails, and balusters.
- B. Grade: Custom.
- C. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in the same area of the building unless otherwise indicated.
 - 1. Species: Red oak, unless otherwise noted.
 - 2. Cut: Plain sliced/plain sawn.
- D. Hardwood Standing and Running Trim for Stain or Clear: Shall be Custom grade, conforming to AWI Section 300, unless otherwise noted.
 - 1. Species and Grade: Red Oak; Clear; NHLA.
 - 2. Finger Jointing: Not allowed.
 - 3. Gluing for Width: Use for lumber trim wider than 6 inches.
 - 4. Veneered Material: Use for lumber trim wider than 6 inches.
 - 5. Face Surface: Surfaced (smooth).
 - 6. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends exposed in finished work.

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality

standard for each type of ornamental woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content for Interior Materials: 8 to 13 percent.

2.4 MISCELLANEOUS MATERIALS

- A. Interior Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Provide self-drilling screws for metal-framing supports, as recommended by the metal-framing manufacturer.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- D. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.5 FABRICATION

- A. Fabricate ornamental woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
- B. Complete fabrication, including assembly and finishing, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

2.6 FACTORY OR SHOP FINISHING OF INTERIOR WOODWORK

- A. Quality Standard: Comply with AWI Section 1500 unless otherwise indicated.
- B. General: Finishing of interior finish carpentry is to be performed at factory or shop as specified in this section.
 1. For painted finishes, refer to Division 09 Section "Interior Painting" for final finishing of installed architectural woodwork and for material and application requirements of prime coats for woodwork not specified to receive final finish in this section.
- C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.
- D. Transparent Finish: Comply with requirements indicated below for grade, finish system, staining, effect, and sheen, with sheen measured on 60-degree gloss meter per ASTM D523.
 1. Grade: Custom
 2. Finish System: AWI System 11 - Catalyzed Polyurethane
 3. Staining: Match approved sample for color
 4. Effect: Open grain
 5. Sheen: Semi-gloss bright rubbed affects 55–60 degrees.

PART 3 – EXECUTION

1.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

1.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

1.3 INSTALLATION

- A. Grade: Install ornamental woodwork to comply with same grade as item to be installed.
- B. Assemble ornamental woodwork and complete fabrication at Project site to the extent that it was not completed in the shop.
- C. Install ornamental woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut ornamental woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor ornamental woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with ornamental woodwork. For shop-finished items, use filler matching finish of items being installed.
- F. Touch up finishing work specified in this Section after installation of ornamental woodwork. Fill nail holes with matching filler where exposed.
 - 1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

1.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective ornamental woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace ornamental woodwork. Adjust joinery for uniform appearance.
- B. Clean ornamental woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064400

SECTION 064619
WOOD TRIM AND SHOE MOLDING

PART I - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior standing and running trim.

1.2 QUALITY ASSURANCE

- A. Fabricator Qualifications: Certified participant in AWI's Quality Certification Program.

1.3 SUBMITTALS

- A. Contractor to submit manufacturer information including; style, size, and material. Owner to make selection based on submittals. Contractor to order and secure trim only after Owner's official selection.

PART 2- PRODUCTS

2.1 WOOD TRIM, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of wood trim indicated for construction, finishes, installation, and other requirements.
1. Provide labels from AWI certification program indicating that woodwork complies with requirements of grades specified.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Grade: Custom.
- B. Wood Species: Eastern white pine, sugar pine, or western white pine.
- C. Molding Patterns. Made to patterns included in WMMPA WM 12.
1. Base Pattern: WM 750W, 9/16-by-4-1/4-inch (14-by-108-mm) beaded-edge base.
 2. Shoe-Mold Pattern: WM 126, 1/2-by-3/4-inch (13-by-19-mm) quarter-round shoe mold.

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of wood trim and quality grade specified unless otherwise indicated.

1. Wood Moisture Content for Interior Materials: nine (9) percent.

2.4 MISCELLANEOUS MATERIALS

- A. Adhesives: Do not use adhesives that contain urea formaldehyde.
- B. VOC Limits for Installation Adhesives and Sealants: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Wood Glues: **30 g/L.**
 2. Multipurpose Construction Adhesives: **70 g/L.**
 3. Structural Wood Member Adhesive: **140 g/L.**
 4. Architectural Sealants: **250 g/L.**

2.5 FABRICATION

- A. Fabricate wood trim to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
1. Edges of Solid-Wood (Lumber) Members: **1/16 inch (1.5 mm)** unless otherwise indicated.
- B. Backout or groove backs of flat trim members and kerf backs of other wide, flat members except for members with ends exposed in finished work.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition wood trim to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

- A. Grade: Install wood trim to comply with same grade as item to be installed.
- B. Install wood trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of **1/8 inch in 96 inches (3 mm in 2400 mm).**

- C. Scribe and cut wood trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor wood trim to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork.
- E. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than **36 inches (900 mm)** long except where shorter single-length pieces are necessary. Scarf running joints.

END OF SECTION 064619

DIVISION 07
THERMAL AND MOISTURE PROTECTION

SECTION 072100
BATT AND BLANKET THERMAL INSULATION

PART 1 GENERAL

2.1 REFERENCES

- A. ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction.

2.2 SUBMITTALS

- A. Submit manufacturer's installation instructions under provisions of Section 013300.

PART 2 PRODUCTS

2.3 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products that can be incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.
- C. Acceptable Manufacturers of Batt Insulation:
 - 1. Owens-Corning Fiberglass Corporation.
 - 2. Johns-Manville International, Inc.
 - 3. Certainteed Corporation.
 - 4. Knauf Insulation.

2.4 MATERIALS

- A. Batt Insulation: Flexible un-faced preformed inorganic glass fiber batt bonded with formaldehyde-free thermosetting resin; ASTM C665 Type I - ASTM E84 flame-spread 25 or less, fuel contributed 0, smoke developed 50.
- B. Spindle Fasteners: Galvanized wire spindle on flat metal base with self-locking washers; adhesive recommended by manufacturer.
- C. Vapor Barrier: Covered by gypsum wallboard. Polyethylene sheet for above grade application, 6 mil with self-adhesive vapor retarder tape, flame spread index of 25 or less, smoke developed index of 50 or less.
- D. Exposed Vapor Barrier: Lamtec R-3035, Foil/Scrim/Kraft; U.L. listed, Kraft exposed flame spread 25, smoke developed 10; foil exposed flame spread 5, smoke developed 0.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify adjacent materials are dry and ready to receive installation.

- B. Verify mechanical, plumbing, and electrical services within walls have been installed and tested.
- C. Surfaces to which spindle fasteners are to be applied shall be sound, clean, dry and unpainted. If previously painted, remove paint at hanger locations by sanding. Adhesive solvents will attack most paints and prevent proper bonding of hanger to substrate. Concrete surfaces shall be wire brushed to remove surface laitance. Surface temperature of surface to receive spindle fasteners shall be between 45 degrees F and 120 degrees F. Maintain temperature range until adhesive has completely cured and will support the design load as determined by field tests, as recommended.

3.2 INSTALLATION

- A. Install batt insulation in accordance with manufacturer's instructions.
- B. Install batt insulation in exterior wall spaces without gaps or voids in locations as scheduled.
- C. Trim insulation neatly to fit spaces. Use batts free of damage.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
- E. Retain insulation in place with spindle fasteners spaced in accordance with insulation manufacturer's recommendations.
- F. Secure sheet vapor barrier to studs with adhesive caulk or tape. Lap joints over firm bearing to ensure complete seal.
- G. Retain sheet vapor barrier at roof/ceiling with spindle fasteners. Lap joints and seal with adhesive caulk or tape.

3.3 SCHEDULE

- A. Provide batt insulation installed with fastening devices as required. R-value as detailed on drawings.

END OF SECTION 072100

SECTION 072600
MOISTURE/VAPOR PROTECTION

PART 1 – GENERAL

1.1 Summary

- A. Includes but not limited to:
 - 1. Weather Barrier Membrane
 - 2. Seam Tape
 - 3. Flashing
 - 4. Fasteners

1.2 References

- A. AATCC127: Water Resistance Hydrostatic Head Test.
- B. ASTM C920: Standard Specification for Elastomeric Joint Sealants.
- C. ASTM C1193: Standard Guide for Use of Joint Sealants.
- D. ASTM D779: Dry Indicator Method, Water Penetration Resistance.
- E. ASTM D882: Test Method for Tensile Properties of Thin Plastic Sheeting.
- F. ASTM D1117: Standard Guide for Evaluating Non-woven Fabrics.
- G. ASTM D5733-9 Trapezoidal Test.
- H. ASTM E84: Test Method for Surface Burning Characteristics of Building Materials
- I. ASTM E96: Test Method for Water Vapor Transmission of Materials
- J. ASTM E 1677: Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.
- K. ASTM E2178: Test Method for Air Permeance of Building Materials.
- L. TAPPI T-410: Grams of Paper and Paperboard (Weight per Unit Area).
- M. TAPPI T-460: Air Resistance (Gurley Hill Method)

1.3 Submittals

- A. Refer to Section 013300 for Submittal Procedures.
- B. Product Data: Submit manufacturer current technical literature for each component.
- C. Samples: Weather Barrier membrane, minimum 8-1/2 inches by 11 inch.
- D. Quality Assurance: Submit copies of test results showing performance characteristics equaling or exceeding those specified.
- E. Manufacturer Instructions: Provide manufacturer's written installation instructions.
- F. Closeout Submittals: refer to section 017800.

1.4 Quality Assurance

- A. Installer shall have experience with installation of similar weather barrier assemblies under similar conditions.
- B. Installation shall be in accordance with manufacturer's installation guidelines and recommendations.

- C. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer. Provide all materials procured new for this project.

1.5 Delivery, Storage, and Handling

- A. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store weather barrier materials as recommended by manufacturer.

1.6 Scheduling

- A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.
- B. Preferred install is prior to window and door.

PART 2 – PRODUCTS

2.1 Water-Resistant Barrier

- A. Spunbonded polypropylene or polyolefin weather membrane with a microporous coating, non-woven, Non-perforated.
- B. Performance Characteristics
 1. Gurley Hill [TAPPI T-460] [sec/100cc] >2500.
 2. Water Vapor Transmission 9-15 perms as tested by ASTM E-96-90, Method A.
 3. Water penetration resistance of 865 cm on hydrostatic head in accordance with AATCC-127.
 4. Trapezoidal Test of 30/33 in accordance with ASTM D-5733-9.
 5. Air-Ins < .02L/S·M2 @ 75 PA.
 6. Dry Indicator Method ASTM D-779 = to 24 hour rating.
- C. Approved Manufacturers:
 1. Typar Weather-Protection Membrane by Fiberweb (www.typar.com).
 2. DuPont; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1-800-44-TYVEK (8-9835); <http://www.construction.tyvek.com>
- D. Manufacturer's Warranty:
 1. Lifetime limited product warranty (for single-family residential applications) plus an incredible 10-year warranty on labor and materials (restrictions apply, see warranty for details).

2.2 Sealing Tape/Fasteners

- A. Approved Tape Manufacturers
 1. Typar Construction Tape, by Fiberweb.
 2. DuPont Seam Tyvek Tape.
- B. Recommended Sealants against logo side coating.

1. Elastomeric polymer based, butyl rubber, rubber based, meeting ASTM C920 evaluation.
- C. Recommended Fasteners for Wood, Insulated Sheathing Board, Exterior Gypsum
 1. Plastic cap nails.
 2. Plastic cap staples.
- D. Recommended Fasteners for Steel Frame construction
 1. Rust-resistant screws with washers.
- E. Recommended Fastening to Masonry
 1. Sealant: Polyurethane based, meeting ASTM C920 evaluation.
 2. Mechanical: Masonry fastener with washer.

PART 3 – EXECUTION

3.1 Installation

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.
- B. Install in accordance with Manufacturer's instruction over exterior sheathing or open studs. Seal joints and penetrations through weather resistive barrier with specified tape and fasteners prior to installation of finish material. Air infiltration barrier shall be air tight and free from holes, tears, and punctures. All window and door penetrations are to be flashed and sealed per ASTM 2112, AMMA guidelines and manufacturer instructions. Cover with exterior cladding within 6 months of installation.

3.2 Weather Barrier

- A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.
- B. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- C. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface. Maintain weather barrier plumb and level.
- D. Extend bottom roll edge over sill plate interface 2" to 3" minimum. Seal weather barrier with sealant or tape. Shingle weather barrier over back edge of thru-wall flashings and seal weather barrier with sealant or tape. Ensure weeps are not blocked.
- E. Subsequent layers shall overlap lower layers a minimum of 6 inches horizontally in a shingling manner.
- F. Window and Door Openings: Extend weather barrier completely over openings.
- G. Weather Barrier Attachment:
- H. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommended fasteners, spaced 12 -18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.
- I. Apply 4 inch by 7 inch piece of flash to weather barrier membrane prior to the installation cladding anchors.

3.3 Seaming

- A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.
- B. Seal any tears or cuts as recommended by weather barrier manufacturer.

3.4 Opening Preparation

- A. Cut weather barrier in an “I-cut” pattern. A modified I-cut is also acceptable.
 - 1. Cut weather barrier horizontally along the bottom and top of the window opening.
 - 2. From the top center of the window opening, cut weather barrier vertically down to the sill
 - 3. Fold side and bottom weather barrier flaps into window opening and fasten.
- B. Cut a head flap at 45-degree angle in the weather barrier membrane at window head to expose 8 inches of sheathing. Temporarily secure weather barrier membrane flap away from sheathing with tape.

3.5 Flashing

- A. Cut 9-inch wide wrap a minimum of 12 inches longer than width of sill rough opening. Apply primer as recommended by the manufacturer.
- B. Cover horizontal sill by aligning wrap edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan wrap at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.
- D. On exterior, apply continuous bead of sealant to wall or backside of window mounting flange across jambs and head. Do not apply sealant across sill.
- E. Install window according to manufacturer’s instructions.
- F. Apply 4-inch wide strips of flash at jambs overlapping entire mounting flange. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.
- G. Apply 4-inch wide strip of flash as head flashing overlapping the mounting flange. Head flashing should extend beyond outside edges of both jamb flashings.
- H. Position weather barrier head flap across head flashing. Adhere using 4-inch wide flash over the 45-degree seams.
- I. Tape head flap in accordance with manufacturer recommendations.
- J. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer’s instructions and ASTM C1193.

3.6 Thru Wall Flashing Installation

- A. Apply primer per manufacturer’s written instructions.
- B. Install preformed corners and end dams bedded in sealant in appropriate locations along wall.

- C. Starting at a corner, remove release sheet and apply membrane to primed surfaces in lengths of 10 feet.
- D. Extend membrane through wall and leave ¼ inch minimum exposed to form drip edge.
- E. Roll flashing into place. Ensure continuous and direct contact with substrate.
- F. Lap ends and overlap preformed corners 4 inches minimum. Seal all laps with sealant.
- G. Trim exterior edge of membrane 1-inch and secure metal drip edge per manufacturer's written instructions.
- H. Terminate membrane on vertical wall. Terminate into counterflashing or with termination bar.
- I. Apply sealant bead at each termination.

3.7 Thru Wall Flashing/Weather Barrier Interface at Base of Wall

- A. Overlap thru-wall flashing with weather barrier by 6-inches.
- B. Mechanically fasten bottom of weather barrier through top of thru-wall flashing.
- C. Seal vertical and horizontal seams with tape or sealing membrane.

3.8 Thru Wall Flashing/Weather Barrier Interface at Shelf Angle

- A. Seal weather barrier to bottom of shelf angle with sealing membrane.
- B. Apply thru-wall flashing to top of shelf angle. Overlap thru-wall flashing with weather barrier by 6-inches.
- C. Seal bottom of weather barrier to thru-wall flashing with tape or sealing membrane.

3.9 Thru Wall Flashing/Weather Barrier Interface at Window Head

- A. Cut flap in weather barrier at window head.
- B. Prime exposed sheathing.
- C. Install lintel as required. Verify end dams extend 4 inches minimum beyond opening.
- D. Install end dams bedded in sealant.
- E. Adhere 2 inches minimum thru-wall flashing to wall sheathing. Overlap lintel with thru-wall flashing and extend ¼ inch minimum beyond outside edge of lintel to form drip edge.
- F. Apply sealant along thru-wall flashing edges.
- G. Fold weather barrier flap back into place and tape bottom edge to thru-wall flashing.
- H. Tape diagonal cuts of weather barrier.
- I. Secure weather barrier flap with fasteners.

END SECTION 072600

SECTION 074646
EXTERIOR SIDING & SOFFIT

PART 1 GENERAL

1.1 QUALITY ASSURANCE

- A. Source Limitations for Siding and Soffit: Obtain each type, color, texture, and pattern of siding and soffit, including related accessories, through one source from a single manufacturer.
- B. Mockup: Build mockup to verify selections made under sample submittals and to demonstrate aesthetic effects.
 - 1. Build mockup approximately **48 inches long by 60 inches high**. Include outside corner on one end of mockup and inside corner on other end, include finish coating representative of standard for each material. Do not proceed with installation until mock up is approved by Owner.

1.2 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated and manufacturer's written installation instructions.
- B. Samples for Selection: For each siding and soffit type, color, texture, and pattern.
- C. Product Certificates: For each type of siding and soffit, signed by product manufacturer.
- D. Research/Evaluation Reports: For each type of siding required.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in a dry, well-ventilated, weather tight place.

1.4 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with siding installation only if substrate is completely dry and if existing and forecasted weather conditions permit siding to be installed according to manufacturer's written instructions.

1.5 SEQUENCING

- A. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

1.6 WARRANTY

- A. Provide Manufacturer's Warranties: 50-year product warranty for Hardiplank and Hardipanel siding, 10-year product warranty for Harditrim and 25-year for Hardisoffit panels.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish full lengths of siding and trim in a quantity no less than two percent (2%) of the amount installed.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.

2.2 SIDING

- A. Reinforced Fiber-Cement Siding: Siding made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Basis-of-Design Product: Hardiplank by James Hardie Building Products, Inc.
 - 2. Acceptable Manufacturers:
 - a. Cemplank, Inc.
 - b. CertainTeed Corp.
 - c. James Hardie Inc.
 - 3. Pattern: provide Owner with submittal patterns. Owner to select pattern. Do not order or install without prior submittal approval.
 - 4. Factory Priming: Manufacturer's standard alkali-resistant acrylic primer, for custom coating per section.

2.3 TRIM

- A. Reinforced Fiber-Cement Planks: 5/4" Hardi Trim XLD smooth planks.

2.4 SOFFIT

- A. Reinforced Fiber-Cement Vented Soffit: Panels made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.
1. Acceptable Manufacturers: Same manufacturers listed for fiber-cement siding.
 2. Pattern and texture from smooth soffit panels.
 3. Size: Minimum panel size – 12" x 12' x 1/4" thick.
 4. Ventilation: 5 sq. inches of net free ventilation per linear foot of soffit.
 5. Factory Priming: Manufacturer's recommended flat primer.
 6. Colors for siding. As selected by Owner.

2.5 ACCESSORIES

- A. Siding Accessories: Provide starter strips, edge trim, corner cap, and other items as recommended by siding manufacturer for building configuration.
1. Provide accessories made from same material as adjacent siding, unless otherwise indicated.
 2. Provide accessories matching undercoating, color and texture of adjacent siding, unless otherwise indicated.
- B. Flashing:
1. Provide flashing complying with Division 7 Section "Sheet Metal Flashing and Trim" at window and door heads and where indicated.
 2. Penetration Flashing: Huber + Suhner, Vidiflex - F
- C. Elastomeric Joint Sealant: Single-component neutral-curing silicone joint sealant for Use NT (nontraffic) and for Uses M, G, A, and, as applicable to joint substrates indicated, O joint substrates.
- D. Fasteners:
1. For fastening to wood, use siding nails or ribbed bugle-head screws of sufficient length to penetrate a minimum of 1 inch into substrate.
 2. For fastening aluminum, use aluminum fasteners. Where fasteners will be exposed to view, use prefinished aluminum fasteners in color to match item being fastened.
 3. For fastening fiber-cement siding, use hot-dip galvanized fasteners.
- E. Drainage Mat: To go behind siding: Colbond EnkabARRIER, with weather resistive barrier on the sheathing side surface.

F. Weather Resistive Barrier @ siding side of exterior wall: WallShield by VaproShield.

1. Thickness and Weight: 0.023 inches thick and 5.161 oz./ sq. yd.
2. Water Vapor Transmission: 212 perms per ASTM E 96-00, Method B (as tested by CNRC).
3. Water Penetration Resistance: 68 cm per ATTCC-127.
4. Surface Burning Characteristics: ASTM E 84-97A, Flame Spread: Class A, Smoke Developed: Class A

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION, GENERAL

- A. Comply with siding manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply. Center nails in elongated nailing slots without binding siding to allow for thermal movement. Overlap joints to shed water away from direction of prevailing wind.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective siding materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to siding manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646

SECTION 077123
GUTTERS & DOWNSPOUTS

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM A446 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- B. ASTM B32 - Solder Metal.
- C. ASTM B486 - Paste Solder.
- D. FS O-F-506 - Flux, Soldering, Paste and Liquid.
- E. SMACNA - Architectural Sheet Metal Manual.

1.2 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- C. Product Data: Provide data on prefabricated components.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site per manufacturer's requirements.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.
- D. Schedule delivery of materials to site to reduce total amount of time that materials are required to be stockpiled on site prior to installation.

1.4 COORDINATION

- A. Coordinate the work with downspout discharge pipe inlet.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Pre-Coated Galvanized Steel: ASTM A446, Grade A, G90 zinc coating; 26 gauge core steel, shop pre-coated.

2.2 COMPONENTS

- A. Downspouts: SMACNA 3" x 3" minimum plain rectangular profile.
- B. Gutters: SMACNA Style F, sized per detailing.

- C. Debris Guards: Profiled to suit downspouts and gutters, manufactured from same or similar material(s) as gutters.
- D. Accessories: Splash Blocks, Profiled to suit downspouts and gutter.

2.3 ACCESSORIES

- A. Anchorage Devices: SMACNA requirements.
- B. Downspout Supports: Straps.
- C. Gutter Spreader/Support bracket, cleats and fasteners per SMACNA.
- D. Fasteners: Galvanized steel; finish exposed fasteners same as flashing metal.
- E. Solder: ASTM B32; 50/50 type.
- F. Flux: FS O-F-506.

2.4 FABRICATION

- A. Form downspouts and gutters of profiles and size indicated on drawings.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance.
- D. Hem exposed edges of metal.
- E. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.
- F. Fabricate accessories; seal watertight.

2.5 FINISHES

- A. Prepare and paint surfaces in accordance with Section 099100.
- B. Back paint concealed metal surfaces in contact with dissimilar materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.

3.2 INSTALLATION

- A. Join lengths with seams soldered watertight.
- B. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- C. Secure downspout and gutter to building.
- D. Provide splash blocks or Connect downspouts to storm sewer system (where applicable).

END OF SECTION 077123

SECTION 077410
METAL (ROOFING/SIDING) PREFORMED PANELS

PART 1 – GENERAL

1.01 SECTION INCLUDES

The work includes, but is not necessarily limited to, furnishing and installation of all preformed metal Roofing /Siding, Support Members, and Accessories required for installation of preformed metal Roofing /Siding as indicated on the drawings and specified herein.

1.02 RELATED SECTIONS

- A. Thermal Insulation: Section 077000
- B. Gutters and Downspouts: Section 077123
- C. Painting: Section 099100

1.03 SUBMITTALS

A. PRODUCT DATA

1. Submit Manufacturer's technical product data, installation instructions and recommendations for each type of Performed Panel, Support Members, and Accessories required. Include data substantiating that materials comply with requirements.

B. SAMPLES

1. Prior to ordering products, submit Manufacturer's standard color samples for Owners Representative selection.
2. Prior to starting work, submit (2) 12" long panel samples showing shape and a representative color chip for Owners Representative acceptance.

C. SHOP DRAWINGS

3. Submit, complete shop drawings detailing all perimeter and joint flashings that comply with Manufacturer's standard recommendations.
4. Describe all proposed details that deviate from what is shown on the plans.
5. Details to allow for expansion and contraction.

D. SITE CONDITIONS

Contractor shall inspect existing structure and verify that members and/or substrate to receive preformed panels are complete, accurately sized and located, in true plane, secure and otherwise properly prepared. Members and/or substrate shall be replaced and or additional members and/or substrate shall be added for proper support of Preformed Panels and or accessories.

1.05 QUALITY ASSURANCE

A. INSTALLER'S QUALIFICATIONS

1. Installer shall meet the following:
 - a. Successfully applied five metal preformed panels of comparable size and complexity which reflects a quality weather tight installation in the region where the work will be performed.
 - b. Have been in business for a minimum period of five (5) years in the region where the work will be performed.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect against damage and discoloration.
- B. Handle panels with non-marring slings.
- C. Do not bend panels.
- D. Store panels above ground, with one end elevated for drainage.
- E. Protect panels against standing water and condensation between adjacent surfaces.
- F. If panels become wet, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Painted panels shall be shipped with a protective plastic sheeting or a strippable film coating between all panels. Remove any strippable film coating prior to installation and in any case, do not allow the strippable film coating to remain on the panels in extreme heat, cold, or in direct sunlight or other UV source.

1.07 PROJECT CONDITIONS

- A. Examine the conditions and substrates in which metal roofing/siding work is to be installed. Substrate shall be installed level, flat and true to avoid panel stresses.
- B. Field measurements shall be taken prior to fabrication of panels.
- C. Proceed with roofing/siding installation only after satisfactory conditions are met.

1.08 WARRANTY

A. MANUFACTURER'S PRODUCT WARRANTY

1. Manufacturer's standard coating performance warranty shall be 25 years.

B. CONTRACTOR'S WARRANTY

1. Warrant panels, flashings, sealants, fasteners and accessories against defective materials and/or workmanship, to remain watertight and weatherproof with normal usage for two (2) years following Project Substantial Completion date.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

AEP Span, A Division of ASC Profiles Inc, 2110 Enterprise Boulevard, West Sacramento, California

95691, 800-733-4955

SALES AND MANUFACTURING LOCATIONS:

Los Angeles: 10905 Beech Avenue, Fontana, California 92335

Tacoma: 2141 Milwaukee Way, Tacoma, Washington 98421

A. PANEL DESIGNATION: Klip-Rib®

B. ALTERNATES: Approval of substitute systems is required prior to bid. The Owners Representative will be the sole judge of what qualifies as an “equal” system. To be approved as an equal system, submit or respond to all items in “Quality Assurance”, “Performance Requirements” and “Submittal” sections of this specification. All submittals must be received in the Owners Representative a minimum of ten (10) working days prior to bid.

C. Color: Shall be approved by Owners Representative prior to ordering of materials per Part 1 General, 1.04 Submittals B. Samples

D. ACCESSORIES

1. Fastener Clip: Per manufacturer's recommendation.
2. Fasteners: Per manufacturer's recommendation.
3. End Closures:
 - a. Material: Weatherproof, laminated, semi-rigid, cross-linked polyethylene foam, tightly fit to panel configurations.

4. Sealant:

- a. Gunnable grade caulking: Single component urethane and butyl rubber caulk.
- b. Tape sealant: Butyl-type mastic.

E. FLASHING

- 1. Protective metallic coating, material, gauge and finish to match panels. Do not use lead or copper.

Remove any strippable film prior to installation.

- 2. Material, gauge and finish to match panels. Do not use lead or copper.

F. FABRICATION

- 1. Unless otherwise shown on drawings panels shall be full length. Flashings and accessories shall be fabricated in longest practical lengths.
- 2. Roofing/Siding panels shall be factory formed. Field formed panels are not acceptable.

PART 3 – EXECUTION

3.01 EXAMINATION

A. EXISTING CONDITIONS

- 1. Verify that members and/or substrate to receive panels are complete, accurately sized and located, in true plane, secure and otherwise properly prepared. Members and/or substrate shall be replaced and or additional members and/or substrate shall be added for proper support of Preformed Panels and or accessories.
- 2. Prior to starting work, notify Owners Representative about defects requiring correction.
- 3. Do not start work until conditions are satisfactory.

3.02 PREPARATION

A. FIELD MEASUREMENTS

- 1. Verify prior to fabrication.
- 2. If field measurements differ from drawing dimensions, notify Owners Representative prior to fabrication.

B. PROTECTION

- 1. Treat, or isolate with protective material, and contacting surfaces of dissimilar materials to prevent electrolytic corrosion.
- 2. Require workmen who will be walking on Roofing panels to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material, which could cause damage or discoloration.
- 3. Protect Work of other Trades against damage and discoloration.

C. SURFACE PREPARATION

1. Clean and dry surfaces prior to applying sealant.

3.03 INSTALLATION

A. PANELS

1. Follow performed panel manufacturer's directions.
2. Install panel seams vertically.
3. Lap panels away from prevailing wind direction.
4. Do not stretch or compress panel side-lap interlocks.
5. Secure preformed panels without warp or deflection.
6. Fully engage attachment clips and interlocking seams.
7. Extend roof preformed panels over gutter openings or eave trim 2 inches, but do not restrict opportunity to clean gutters.
8. Remove any strippable protective film preceding preformed panel installation.

B. ALLOWABLE ERECTION TOLERANCE

1. Erection tolerance: panels shall be installed in a true and straight alignment. Maximum alignment variation: 1/4 inch in 40 feet.

C. FLASHING

1. Follow manufacturer's directions and Owners Representatives approved shop drawings.
2. Overlap preformed panels at least 6 inches.
3. Install flashings to allow for thermal movement.

D. CUTTING AND FITTING

1. Neat, square and true. Torch cutting is prohibited.
2. Openings 6 inches and larger in any direction: Shop fabricated and reinforce to maintain original load capacity.
3. Where necessary to saw-cut panels, debur and treat with galvanic paint.

3.04 CLEAN UP AND CLOSE OUT

A. PANEL DAMAGE AND FINISH SCRATCHES

1. Do not apply touch-up paint to damaged paint areas that involve minor scratches.
2. Panels or flashings that have severe paint and/or substrate damage shall be replaced as directed by the Owner's representative.

B. CLEANING AND REPAIRING

1. At completion of each day's work and at work completion, sweep Panels, Flashings and Gutters clean. Do not allow fasteners, cuttings, filings or scraps to accumulate.
2. Remove debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

SECTION 077900

JOINT SEALERS

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open Cell Foam).
- B. FS TT-S-227 - Sealing Compound, Rubber Base, Two Component.
- C. FS TT-S-230 - Sealing Compounds, Synthetic-Rubber Base, Single Component, Chemically Curing.
- D. ASTM C834 - Latex Sealing Compounds.

1.2 SUBMITTALS

- A. Submit product data and samples under provision of Section 013300.
- B. Submit samples of sealant colors.
- C. Submit manufacturer's surface preparation and installation instructions under provisions of Section 013300.

1.3 WARRANTY

- A. Provide five year warranty under provisions of Section 017800.
- B. Warranty: Replace sealants which fail because of loss of cohesion or adhesion, or do not cure.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.

C. Manufacturers of sealant

1. Pecora Corp.
2. Mameco International, Inc.
3. Tremco
4. Bostik

2.2 SEALANT MATERIALS

- A. Sealant 'A': Polyurethane base, single component, chemical curing, paintable, non-sagging; conforming to FS TT-S-230; Shore A hardness of minimum 15 and maximum 50; non-staining, non-bleeding; color as selected by Engineer.
- B. Sealant 'B': Acrylic latex, single component, water evaporation curing, paintable, non-sagging; conforming to ASTM C 834; Shore A hardness of 50; non-staining, non-bleeding; color as selected by Engineer.

2.3 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Filler: ASTM D1565; round, open cell polyethylene foam rod; oversized 25 percent; Denver foam manufactured by Plateau Supply.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify joint dimensions, physical, and environmental conditions are acceptable to receive work of this Section.
- B. Beginning of installation means acceptance.

3.2 PREPARATION

- A. Clean, prepare, and size joints in accordance with manufacturer's instructions. Remove any loose materials and other foreign matter which might impair adhesion of sealant.

- B. Verify that joint shaping materials and release tapes are compatible with sealant.
- C. Examine joint dimensions and size materials to achieve required width/depth ratios.
- D. Use joint filler to achieve required joint depths, to allow sealants to perform properly.
- E. Use bond breaker where required.
- F. Primer windows and all other surfaces as recommended by sealant manufacturer.

3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.
- C. Joints: Free of air pockets, foreign embedded matter, ridges, and sags.

3.4 SCHEDULE

<u>Location</u>	<u>Sealant Designation</u>
Interior horizontal concrete slab on grade joints	A
Interior hollow metal door and relite frames to wall	B
Exterior door and window frames, wall louvers	A
Backsplash to wall	B
Miscellaneous interior joints and conditions not specifically identified in this schedule	B
Miscellaneous exterior joints and conditions not specifically identified in this schedule	A
Plumbing fixtures	(Per Division 22)

END OF SECTION 077900

DIVISION 08
OPENINGS

**SECTION 081400
WOOD DOORS**

PART 1 GENERAL

1.1 REFERENCES

- A. AWI Quality Standards of Architectural Woodwork Institute.
- B. NWMA Industry Standard I.S. 1-80.

1.2 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 013300.
- B. Indicate general construction, jointing methods, stile and rail reinforcement, hardware locations, and locations of cut-outs for glass.

1.3 WARRANTY

- A. Provide warranty under provisions of Section 017800.
- B. Warranty: Provide for replacing, including cost of re-hanging and refinishing, at no cost to the Owner, wood doors exhibiting defects in materials or workmanship including warp and de-lamination within minimum period of two years from Date of Substantial Completion of the Work.

1.4 QUALITY ASSURANCE

- A. Wood doors shall conform to applicable regulations of Underwriters Laboratories, Inc. or I.C.B.O. for standard as required per door schedule.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.
- C. Standards established by a specifically listed product shall include but not be limited to visual matching. The final judgment whether a product proposed by the contractor, visually matches the specified product satisfactorily will be determined by the Engineer.
- D. Manufacturers of wood doors:
 - 1. Cal-Wood Doors
 - 2. Jeld-Wen

3. Therma-Tru
4. Vancouver Door
5. VT Industries
6. Weyerhaeuser Company

2.2 DOOR TYPES

- A. Flush faced type wood doors.

2.3 DOORS

- A. Flush Interior Doors: 1-3/4 inches thick; solid core construction with plastic laminate face veneers.
- B. Fire Rated Flush Doors: 1-3/4 inches thick; plastic laminate face veneers; 1-1/16" laminated wood fiber stile for hinge attachment at mineral core fire rated doors. Refer to Drawings for label requirements.
- C. Core: Softwood core blocks not over 2-1/2 inches wide or longer than 14 inches. Glue under heat and pressure with grain running lengthwise. Subcontractor may substitute particle board in accordance with ANSI A208.1.
- D. Edgebands: Minimum 1-1/2 inch thick hardwood at sides with 1-1/8" softwood or hardwood at top and bottom, suitable for painting.
- E. Glass Stops: Pressed Steel.

2.4 FABRICATION

- A. Fabricate doors in accordance with requirements of AWI Quality Standards.
- B. Fabricate fire rated doors in accordance with requirements of Underwriters' Laboratories (UL).
- C. Make cut-outs and provide stops for glass.
- D. Provide astragals for double doors. Provide in accordance with UL requirements.
- E. Bevel strike edge of single acting doors 1/8 inch (3 mm) in two inches (51mm). Radius strike edge of double acting swing doors 2-1/8 inches (55mm).
- F. Prepare doors to receive hardware. Refer to Section 08710 for hardware requirements.
- G. Plastic laminate face veneers and dutch door shelf surfaces.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install wood doors plumb and square, and with maximum diagonal distortion of 1/16 inch.
- B. Coordinate installation of glass and glazing in wood doors.

- C. Install in accordance with finish carpentry specifications.
- D. Clearances:
 - 1. Between door and frame at head and jamb: 1/8"
 - 2. At sill without threshold: 3/8" for single door, 1/4" for a pair of doors.
 - 3. At sill with threshold: 1/4" between door and threshold.

3.2 FINISH

- A. Provide finish options to Owner under submittal provisions Section 013300.
- B. Door edges shall be painted per Section 099100. Color to match face finish.

END OF SECTION 081400

SECTION 081600 COMPOSITE DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Composite Doors.
 - 2. Hinges and other door hardware.
 - 3. Accessories.
 - 4. Removable mullions installed in framing.
- B. Products Installed but not Furnished Under this Section:
 - 1. Hardware for Composite Doors: Unless otherwise specified, receive hardware items specified in Hardware Sets for "Composite DoorsHardware" in DIVISION 08 and provide factory installation of hardware items to ensure proper coordination of hardware items with corresponding reinforcement or modification of Composite Doors and door frames. Provide receipt for hardware items to Hardware Supplier.

1.2 REFERENCES

- A. AAMA 1503-98 - Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
- B. ANSI A250A - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcing.
- C. ASTM B 117 - Operating Salt Spray (Fog) Apparatus.
- D. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- E. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- F. ASTM D 256 - Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- G. ASTM D 543 - Evaluating the Resistance of Plastics to Chemical Reagents.
- H. ASTM D 570 - Water Absorption of Plastics.
- I. ASTM D 638 - Tensile Properties of Plastics.
- J. ASTM D 790 - Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
- K. ASTM D 1308 - Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- L. ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics.
- M. ASTM D 1623 - Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
- N. ASTM D 2126 - Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- O. ASTM D 2583 - Indentation Hardness of Rigid Plastics by Means of a Barcollmpressor.
- P. ASTM D 3029 - Impact Resistance of Flat Rigid Plastic Specimens by Means of a Falling Weight.

- Q. ASTM D 6670-01 - Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products.
- R. ASTM E 84 - Surface Burning Characteristics of Building Materials.
- S. ASTM E 90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- T. ASTM E 283 - Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- U. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- V. ASTM E 331 - Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- W. ASTM F 476 - Security of Swinging Door Assemblies.
- X. SFBC PA 201 - Impact Test Procedures.
- Y. SFBC PA 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
- Z. SFBC 3603.2 (b) (5) - Forced Entry Resistance Test.
- AA. ASTM D 523 - Standard Test Method for Specular Gloss.
- BB. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self Supporting Plastics in a Horizontal Position.
- CC. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- DD. ASTM E 152 - Standard Methods of Fire Tests of Door Assemblies.
- EE. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- FF. SOI 100 - Recommended Specifications for Steel Doors and Frames.
- GG. UL 305 - Standard for Panic Hardware ..

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Systems tested according to the following, unless higher loads are required by Code requirements
 - 1. Thermal Movement: Fabricate exterior components' from manufacturer's stock systems that have been designed to provide for expansion and contraction resulting from ambient temperature range of 120 degrees F.
 - a. Design Wind Load: Comply with applicable requirements of California Building Code including applicable International Building Code 2009 requirements
 - b. Code Requirements for Wind Pressures:
 - i. Comply with applicable requirements of the California Building Code including applicable 2009 International Building Code - California Edition, and the following criteria per ASCE 7.
 - ii. Adjust wind pressures at corners, edges, and field areas.

1.4 SUBMITTALS

- A. Procedure: Comply with submittal requirements indicated below and as stipulated In Section 013300.

- B. Product Data: Submit manufacturer's product literature for Composite Doors, frames, and related components and accessories, demonstrating compliance with requirements specified, including structural and performance requirements:
- C. Shop Drawings: Show layout and profiles; include assembly methods. Submit shop drawings for fabrication and installation of Composite Doors and frames, related assemblies and associated components prepared by door and frame system manufacturer.
- D. Samples: Upon request by Owner, Submit three (3) samples of each fiberglass reinforced plastic (FRP) finish, on twelve (12) inch long extrusions or six (6) inch square sheets to be used. Where normal color and texture variations are to be expected, include two (2) or more units in each sample to show range of such variations. Owner review shall be for color and texture only; compliance with other requirements remains the exclusive responsibility of the Contractor.
- E. Maintenance Data: Include instructions for repair of minor scratches and damage.
- F. Maintenance Manual: Submit manufacturer's maintenance and cleaning instructions for doors, including maintenance and operating instructions for hardware.\
- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer; include detailed terms of warranty.
- H. Test Reports: Submit certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- I. Quality Control Submittals:
- J. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than ten (10) years of documented successful experience.
- K. Installer Qualifications: Company specializing in installing products of the type specified in this section with not less than five (5) years of documented successful experience. Provide certification from manufacturer that installer is a certified installer of the product being utilized. Submit documentation of above.
- L. Contract Closeout Submittals: Comply with requirements of SECTION 017800, including submission of operating and maintenance instructions described in that section.
- M. Verification of Conditions (by Installer/Applicator): Examine conditions under which products of this section are to be installed in coordination with Installer of materials and components specified in this Section and notify the General Contractor in writing, with copies to the Owner's Representative and Engineer, of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer
- N. When Installer confirms conditions are acceptable to ensure proper and timely. Installation of the proposed products and confirms requirements for applicable warranty or guarantee can be satisfied; submit to General Contractor written confirmation, with copies to the Owner's Representative and Engineer, from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
- O. Sustainability / Environmental Submittals: Show evidence including but not limited to the following:

1. Recycled content - documentation showing product supports pre and post - consumer content.
 2. Indoor Environmental Quality - product is VOC compliant' in the state and jurisdiction the project is located.
 3. Provide products, where possible, that are manufactured within a 500-mile radius of the project site and are considered to be a locally produced material which supports regional materials and resources.
 4. Comply with recycling program and waste management procedures.
- P. Contract Closeout Submittals: Comply with the applicable sections noted in DIVISION 1, including but limited to the following:
1. Requirements of Section 017800 CLOSEOUT PROCEDURES;
 2. Submission of maintenance instructions described in 017823 OPERATION AND MAINTENANCE DATA;

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain Composite Doors and associated components by single firm specializing in type of construction required, so that there will be a single point of responsibility for specified performance of all component parts, including following:
1. Glazing of Composite Doors.
 2. All hardware installed on doors.
 3. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than ten (10) years of documented successful experience.
 4. Installer Qualifications: Company specializing in installing products of the type specified in this section with not less than five (5) years of documented successful experience and (5) successful projects in the past (3) years and approved in writing by manufacturer to install their products.
 5. Provide certification from manufacturer that installer is a certified installer of the product being utilized.
 6. Provide evidence of a compliant documented quality management system.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Mark doors with location of installation, door type, color, and weight.
1. Deliver materials in manufacturer's-original, unopened, undamaged containers with identification labels intact clearly identifying opening door mark and manufacturer.
- B. Store materials in original packaging, under cover, protected from exposure to harmful weather conditions and from direct contact with water.
1. Store in clean, dry area at temperature and humidity conditions recommended by manufacturer.
 2. Do not use non-vented plastic or canvas shelters.
 3. Immediately remove wet wrappers.

- C. Store in position recommended by manufacturer, elevated minimum 4 inches (102 mm) above grade, with minimum 1/4 inches (6 mm) space between doors.

1.7 PROJECT CONDITIONS

- A. Obtain hardware manufacturer's templates prior to starting fabrication.
- B. Do not install doors until structure is enclosed.
- C. Maintain temperature and humidity at manufacturer's recommended levels during and after installation of doors.

1.8 WARRANTY

- A. Submit two (2) copies of written guarantee signed by Manufacturer, Installer and Prime Contractor, agreeing to replace Composite Doors, frames and components, which fail in materials or workmanship within ten (10) years of date of acceptance.
 - 1. Warrant framing against failure in materials and workmanship, including excessive deflection and deterioration of finish or construction in excess of normal weathering.
 - 2. Warrant door system including doors, frames, vision lites, transom lites, and factory installed hardware.
 - 3. Warranty Period: Ten (10) years starting on date of substantial completion.
- B. Failure of materials or workmanship include but are not limited to excessive leakage or air infiltration, excessive deflections, delamination of panels, deterioration of finish or metal in excess of normal weathering, and defects in accessories, weather-stripping, and other components, Warranty shall also cover any and all repair of damaged materials in building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. As a basis of design, details and specifications have been based on products specified below by the following manufacturers:
 - 1. Special-Lite, Inc
 - a. Special-Lite, Inc., PO Box 6, Decatur, Michigan 49045. P: (800) 821-6531
 - b. Web Site: www.special-lite.com
 - 2. Other Manufacturer's that may be acceptable upon a compliance review include:
 - a. Kawneer Corporation
 - b. Vistawall Engineering Products
 - c. Milgard
 - d. Therma-Tru
 - e. Jeld-Wen
 - f. Provide all fiberglass doors from a single source manufacturer.

2.2 MATERIALS

- A. Fiberglass Reinforced Polyester (FRP) Face: Embossed fiberglass reinforced polyester sheet, minimum 0.120-inch thick; provide material with Class A rating with flame spread less than 25 per ASTM E84 for faces with interior exposure.
- B. Insulation: Froth-in-place or foamed-in-place urethane foam, not less than 5 lb/cubic ft density, free of chlorofluorocarbon (CFC) blowing agents.
- C. Fasteners: Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components. Do not use exposed fasteners, except where unavoidable for application of hardware. Match finish of adjoining metal.
- D. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, non-magnetic stainless steel or hot-dip galvanized steel complying with ASTM A-386.
- E. Bituminous Coatings: Cold-applied asphalt mastic, compounded for min. 30-mil thickness.
- F. Glazing: Provide glass types as indicated on Drawings. Refer to DIVISION 08 - Glazing.

2.3 COMPOSITE DOORS

- A. Flush Door with FRP Face
 - 1. As a basis of design, details and specifications have been based on the following products:
 - a. Special-Lite, Inc: SL-17 FRP "Flush Door" with SpecLite3 fiberglass reinforced polyester (FRP) face sheets.
 - 2. Other Manufacturer's include:
 - a. Geld-Wen.
 - b. Kawneer Corp.: "Flush line Entrance FRP Door"
 - c. Vistawall Engineerural Products: "Vision Lite FRP Door"
 - 3. Door Construction:
 - a. Door Thickness: 1-3/4 inches
 - b. Stiles and Rails: Aluminum Alloy 6063-T5, minimum of 2-5/16-inch depth.
 - c. Corners: Mitered.
 - d. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom as standard tubular shaped stiles and rails reinforced to accept hardware as specified.
 - e. Securing Internal Door Extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.
 - f. Furnish extruded stiles and rails with integral reglets to accept face sheets. Lock face sheets into place to permit flush appearance.
 - g. Rail caps or other face sheet capture methods are not acceptable.
 - h. Extrude top and bottom rail legs for interlocking continuous weather bar.
 - i. Meeting Stiles: Pile brush weather-seals. Extrude meeting stile to include integral pocket to accept pile brush weather-seals.
 - j. Bottom of Door: Install bottom weather bar with nylon brush weather-stripping into extruded interlocking edge of bottom rail.

- k. Glue: Use of glue to bond sheet to core or extrusions is not acceptable.
- l. Exposed Stops and metal Edges: Kynar paint finish. Color selected by Engineer from full range of colors, textures, and patterns. Color to match door skin of FRP door unless otherwise required by Engineer.

2.4 GLAZING

- A. Design glazing system for replacement of glass.
- B. Manufacturer's standard glazing system of applied stops as indicated on the Drawings.
- C. Allow for thermal expansion on exterior units.
- D. Glazing @ Exterior of Building:
 - 1. Provide 1 inch (25 mm) thick fabricated insulating units with Low-E coating with Argon gas filled, tempered glass for exterior locations of building. Tinted to match curtain wall glazing.
- E. Glazing System: Dry glazed with EPDM or other elastomeric extrusion in aluminum glazing stops; fixed stop one side with removable stop on other side providing for replacement of glass panel.

2.5 COMPONENTS

- A. Arrange for delivery of hardware items to door manufacturer for factory-installation.
 - 1. Provide concealed reinforcement in the frame where hardware is to be installed. Designate reinforcement locations on shop drawings.
 - 2. Accessories: Provide all accessories required for frames to receive FRP doors including but not limited to stops, weather stripping, astragal, door sweep, gaskets, hardware reinforcement, hardware accessories, and fittings. Submit all products for review and approval during the shop drawing sequence.

2.6 FABRICATION

- A. Sizes and Profiles: Nominal size and profile requirements for door and frame units are indicated on Drawings, with variable dimensions required to achieve design requirements and coordination with other construction,
- B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.
- C. Prefabrication: To greatest extent possible, complete fabrication, assembly, finishing, hardware application, and other construction before shipment to Site. Disassemble components only as necessary for shipment and installation.
- D. Assembly: Complete cutting, fitting, forming, drilling, and grinding of metal before assembly. Remove burrs from cut edges.
- E. Welding: Field welding of framing is not acceptable.
- F. Fit:
 - 1. Maintain continuity of line and accurate relation of planes and angles.
 - 2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

- G. Sealant: per manufacturer recommendations.
- H. Sequencing: Complete cutting, fitting, forming, drilling, and grinding of metal work prior to cleaning, finishing, surface treatment, and application of finishes. Remove arises from cut edges, and ease edges and comers to radius of approx. 1/64 inch.
- I. Reinforcing: Install reinforcing as necessary for performance requirements; separate dissimilar metals with bituminous paint or other separator that will prevent corrosion.
- J. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.
- K. Fasteners: Conceal fasteners wherever possible. If fasteners are exposed provide tamper resistant heads flush with finished surface of frame.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions (by Installer/Applicator): Examine conditions under which products of this section are to be installed in coordination with Installer of materials and components specified in this Section and notify the General Contractor in writing, with copies to the Owner's Representative and Engineer, of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. When Installer confirms conditions are acceptable to ensure proper and timely installation of the proposed products and confirms requirements for applicable warranty or guarantee can be satisfied; submit to General Contractor written confirmation, with copies to the Owner's Representative and, Engineer, from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
- C. Verify actual dimensions of openings by field measurements before door fabrication; show recorded measurements on shop drawings.
- D. Do not begin installation until substrates have been properly prepared.
- E. If substrate preparation is the responsibility of another installer, notify Contractor of unsatisfactory preparation, in writing with copies to Engineer, and Owner, before proceeding. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- F. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Prime Contractor written confirmation, with copies to the Owner's Representative and Engineer, from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.

3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- B. Clean and prepare substrate in accordance with manufacturer's directions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions; do not penetrate frames with anchors, provide a complete assembly and installation of (doors, frames, hardware, operators, and other components).
- B. Install fire-rated assemblies in accordance with NFPA 80.
- C. Set units plumb, level and true to line, without warping or racking of doors or frames, sash, ,or panels and with specified clearances. Anchor securely in place;
- D. Make suitable provision for thermal expansion in assembly of groups of units.
- E. In masonry walls, install frames prior to laying masonry; anchor frames into masonry mortar joints; fill jambs with grout as walls are laid up. Seal entire perimeter joints on exterior and interior sides of door frame units in accordance with the requirements of Division 07 Joint Sealants.
- F. Set sill members, thresholds and other members in full bed of sealant compound to provide weather-tight construction.
- G. Provide suitable gaskets or coatings where dissimilar metals are in contact.
- H. Install exterior doors to be weather-tight in closed position.

3.4 ADJUSTING

- A. Lubricate, test, and adjust doors to operate easily, free from warp, twist and distortion, and to fit watertight for entire perimeter.
- B. Adjust hardware for smooth and quiet operation.
- C. Adjust doors to fit snugly and close without sticking or binding.
- D. Adjust doors and hardware to provide tight fit at contact points and at weather-stripping (if any), for smooth operation and weather-tight closure.

3.5 CLEANING AND PROTECTION

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Repair or replace damaged installed products.
- C. Protect adjacent work areas and finish surfaces from damage during installation.
- D. Protect installed product and finish surfaces from damage during subsequent construction.
- E. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Engineer.
- F. Remove and replace damaged components that cannot be successfully repaired as determined by Engineer.
- G. Comply with waste management and recycling program requirements.
- H. Dispose of waste legally and in accordance with local jurisdiction requirements.

END OF SECTION 081600

SECTION 085300
POLY VINYL CHLORIDE (PVC) WINDOWS

PART 1 GENERAL

1.1 REFERENCES

- A. AAMA/NWWDA 101/I.S.2 - Voluntary Specification for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; 1997 with revisions contained in "reprinting" of 12/99.
- B. AAMA 303 - Voluntary Specification for Poly (Vinyl Chloride) (PVC) Exterior Profile Extrusions; 2000.
- C. AAMA 701/702 - Combined Voluntary Specifications for Pile Weather strip and Replaceable Fenestration Weather seals; 2000.
- D. AAMA 902 - Voluntary Specification for Sash Balances; 1999.
- E. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position; 1998.
- F. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 1996.
- G. ASTM D 4726 - Standard Specification for Rigid Poly(Vinyl Chloride)(PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors; 2001.
- H. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units; 1997.
- I. CAWM 301 - Forced Entry Testing; California Association of Window Manufacturers.

1.2 PERFORMANCE REQUIREMENTS

- A. Testing standards for air infiltration, water penetration and structural performance: AAMA/NWWDA 101/I.S.2 - 97 for type of window configuration indicated.
- B. Air infiltration: Maximum 0.14 CFM per square foot of overall sash crack at inward test pressure of 1.57, ASTM E 283. 5220 Series maximum 0.22 CFM per foot of overall sash crack at inward test pressure of 1.57, ASTM E 283. 5620 Series maximum 0.13 CFM per foot of overall sash crack at inward test pressure of 1.57, ASTM E 283.
- C. Water penetration: No water penetration at inward test pressure of 3.75 psf, ASTM E 331.

- D. Structural performance: No glass breakage, damage to hardware, permanent deformation at positive and negative test pressure of 37.5 psf, ASTM E 330.
- E. Conform to ASTM 4099-85 and ICBO. Provide a copy of the Manufacturer's ICBO report.
- F. Provide certification for overall U-Value as rated in accordance with National Fenestration Rating Council (NFRC) standards.

1.3 SUBMITTALS

- A. Product data: Submit manufacturer's product specifications, technical support data, installation and maintenance recommendations and standard details for each type of unit required, including finishing methods, hardware and accessories.
- B. Shop Drawings: Submit for approval the following:
 - 1. Elevation for each style window and door specified; indicate sizes, glazing types, muntin types and designs.
 - 2. Schedule: Indicate each window and door in project; reference each unit to specific elevation style.
 - 3. Details: Head, jamb, and sill details for each project condition.
- C. Color samples: Submit samples of each required exterior finish on PVC sample. Submit sample of co-extruded PVC material with required interior and exterior finish.
- D. Certification: Provide certification by a recognized, independent testing laboratory certifying that each required type of window complies with performance requirements indicated.
- E. Quality Assurance/Control Submittals:
 - 1. Qualifications: Proof of manufacturer's qualifications.
 - 2. U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.
 - 3. Installation Instructions: AAMA 2400 ("Mounting Flange Installation").
- F. Closeout Submittals: Reference Section 017800- Closeout Submittals; submit the following items:
 - 1. Temporary window labels marked to identify windows that labels were applied to.
 - 2. Maintenance instructions.
 - 3. Special Warranties

1.4 DELIVERY, STORAGE AND HANDLING

- A. Protect products from moisture, construction traffic, and damage in accord with manufacturer's instructions.
- B. Do not use non-vented plastic or canvas shelters; provide 1/4 inch (6 mm) space between units to promote air circulation.

1.5 QUALIFICATIONS

- A. Manufacturer Qualifications: Minimum three years documented experience producing products specified in this section.
- B. Installer Qualifications: Minimum three years documented experience installing products specified in this section.
- C. Certifications: Provide window units independently tested and third party certified for air infiltration, water resistance, and structural performance to AAMA/NWWDA 101/I.S.2; for thermal transmission and solar heat gain coefficient by NFRC; and insulating glass certified by ALI/IGCC to ASTM E 774, Class CBA.

1.6 WARRANTY

- A. Residential Special Warranty (Owner Occupied Single Family Residential):
 - 1. Full Lifetime Warranty to original owner.
 - 2. Transferability:
 - a. Permit unlimited transfer of ownership in first ten (10) years.
 - b. Upon first transfer of ownership, warranty period shall become ten years from date of original purchase.
 - c. Warranty windows against defect in materials and workmanship including costs for parts and labor.
 - 3. Submit, for Owner's acceptance, manufacturer's Full Lifetime Warranty document.
- B. Commercial Special Warranty:
 - 1. 10-year Warranty.
 - 2. Warranty windows against defects in materials and workmanship including costs for parts and labor.

PART 2 PRODUCTS

2.1 MANUFACTURERS: Use one of the followings, or as approved by Project Coordinator.

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which may be incorporated in the work include, but are

not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.

B. Substitutions under provisions of Section 012500.

C. Milgard Manufacturing Inc.

1. Energy Efficient Windows.

D. Pella Energy Star Windows.

E. Insulate Windows, a division of CertainTeed.

2.2 GENERAL PERFORMANCE REQUIREMENTS

A. Thermal Performance: Comply with NFRC 100.

B. Air Leakage, Water Resistance, Structural Test: Comply with ANSI/AAMA 101/I.S.2.

C. Forced-Entry Resistance: Comply with ASTM E 588.

2.3 COMPONENTS

A. Window Frame and Sash Members: Impact resistant, exterior grade polyvinyl chloride extrusions complying with AAMA 303 and ASTM D 4726, based on Milgard Vinyl Windows, Classic Series, for 1" glazing, fixed and horizontal sliders.

1. Ignition Temperature: Minimum of 824 degrees F (440 degrees C), when tested in accordance with ASTM D 1929.
2. Flammability: Burn time of less than 5 seconds and burn distance of less than 10 mm, when tested in accordance with ASTM D 635.
3. Non-corroding, non-flaking, non-chipping, non-rotting; no electrical conductance; low thermal conductance
4. Minimum External Wall Thickness: 0.070 inch (1.8 mm) nominal.
5. Finish of Surfaces Exposed to View: Solid vinyl with smooth gloss finish and uniform consistent color.

B. Glass and Glazing: Provide manufacturer's standard clear sealed insulating glazing material that complies with ASTM E 774 Class A and is at least 1" overall in thickness.

1. Glass: Factory installed insulated with 1/2-inch minimum airspace.
2. Glazing: Exterior dry glazed with butyl glazing tape and poly glazing bead.
3. Factory inside glazed except where field glazing is required due to large window unit dimensions. Units shall be re-grazeable without dismantling sash framing.
4. Spacer Bar: Warm-edge spacer.

- C. Screens: Type installable from interior side, providing reasonable insect control (only) when operable sash is in open position; re-wirable glass fiber mesh, 14 x 18 mesh, secured in channel of aluminum box frame with continuous vinyl spline.

- 1. Frame Color: Matching frame and sash interior color.

- D. Hardware: Operating sash hardware to function according to the type of window indicated on the Drawings. Provide the manufacturer's standard hardware fabricated from a corrosive resistant material and of sufficient strength to perform its intended function. For application of exposed hardware, use fasteners that match the finish of the hardware being fastened. All locking hardware must have certified forced entry resistance performance per CMBSO 1-79, CAWM 300/301.
- E. Fasteners: Corrosion-resistant.
- F. Weatherstripping: Types for specified operable-sash windows and operable doors.
- G. Mullions: Structural mullion system complying with AAMA Grade deflection requirements for supported windows; extruded aluminum core; internal and external rigid PVC caps color to match adjacent window frames; system is anchored to rough opening with reinforcement brackets.
- H. Frame Extensions: Foamed polyvinyl chloride (PVC) extrusion, 5/8 inch (16mm) thick.

2.4 FABRICATION

- A. Fabricate framing, mullions and sash members with mitered and fusion welded corners and joints. Supplement frame sections with internal reinforcement where required for structural rigidity. Trim and finish corners and welds to match adjacent areas.
- B. Glazing: Factory inside glazed, except where field glazing is required due to unit dimensions. Designed for easy replacement without dismantling sash framing.
- C. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- D. Provide internal offset weep holes and channels to migrate moisture to exterior. Weep holes should be covered.
- E. Prepare components to receive anchor devices.
- F. Provide integral weather stop flange to perimeter of unit.
- G. Provide double or triple seal polypropylene for weatherstripping depending on type of operable window.

- H. Assemble insect screens to fully integrate with window frame. Frames to be manufactured of cambered formed aluminum and reinforced with rigid plastic corner keys. Screen mesh to fit taut in frame and secured. Door screens made of extruded aluminum for strength and durability.

2.5 FINISHES

- A. PVC: (Poly Vinyl Chloride) solid, homogeneous.
- B. Framing members and grid pattern shall be white in color, or as approved by Project Coordinator.
- C. All exposed PVC surfaces shall be smooth, glossy, and uniform in appearance.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this section.
- B. Examine openings in which windows will be installed.
 - 1. Verify that framing complies with AAMA 2400 ("Mounting Flange Installation").
 - 2. Verify that fasteners in framed walls are fully driven and will not interfere with window installation.
- C. Coordinate with responsible entity to correct unsatisfactory conditions.
- D. Commencement of work by installer is acceptance of substrate conditions.

3.2 INSTALLATION

- A. Install windows in framed walls in accordance with AAMA 2400 ("Mounting Flange Installation").
- B. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, accessories and other window components.
- C. Windows shall be factory sized to fit in each framed opening so that the net sized window is 1/2" smaller than the framed (rough) opening to allow 1/4" clearance on all sides (tolerance +/- 1/16").
- D. Windows shall be fabricated to rough opening size with 1/2" deductions automatically made, so that no additional calculations will be required.

- E. Opening panels must be closed and locked during installation. Windows must be installed level, plumb and square with 1/4" clearance on all sides and with weep holes at bottom, and as recommended by manufacturer.
- F. Headers must not be nailed. Nail through fin into framing along sides and base. At the head, finishing nails may be placed 1/2" above fin and bent down over fin to allow for header deflection. Full support is required along entire length of sill.
- G. Operating sash and hardware should fit tight at contact points and weather stripping.
- H. Field applied trim stops and secondary weather stripping to be of compatible materials. The installer is to seal and check each window to ensure weather tightness and proper operation.
- I. Install products level, plumb and in true alignment; fasten to building substrate to meet applicable code requirements – to a minimum fasten per manufacturer's written installation instructions.

3.3 ADJUSTING

- A. Ensure that windows operate correctly, free from binding or other defects.

3.4 CLEANING

- A. Remove protective material from pre-finished surfaces.
- B. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Do not use petroleum distillates to clean windows.

END OF SECTION 085300

SECTION 086270 SUN TUNNELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Tubular unit skylight daylighting systems with formed pan flashing.

1.2 RELATED REQUIREMENTS

- A. Division 07 roofing section for roofing terminations at tubular unit skylight pan flashings.
- B. Section 086200 "Unit Skylights" for unit skylights without reflective tubes.
- C. Section 086300 "Metal-Framed Skylights" for aluminum-framed sloped glazing assemblies.
- D. Division 26 electrical sections for conduit and wiring for tubular unit skylight dimmers.

1.3 REFERENCE STANDARDS

- A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.
- B. American Architectural Manufacturers Association (www.aamanet.org), Window & Door Manufacturers Association (www.wdma.com) Canadian Standards Association, (www.csagroup.org/us/en/services):
 - 1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/ Specification for Windows, Doors, and Skylights (NAFS)
 - 2. CSA A440S1-09 – Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440
 - 3. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems
 - 4. AAMA 2603 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels
- C. ASTM International: www.astm.org:
 - 1. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

2. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
3. ASTM D 635 - Test Method for Rate of Burning and/or Extent of Time of Burning of Self-supporting plastics in a Horizontal Position
4. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics
5. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free
6. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials
7. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings
8. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
9. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
10. ASTM E 408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
11. ASTM E 1651-94(2004) - Standard Test Method for Total Luminous Reflectance Factor by Use of 30/t Integrating-Sphere Geometry
12. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
13. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

D. Code of Federal Regulations:

1. 29 CFR 1910.23 (e)(8) - Occupational Safety and Health Standards for Walking-Working Surfaces to Guard Floor and Wall Openings and Holes

E. Illuminating Engineering Society of North America (IESNA): www.ies.org:

1. IESNA – The Lighting Handbook.

F. National Fenestration Rating Council: www.nfrccommunity.org:

1. NFRC 100 - Procedure for Determining Fenestration Product U-factors
2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

G. National Fire Protection Association: www.nfpa.org:

1. NFPA 70 - National Electrical Code

H. The Coatings Society (SSPC): www.sspc.org:

1. SSPC-SP 12/NACE NO. 5 - Surface Preparation And Cleaning Of Metal

1.4 COORDINATION

- A. Coordinate tubular unit skylight interior termination locations with structural layout, ceiling grid layouts, and other ceiling-mounted items.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site prior to delivery of tubular unit skylight and installation of roof deck.

1.6 ACTION SUBMITTALS

- A. Product Data: For tubular unit skylights. Include standard construction details, product performance characteristics, and material descriptions, dimensions of individual components and profiles, and finishes.

- 1. Include test reports of qualified independent testing agency or third party certificates verifying compliance with performance requirements.

- B. LEED Submittals: (NOT REQUIRED)

- 1. Credit MR 4 Recycled Content: Documentation indicating the following:

- a. Percentages by weight of post-consumer and pre-consumer recycled content.
 - b. Total weight of products provided.
 - c. Include statement indicating costs for each product having recycled content.

- C. Shop Drawings: For tubular unit skylight work. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.

- 1. Lighting photometric study indicating compliance with performance requirements in accordance with IESNA. Include layout, spacing criteria and foot-candle report. (NOT REQUIRED)
 - 2. Wiring Diagrams: For power and control wiring for dimmers. (NOT REQUIRED)

1.7 INFORMATIONAL SUBMITTALS

- A. Buy American Act Certification: Submit documentation certifying that products comply with provisions of the Buy American Act 41 U.S.C 10a – 10d.
- B. Warranty: Sample of special warranty.

1.8 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data.

1.9 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer listed in this Section with minimum 10 years' experience in the US manufacturing similar products in successful use on similar projects and able to provide tubular unit skylights meeting requirements.

1.10 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of tubular unit skylights that fail in materials or workmanship under normal use within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metals, metal finishes, dome, and other materials beyond normal weathering.
 - b. Breakage of glazing.
 - 2. Warranty Period:
 - a. Tubular Unit Skylight Assembly: 10 years from date of purchase.
 - b. Tunnel Reflective Coating: 20 years from date of purchase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approver Suppliers - **VELUX America Inc.**, Greenwood, SC 29648; www.VELUXusa.com; (800) 878-3589, specifications@veluxusa.com.
- B. Substitutions: Per Section 012500 Product Substitution
- C. Source Limitations: Obtain tubular unit skylights through single source from single manufacturer.

2.2 TUBULAR DAYLIGHTING DEVICES

- A. System Description: Tubular unit skylight daylighting devices with exterior glazed dome, glazing retainers and gaskets, pan flashing assembly with integral adjustable pivot device, reflective tunnel, interior diffuser assemblies, and accessories, as required to meet installation and performance requirements indicated.
 - 1. Basis of Design: **VELUX America, Inc., Model TCC Commercial 22" Sun Tunnel Skylight.**

- B. Roof Dome Assembly: Transparent, UV-resistant dome with flashing base supporting dome, and top of tunnel.
 - 1. Unit Sizes: 22" diameter or As indicated on Drawings.
 - 2. Dome Glazing: 0.125 inch (3.18 mm) minimum thickness injection molded transparent [impact modified acrylic] [polycarbonate] material; with UV-absorbing additive.
 - 3. Dome Seal: Adhesive-backed foam weatherstrip.
 - 4. Daylight Directing Device: 22-inch- (559-mm-) diameter, injection molded, impact modified acrylic prism array configured to direct low-angle sunlight into tunnel and re-reflect high solar heat gain sunlight to exterior.
 - a. Basis of Design: **VELUX America, Inc., VELUX SunCurve Daylight Directing Device.**
- C. Roof Pan Flashing: One-piece, formed self-flashing type pan flashing suitable for installation on commercial roof pitches up to 60 deg. from horizontal.
 - 1. Basis of Design: **VELUX America, Inc., Model TCC flashing.**
 - 2. Unit Sizes: As required for skylight unit sizes indicated on Drawings
 - 3. Material: Galvanized steel sheet, 0.023-inch/24-ga.- (0.58-mm-) thick.
 - a. Finish: Powder coat, gray.
 - 4. Intermediate Ring: High-impact plastic reflective tunnel receiver attached to top of roof flashing serving as mounting base for dome assembly and providing a thermal break between flashing and reflective tunnel, configured to channel condensed moisture out of assembly.
 - a. Intermediate Ring Seal: Santoprene O-ring providing weather tight seal with roof flashing.
 - b. Pivot Ring and Reflective Tunnel Collar: High-impact plastic pivoting socket mounts in intermediate ring and secures to factory-installed tunnel collar; adjustable to allow increased adjustability for proper alignment of tunnel sections.
- D. Flashing Accessories:
 - 1. Manufacturer's standard turret extensions, [12 inches (305 mm) high] [36 inch (914 mm) high] [height indicated on Drawings], matching flashing metal and finish.
 - 2. Fire Band: Dome edge protection band, as required for installation in fire-resistance-rated roof assemblies; matching flashing metal and finish.
- E. Reflective Tunnel: Skylight light shaft formed from Class II anodized aluminum sheet, 0.016-inch/26-ga. (0.41 mm) thick, with silver specular interior finish surface coated with vacuum-evaporated silicone oxide and titanium oxide protective surface

that protects the tunnel surface from corrosion and provides a long life of reflection characteristics.

1. Basis of Design: **VELUX America, Inc., Model TTK or ZTR Rigid Reflective Tunnel.**
 2. Diameter: As required for indicated skylight unit sizes.
 3. Reflectance: 99 percent reflectance when measured in accordance with ASTM E 1651 at 30 degrees from vertical. Total reflectance greater than 98 percent when measured in accordance with ASTM E 1651.
 4. Color Rendition, ASTM E 408: As defined by CIE L*a*b* color model, L equal to 99-100, values a* and b* shall not exceed +1 or be less than -1.
- F. Reflective Tunnel Components: Provide components indicated and as required for installation based upon roof, ceiling, and structural member configuration, skylight and diffuser locations indicated on Drawings, and manufacturer's recommendations, selected from the following:
1. Rigid Tunnel Extensions: Reflective extension tube, lengths as required for application.
 2. Universal Reflective Elbows: Reflective angle adaptors adjustable to 45 degrees, 0.023-inch/24-ga. (0.58 mm) thick, and mounted at the top, middle, or bottom of reflective tunnel assemblies as required for application.
 3. Reflective Tunnel Fastening System: Manufacturer's recommended fastening devices consisting of spring tempered stainless steel pull clip mechanical fasteners allowing tunnel vertical and horizontal joints to be secured without the use of screws or tools, used in conjunction with pre-located punched holes in tunnel sections, that allow for a tight naturally-occurring tapered mating of interconnecting tunnel sections and elbows.
 - a. Basis of Design: **VELUX America, Inc., Flexi-Loc Fasteners.**
- G. Reflective Tunnel Accessories: Provide accessories indicated and as required for installation based upon roof, ceiling, and structural member configuration, skylight and diffuser locations indicated on Drawings, and manufacturer's recommendations, selected from the following:
1. Rotating Couplers: Rotating adaptors allowing coupling of two elbows to create 90 degree transition of tunnels using fastening system connections with rotating joint enabling alignment of tunnel sections.
 2. Commercial Energy Kit: Two clear diffusers mounted in airtight Santoprene gasketing system inserted in a round polymer housing that provides a thermal break and installs in line with building envelope insulation to isolate tunnel from exterior temperatures. Kit is affixed to tunnel with manufacturer's spring lock fasteners.

- a. Provide semi-transparent heat shield plate fastened with screws to the inside of the dome to reduce solar heat gain associated with high sun angles for units.
- b. Basis of Design: **VELUX America, Inc., Commercial Energy Kit Model ZTC.**

2.3 DIFFUSERS

- A. Round Diffuser Assemblies for Exposed Structure Applications: Round diffuser attached directly to bottom of tunnel, with high visible light transmittance lens, airtight seals, and white polycarbonate trim ring.
 1. Basis of Design: **VELUX America, Inc., Round Diffuser Model TOC.**
 2. Size: As required for skylight sizes indicated.
 3. Lens Type: [Prismatic lens, minimum 92 percent visible light transmittance] [Frosted lens, minimum 92 percent visible light transmittance] [Fresnel lens with concentric honeycomb parabolic light-diffusing prisms].
- B. Square Diffuser Assemblies for Suspended and Hard Ceiling Applications: Round-to-square transition box with white diffuse internal coating attached directly to bottom of tunnel and fitted to standard suspended ceiling grid or hard ceiling, with hinged, white painted extruded aluminum diffuser frame with high visible light transmittance lens, seals, and white metal ceiling trim.
 1. Basis of Design: **VELUX America, Inc., Square Diffuser Model TTC.**
 2. Size: As required for skylight sizes indicated, and coordinated with nominal 24 by 24 inch (610 by 610 mm) ceiling grid size.
 3. [Round-to-Round Adapter: Where required to adapt 14 inch tunnel to square diffuser assembly.]
 4. Curvilinear Ceiling Adapter Assembly, 22-inch round to 24-inch square: [Injection-molded copolymer] [Plenum-rated Kynar PVDF thermoplastic].
 5. Lens Type: [Prismatic lens, minimum 92 percent visible light transmittance] [Frosted lens, minimum 92 percent visible light transmittance] [Fresnel lens with concentric honeycomb parabolic light-diffusing prisms supported by clear lens, 92 percent visible light transmittance].
- C. Round Diffuser Assemblies for Finished Ceiling Applications: Round ceiling diffuser assembly attached directly to bottom of tunnel, dual high visible light transmittance lenses with insulating airspace, airtight seals, and paintable white acrylic trim ring.
 1. Basis of Design: **VELUX America, Inc., Round Diffuser Model THC.**
 2. Size: As required for skylight sizes indicated.
 3. Lens Type: Prismatic lens, minimum 92 percent visible light transmittance

2.4 ACCESSORIES

2.5 PERFORMANCE REQUIREMENTS

- A. Unit Skylight Standard, 14 inch (356 mm) Unit: AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-11 or previous):
1. Performance Grade (Primary Designator): TDDCC/TDDOC-PG145.
 2. Design Pressure (DP): +300/-145 psf (+14.4/-6.94 kPa).
 3. Water Test Pressure: 15 psf (0.72 kPa) with no leakage at 5 gallons per minute spray rate.
 4. Air Leakage Rate: 0.30 cfm/ft² maximum.
- B. Unit Skylight Standard, 22 inch (559 mm) Unit: AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-11 or previous):
1. Performance Grade (Primary Designator): TDDCC/TDDOC-PG130.
 2. Design Pressure (DP): +300/-130 psf (+14.4/-6.22 kPa).
 3. Water Test Pressure: 15 psf (0.72 kPa) with no leakage at 5 gallons per minute spray rate.
 4. Air Leakage Rate: 0.30 cfm/ft² maximum
- C. Daylighting: Provide daylighting photometric performance comparable to basis of design product at layout indicated, based upon daylighting profile of March 21, 9:00 am local time, at Project location by simulation in accordance with IESNA guidelines.
- D. Air Infiltration: Maximum air leakage through unit of 0.30 cfm/sq. ft. (1.5 L/s/sq. m) of fixed area as determined according to ASTM E 283 at a static-air-pressure differential of 1.57 lbf/sq. ft. (75Pa.)
- E. Water Penetration under Static Pressure: No evidence of water penetration through unit when tested according to ASTM E 331 at a static-air-pressure differential of 15 lbf/sq. ft. (720 Pa).
- F. Windborne-Debris Resistance: Provide tubular unit skylights capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing glazed representative of those specified, according to ASTM E 1886 and ASTM E 1996.
1. Missile Level C, Wind Zone 3 requirements, and +50/-50 psf cycle pressure minimum.
- G. Surface-Burning Characteristics of Plastic Glazing: Provide plastic glazing meeting NAFS and identical to specimens tested for fire-exposure behavior in accordance with test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Self-Ignition Temperature: 650 deg F (345 deg. C) or more for plastic glazing in thickness indicated when tested per ASTM D 1929.
 2. Smoke-Production Characteristics: Comply with either requirement below:
 - a. Smoke-Developed Index: 450 or less when tested per ASTM E 84 on plastic glazing in manner indicated for application.
 - b. Smoke Density: 75 or less when tested per ASTM D 2843 on plastic glazing in thickness indicated for application.
 3. Burning Characteristics: Tested and labeled in accordance with ASTM D 635.
 - a. Plastic Glazing for Domes: [Polycarbonate Class CC1] [Acrylic Class CC2].
- H. Fire Ratings for Roof Assemblies with Fire Classifications: Tubular unit skylight with dome edge protection band tested in accordance with ASTM E 108 and listed as passing Burning Brand test with target classification of Class B
- I. Energy Performance with Energy Kit Installed:
1. Thermal Transmittance: NFRC 100 maximum U-factor:
 - a. 14 inch (356 mm) Units: 0.55 Btu/hr*ft²*deg F (3.12 W/m²*deg C).
 - b. 22 inch (559 mm) Units: 0.43 Btu/hr*ft²*deg F (2.44 W/m²*deg C).
 2. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC:
 - a. 14 inch (356 mm) Units: 0.28.
 - b. 22 inch (559 mm) Units: 0.26.
- J. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- K. Fall Protection Standard Compliance: 29 CFR 1910.23: Passed.

2.6 MATERIALS

- A. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating, either commercial steel or forming steel.
- B. Aluminum Sheet: Flat sheet complying with ASTM B 209/B 209M.
- C. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic, nominally free of sulfur and containing no asbestos fibers, formulated for 15-mil dry film thickness per coating.
- D. Joint Sealants: As specified in Section 079200 "Joint Sealants."

- E. Mastic Sealants: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- F. Roofing Cement: ASTM D 4586, asbestos free, designed for trowel application or other adhesive compatible with roofing system.

2.7 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Galvanized Steel Sheet:
 - 1. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - a. Color and Gloss: Neutral gray.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with tubular unit skylight installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install tubular unit skylights in accordance with manufacturer's written instructions and approved shop drawings. Coordinate installation of units with installation of substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that finished installation is weather tight.
 - 1. Anchor tubular unit skylights securely to supporting substrates.
 - 2. For horizontal installation, install tubular unit skylights true to line and without distortion.

- B. Where metal surfaces of tubular unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by tubular unit skylight manufacturer.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Installer to perform tests and inspections.
 - 1. Test for water leaks according to AAMA 501.2 after installation and curing of sealants but prior to installation of interior finishes.
 - 2. Perform test for total area of each tubular unit skylight.
- B. Work will be considered defective if it does not pass tests and inspections.
- C. Additional testing and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

- A. Clean exposed tubular unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Replace glazing that has been damaged during construction period.
- C. Dimmer Assemblies: Test and adjust dimmer assemblies for proper operation.
- D. Protect tubular unit skylight surfaces from contact with contaminating substances resulting from construction operations.

END OF SECTION

**SECTION 087100
FINISH HARDWARE**

PART 1. GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work under this section includes the complete finish hardware requirements for the project. Quantities listed are for the Contractor's convenience only and are not guaranteed. Items not specifically mentioned, but necessary to complete the work shall be furnished, matching the items specified in quality and finish.

1.3 REFERENCES

A. Standards

1. ANSI/BHMA A156.18 - 2000 Materials and Finishes
2. ICC A117.1 - 1998 - Accessible and Usable Buildings and Facilities
3. NFPA 80 - 1999 - Standard for Fire Doors and Windows
4. NFPA 252 - 1995 - Standard of Fire Tests of Door Assemblies
5. Underwriters Laboratories - Building Materials Directory
6. Underwriters Laboratories Test Standard UL 10C-98 - Positive Pressure Fire Tests of Door Assemblies

B. Codes:

2. ADAAG - Americans with Disabilities Act, "Accessibility Guidelines for Buildings and Facilities".

1.4 SUBMITTALS

- A. General Requirements: All Submittals shall be in accordance with Section 013300, Submittals.
- B. Product Data: Submit Two (2) copies of manufacturer's data for each item of finish hardware

C. Hardware Schedule: Submit Two (2) copies of a detailed Finish Hardware Schedule.

1. The submitted Finish Hardware Schedule shall indicate the complete designation of every item required for each door or opening.
2. Furnish cover sheet listing title of project as shown on the Contract Documents, name, address, phone and fax numbers of Owner, Engineer, Contractor, and Supplier, name of Certified Hardware Consultant, and date of submittal.
3. List each opening individually under separate headings in the same order as the Door Schedule. Do not group like, or similar doors under a single heading. Do not continue individual headings on separate pages.
4. Each heading shall indicate opening location, handing, degree of opening, door size, type, fire rating, and Door and Frame material.
5. An index shall be included in the Finish Hardware submittals indicating door, page, and heading numbers, and locking function of each opening
6. Indicate product Manufacturer and incorporate cross-reference to symbols used in Article 2.3 Hardware Schedule.
7. A cross reference for any abbreviations or symbols used shall be included.
8. Schedules in coded or horizontal format are unacceptable.
9. Submittals not conforming to these requirements will be returned without review, for re-submittal. **Following is an example of the required format:**

1 Sgl. Door #101 - Corridor 100 to Storage 101 LH 90°
HW-9 3-0 x 7-0 x 1-3/4" x 20 Minute x Type A SC WD x HMF

3	Each Butts	MC	TA2714 US26D (652) 4.5 x 4.5 x 1/2MS
1	Lockset	SA	8205 LNL 630 LH
1	Door Closer	LCN	4041 Alum. (689) Hinge Face Mounted x
STB			
1	Wall Stop	TR	1270CX-CP US26D (626)
1	Set Smoke Gasket	PE	S88D - 17' per Set

D. Processing: Hardware Schedules will not be reviewed by the Engineer until they have been reviewed and approved by Contractor. Resubmit only corrected copies of those sheets requiring correction and update distributed copies with corrected sheets.

- E. Revisions: The Hardware Schedule shall be kept current throughout the project duration. All revisions incorporated shall be submitted in accordance with the above requirements. Submit only cover sheet and revised pages. All revisions shall clearly identify changes from previous submittal content.
- F. Samples: If requested by the Engineer, submit one (1) sample of each exposed hardware category, finished as required, and tagged with full description for coordination with the hardware schedule. Samples will be reviewed, by the Engineer, for design and finish only, compliance with other requirements is the responsibility of the Contractor. Units which are acceptable and remain undamaged through submittal procedures may be used on the project.
- G. Color Samples: Submit Two (2) set of color charts and physical samples of each product requiring color selection.
- H. Key Schedule: A Key Schedule and index shall be included in the Finish Hardware submittals indicating door number, heading, page number, and locking function of each Opening. After completion of the Key meeting indicated under Paragraph 2.3 D., submit Two (2) copies of a key schedule indicating the complete project key system for approval
- I. Wiring Diagrams. After receipt of Finish Hardware Schedule Approval, Submit Two (2) copies a separate list of all Electronic Hardware, cross-referenced to the Finish Hardware Submittal and Door Schedule. Include Voltage requirements and along with Product Data and Installation instructions. Where "System Wiring Diagram" has been specified under Part 2, Products, provide terminal-to-terminal wiring diagrams of the system along with riser diagrams and description of system function.
- J. Operations and Maintenance Data.
 - 1. Submit Maintenance and Operations Manuals
 - 2. Manuals shall contain final copy of the Finish Hardware Submittal, Product Data, Templates, Key Schedule, Installation Instructions, Wiring Diagrams, and Warrantees.

1.5 QUALITY ASSURANCE

- A. Supplier: Finish hardware shall be supplied by a recognized builders' hardware supplier who has been furnishing hardware in the same area as the project for a period of not less than five (5) years. They shall be a factory direct, authorized distributor of the Exit Devices, Locksets and Door Closers. The supplier's organization shall include an Engineering Hardware Consultant, certified by the Door and Hardware Institute, who is available at all reasonable times during the

course of the work to meet with the Owner, Engineer or Contractor for project hardware consultation.

- B. Source: Obtain each kind of Hardware (Butts, Locksets, Exit Devices, Door Closers, etc.) from only one manufacturer.
- C. Installer: Finish hardware shall be installed only by experienced tradesmen in compliance with trade union jurisdictions, either at the door and frame fabrication plant or at the project site.
- D. Templates: Furnish hardware templates for each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check the shop drawings of such other work to confirm that provisions will be made for the proper installation of hardware.
- E. Regulatory Requirements:
 - 1. All finish hardware shall comply with applicable local and/or state building codes.
 - 2. Fire Rated Door and Frame Assemblies: Provide only hardware which has been tested and listed by recognized testing agency for the types and sizes of doors required, and which complies with the requirements of the door and door frame labels. Provide Door Closers, Automatic self latching bolts, coordinators, gasketing, astragals, or other components if required to conform to label requirements.
 - 3. All finish hardware shall meet the requirements of ADAAG-1992, and ICC/ANSI A117.1 - 1992, Accessible and Usable Building and Facilities.

1.6 PRODUCT HANDLING AND STORAGE

- A. Packaging: Each item or package is to be separately tagged with identification related to the final hardware schedule. Basic installation instructions shall be included in the packages.
- B. Storage: Provide a locked room at the jobsite for the storage of the hardware.

1.7 WARRANTY

- A. Finish hardware shall be guaranteed against defects in workmanship and operation for a period of one (1) year, backed by a factory guarantee of the hardware manufacturer. The following products shall be guaranteed for periods beyond One (1) Year:

1. Locks - Two (2) Years
2. Door Closers - Ten (10) Years
3. Panic Devices - Three (3) Years

1.8 MAINTENANCE

A. Furnish the following extra materials, which shall be delivered directly to the Owner prior to substantial completion.

1. Provide One (1) Set of Special Tools required for Installation and Adjustment
2. Extra Hardware: Not Required for this project

<u>Quantity</u>	<u>Description</u>	<u>Factory Number</u>
Two (2)	Locksets	8237
Two (2)	Door Closers	4041
One (1)	Key Cabinet	RWC-125-S

PART 2. PRODUCTS

2.1 MATERIALS

A. Manufacturers: Products may be furnished by the manufacturers listed under “As Specified” below, or equivalent products of type, grade, design, and function from manufacturers listed under “Acceptable Substitutions”. Requests for products not listed must be made in accordance with Division 0 & 1 requirements.

<u>Product</u>	<u>As Specified</u>	<u>Acceptable Substitutions</u>
Butts	McKinney (MC)	Bommer, Hager
Continuous Gear Hinges	Pemko (PE)	Roton, Select
Locksets and Cylinders	Sargent (SA)	Corbin/Ruswin, Yale
Exit Devices	Precision (PR)	Corbin/Ruswin, Sargent
Door Closers	LCN Closers (LCN)	Norton 7500 Series Sargent 351 Series
Automatic Operators/Closers	LCN Closers (LCN)	Norton 6670POR Series
Automatic Flush Bolts, Coordinators	Door Controls (DC)	None
Manual Flush Bolts Controls	Trimco (TR)	Glynn Johnson, Door
Door Pulls, Push and Pull Plates		Trimco (TR)
	Rockwood, Tice	
Wall and Floor Stops Rockwood	Trimco (TR)	Glynn Johnson,

Overhead Stop and Holders	Glynn Johnson (GJ)	ABH, Rixson
Kick, Mop, and Armor Plates	Tice Industries (TI)	Trimco, Rockwood
Electro-Magnetic Door Release	Rixson-Firemark (RI)	DynaLock, HES
Weatherstrip & Thresholds	Pemko (PE)	National Guard, Reese
Sliding and Pocket Door Hardware		Lawrence (LA) P.C.
Henderson		
Key Cabinet	Telkee	Lund

B. Finish:

Finish in general to be: US32D, Satin Stainless Steel (BHMA 630), except:

1. Interior Hinges: Satin Chrome (Over Steel), US26D (BHMA 652)
2. Door Closers: Sprayed Aluminum (BHMA 689)
3. Door Stops, Flush Bolts: Satin Chrome US26D (BHMA 626)
4. Plastic Laminate Kick Plates: Color as Selected from full range of Wilsonart, Nevamar, Pionite, or Formica Solid Colors.
5. Smoke Gasketing: As Selected.
6. Threshold, Weatherstrip & Door Bottoms: As listed

C. Butts and Continuous Gear Hinges:

1. Quantity (per Leaf):
 - a. Door openings up to 60": 2 each.
 - b. Door openings 60 to 90": 3 each.
 - c. Doors over 90": Furnish one (1) additional for each 30" increment or fraction thereof.
2. Sizes:
 - 1-3/4" Exterior & Vestibule Doors: 5 x 4-1/2"
 - 1-3/4" Interior Doors up to and including 36": 4-1/2 x 4-1/2"
 - 1-3/4" Interior Doors over 36": 5 x 4-1/2"
3. Width of Hinges shall be as require to clear projecting trim or other conditions to allow maximum degree of opening
4. All locked doors to have non-removable pins (NRP - Set Screw in Barrel)
5. For unusual size or weight doors, furnish type, size and quantity recommended by the hinge manufacturer.

D. Locksets and Cylinders

1. Furnish all Lever Handle Locksets and Latches in LNP Design.
2. Backset: 2-3/4"
3. Provide all Locksets and Cylinders with Key Removable Interchangeable Cores.
4. All Locksets and Latchsets shall be listed with Underwriters Laboratories for A label and lesser class doors.
5. Provide Curved Lip Strikes with adequate projection to protect door trim. Provide flat, flush lip strikes for pairs of doors with overlapping Astragals.
6. Provide manufacturers standard wrought or plastic strike boxes.

E. Panic Devices and Fire Exit Hardware

1. Rated Openings: Provide UL listed Fire Exit Devices at rated openings.
2. Sizes: Provide Exit Devices sized in accordance with the manufacturer manufacturers recommendations.
3. Removable Mullions: Provide Mullion Spacer Blocks for installation in narrow stop frames.
4. Furnish Hex Nuts and Bolts at Wood Composite and Mineral Core Door applications.
5. Vision Frames: Provide Glass Bead Kits where interference with vision frames occurs.
6. Lever Trim: Exit Device Lever Trim shall match design specified under 2.1 D.

F. Door Closers

1. Furnish drop plates where doors have insufficient height top rails, or where Regular Arm Door Closers are used in conjunction with Concealed Overhead Stops.
2. Furnish cold weather fluid, at exterior & vestibule doors.
3. Provide special closer mounting as required where interference with weatherstrip or sound seals occurs.
4. Furnish Door Closers for Fire Rated Doors in compliance with UBC Standard 7-2 (1997)

5. Furnish Shoulder Through Bolts at Wood Composite and Mineral Core Door applications.
 6. Coordinate rough-in, location, and wiring requirements for all Electronic Hold Open Door Closers with Electrical Contractor.
- G. Automatic Operators and Accessories
1. Locate Wall Plate Actuators and Key Switch as noted in the Drawings or as directed by Engineer.
 2. All System Wiring shall be concealed in the Wall and Door Frame.
 3. Coordinate locations, rough-in, and wiring requirements with Electrical sub-contractor.
 4. Submit Wiring Diagrams in accordance with paragraph 1.4 I. One (1) each System Wiring Diagram for each application.
- H. Kick & Mop Plates
1. Kick Plates shall be applied to the Push Side of the Door, Mop Plate applied to the Pull Side.
 2. All plates shall beveled four edges (B4E).
 3. All plates shall be adhesive mounted.
 4. Height: Kick Plates 10", Mop Plates 6", Armor Plates 34"
 5. All plates shall be furnished with width as required to provide 1/4" clearance at sides of doors, frame stops, frame applied weatherstrip, or finger guards.
- I. Stops & Holders
1. Furnish Overhead Stop and Holders sized as recommended by manufacturer.
 2. Furnish Overhead Stop and Holders with Special Shims, Brackets, or Special Template mounting where required.
 3. Coordinate location, rough-in, and wiring requirements for Magnetic Holders with Electrical Contractor.
 4. Where wall stops are not applicable, furnish floor stops 1211 Series, or Overhead Stops if required.

J. Thresholds

1. Furnish Thresholds with FHSL14200, ¼-20 x 2” Phillips Flat Head Sleeve Anchors.

K. Weatherstrip and Smoke Gasketing

1. Furnish weatherstrip and gaskets for complete perimeter of opening, including mullions, and astragals. Furnish weatherstrip at sill of Four (4) sided frames.
2. Rain Drips shall be full width of opening including frame faces.

L. Door Silencers

1. Furnish Rubber Door Silencers for all openings not specified to have Smoke Gasketing or Weatherstrip.
2. Quantity: Furnish three (3) for each single door frame, and four (4) for each pair of door frames.
3. Type 1229A for metal frames, and 1229B for wood frames.

2.2 KEYING

- A. Establish a new Factory registered Grand Master Key System for this project. All Key operated products (Locksets, Cylinders, Deadlocks, etc.) specified under this section shall be keyed to the new system.
- B. Provide Brass Construction Cores and Keys during the construction period. Plastic Cores are unacceptable.
- C. The Finish Hardware Supplier shall meet with the Owner to prepare the permanent keying schedule. Submit Key Schedule for approval in accordance with paragraph 1.4 H.
- D. The Permanent Cores, Master Keys, Change Keys, and Control Keys, prepared according to the approved keying schedule, shall be transmitted directly to the Owner, prior to substantial completion.
- E. All Permanent Cores and Keys shall be sent direct from the lock manufacturer via Registered Mail, Return Receipt Requested, to the Owner.
- F. Provide a key biting list of all cylinders, including 25% additional change combinations.

G. Stamp all Keys "Do not Duplicate" and with change designation as directed.

F. Furnish:

1. Six (6) Building Grand Master Keys
2. Six (6) Master Keys per Set
3. Four (4) change keys per Lockset or Cylinder.
4. Six (4) Construction Keys
5. Two (2) Control Keys
6. Two (2) Construction Control Keys

PART 3. EXECUTION

3.1 PREPARATION

- A. Examination: Examine Doors, Frames, and related items for conditions that would prevent the proper application of the Finish Hardware. Do not proceed until defects are corrected.
- B. Provide solid blocking for all Wall Stops, Wall Plate Actuators, and Magnetic Holders.
- C. Fasteners: Check all conditions and use fastening devices as needed to securely anchor all hardware as per manufacturer's published templates. Self-tapping sheet metal screws are not acceptable. All Door Closers and Exit Devices on Wood Doors shall be Shoulder Through-bolted.

3.2 INSTALLATION

- A. Mounting Heights: Mounting Heights: Mount units at heights as recommended in "Recommended Locations for Engineerural Hardware for Standard Steel Doors and Frames (2001)" by Doors and Hardware Institute, except as indicated below. Products not specifically covered shall be installed in accordance with the manufacturer templates and instructions.
 1. Hinges:
 - a. Top Hinge: 7-1/4", Top of frame rabbet to centerline of hinge.
 - b. Bottom Hinge: 12-1/4", Bottom of Frame to centerline of hinge
 - c. Intermediate Hinges: Centered, equal spacing between top and bottom hinges.

2. Mortise Lock Strikes: 40", bottom of frame to centerline of Strike.
 3. Wall Stops: Locate Wall Stops intended for use with Lever Handle Locksets and Exit Devices at the Centerline of the Spindle or Pull.
- B. Install each hardware item in compliance with manufacturer's instructions.
1. Wherever cutting and fitting are required to install hardware surfaces which will be painted or finished at a later time, install each item completely and then remove and store in a secure place. After completion of the finishes, re-install each item.
 2. Do not install surface-mounted items until finishes have been completed on the substrate.
 3. Install Fire Rated openings to comply with NFPA 80.
 4. Trim Exit Devices to provide 1-1/2" clearance between End Cap and hinge jamb stop face and/or stop applied weatherstrip.
 5. Door Closers shall be located to allow maximum degree of opening that project conditions will allow. Door Closers shall not be used to stop the door, except for models equipped with an integral stop-on-the-arm feature.
 6. Locate Overhead Stop and Holders with maximum degree of opening that project conditions will allow.
 7. Locate Floor Stops at maximum degree of opening that project conditions will allow. Do not locate Floor Stops where they create a hazardous condition. Stops should be located no more than 1/3 Door width from the Latch Edge of the Door.
 8. Set all Exterior Thresholds in a bed of butyl rubber sealant. Remove all excess sealant. Caulk all Edges and Joints to exclude moisture.
 9. Mount and Adjust Rigid Jamb Weatherstrip prior to mounting Parallel Arm Door Closers. Weatherstrip shall be installed to provide a continuous seal at head and jambs. Do not notch Weatherstrip for Door Closer shoe. Provide Parallel Arm 5th hole spacer of increased thickness to allow for revised location.
- C. Adjust and check each operating item of hardware and each door to insure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.

3.3 ADJUSTMENT

- A. Wherever hardware installation is made more than one (1) month prior to acceptance or occupancy, make a final check and adjustment of all hardware items during the week prior to acceptance or occupancy. Clean and lubricate operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- B. After mechanical systems have been balanced, adjust Door Closers to comply with following ICC/ANSI A117.1 - 1992 Requirements.
 - 1. With the door open 70 degrees, the door closer shall be adjusted so that the door will take at least three (3) seconds to move to a point where the leading edge of the door is three inches from latching.
 - 2. The maximum force for pushing or pulling a door open shall be as follows: (these forces do not apply to the force required to retract latch bolts or disengage other devices securing the door)
 - a. Fire Doors: The minimum opening force allowable by the appropriate administrative authority.
 - b. Exterior Doors: 8.5 lbf.
 - c. Interior Doors: 5.0 lbf.
- C. Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes.

END OF SECTION 087100

DIVISION 09
FINISHES

**SECTION 092000
GYPSUM BOARD SYSTEMS**

PART 1 GENERAL

1.1 REFERENCES

- A. ANSI/ASTM C36 - Gypsum Wallboard.
- B. ANSI/ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
- C. ANSI/ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
- D. ANSI/ASTM C646 - Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gauge Steel Studs.
- E. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- F. GA-201 - Gypsum Board for Walls and Ceilings.
- G. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.2 QUALITY ASSURANCE

- A. Performance gypsum board systems work in accordance with recommendations of ASTM C754, GA 151, GA 201 and GA 216 unless otherwise specified in this Section.
- B. Delivery and Storage of Gypsum Wallboard: All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.
- C. Environmental Conditions: In cold weather and during gypsum panel application and joint finishing, temperatures within the building shall be maintained within the range of 55° to 70°F or per manufacturer specification if different. Adequate ventilation shall be provided to carry off excess moisture.

1.3 REGULATORY REQUIREMENTS

- A. Fire-Rated Partitions and Shafts: Listed and labeled by UL.
- B. Fire-Rated Soffits: Listed and labeled by UL.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which can be incorporated into the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitutions with approval, in accordance with Instructions to Bidders, is given.
- B. Substitutions must be submitted and approved under provisions of Section 012500.

C. Manufacturers of Gypsum Board Systems:

1. U.S. Gypsum Co.
2. Gold Bond Building Products
3. Dontar Gypsum America, Inc.
4. National Gypsum Co.

D. Manufacturers of Metal Framing Materials:

1. Angeles Metal Systems
2. Gypsum Co.
3. Inryco

2.2 METAL FRAMING

- A. Provide metal framing materials in accordance with GA 216.
- B. Furring Channels, 25 Gauge: Hat-shaped 1-3/8" wide, 7/8" deep with hemmed legs manufactured from hot dipped galvanized steel.
- C. Channels: 1-1/2" Cold Rolled Channels.
- D. Galvanized Hanger Wire, 8 ga.
- E. Galvanized Tie Wire, 18 ga.
- F. Resilient Channels: 26 ga. galvanized steel.
- G. Fasteners and Anchorages: GA 216.
- H. Shaft Wall Studs: 2 1/2 " CH type, 33ksi hot dipped galvanized.

2.3 GYPSUM BOARD MATERIALS

- A. Gypsum Board: ANSI/ASTM C36; fire resistive type, UL rated; 5/8" thickness Type 'X', maximum permissible length; ends square cut, tapered edges.
- B. Wallboard-Moisture Resistant Fire-Rated: ASTM 630. 5/8" thickness unless otherwise noted, I.C.B.O. approved for installation in moisture areas; Exterior Ceiling Board ASTM C931 for all horizontal moisture areas. U.L. labeled and I.C.B.O. approved for fire resistive system details.
- C. Gypsum Sheathing - Fire-rated: 1/2 inch thick with water repellant paper on both sides and long edges; U.L. labeled and I.C.B.O. approved.
- D. Gypsum Shaft Wall Liner – fire rated: 1" thick, beveled edge 24" wide, U.L. Labeled and ICBO approved.

2.4 ACCESSORIES

- A. Acoustical Insulation: Owens Corning Sound Attenuation Fire Batt Insulation / Mineral Wool; preformed batts, friction fit type un-faced without integral vapor barrier membrane, 3 1/2 inches thick, ASTM E 84 Flame Spread 5, Smoke Developed 0.
- B. Acoustical Sealant: Non-hardening, non-skinning, paintable, for use in conjunction with gypsum board, type as recommended by manufacturer of gypsum board.
- C. Corner Beads: Hot dipped galvanized corner bead in sizes required by board thickness.
- D. Edge Trim: L Shaped, U Shaped as detailed, hot dipped galvanized in sizes required.
- E. Fiberglass reinforcing Tape, Joint Compound, Adhesive, Water; GA 216.

- F. Screws: Type S in required length for attachment to studs. Type S-12 in required length for attachment to heavier gauge metal framing. Bugle or pan head as required.
- G. Backer Board for Ceramic Tile: ½" interior Portland cement board, glass fiber mesh reinforced, fire rated and I.C.B.O. approved.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.

3.2 CEILING FRAMING INSTALLATION

- A. Install in accordance with GA 201 and GA 216.
- B. Space hanging wires at 48" maximum along carrying channels and 6" from each end of carrying channel.
- C. Install carrying channels at 24" on center at proper height, level, and secure with hanger wire saddle-tied along channels. Provide 1" clearance between runners and abutting walls and partitions. At channel splices, interlock flanges, overlap ends 12" and secure each end with double-strand 8 gauge tie wire.
- D. Erect metal furring channels at right angles to 1-1/2" carrying channels. Space furring 24" on center and within 6" of walls. Provide 1" clearance between furring ends and abutting walls and partitions. Attach furring channels to 1-1/2" channels with metal furring channel clips installed on alternate sides of carrying channel.
- E. Coordinate location of hangers with other work.
- F. Install ceiling framing independent of walls, columns, and above-ceiling work.
- G. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24" past each end of openings.
- H. Laterally brace entire suspension system.

3.3 ACOUSTICAL ACCESSORIES INSTALLATION

- A. Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- B. Place acoustical insulation above suspended gypsum board and acoustical panel ceilings at locations adjacent to partitions and extending 3' each side of partition unless indicated to a fuller extent. Lay such that insulating material is supported by ceiling suspension system and not solely supported by ceiling panels.
- C. Install acoustical sealant within partitions in accordance with manufacturer's instructions.

3.4 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 201 and GA 216.
- B. Install **moisture / mold resistant wallboard (Purple)** in restrooms and janitorial closets. Full height of walls ½” and ceilings 5/8”.
- C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- D. Use screws when fastening gypsum board to furring or framing.
- E. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
- F. Fill all voids between decking and full height/to structure partitions.
- G. Refer to drawings for lead lined gypsum board installation notes.
- H. Paint Drywall Reveals to match adjacent wall finish per Section 09900.

3.5 JOINT TREATMENT

- A. Treat joints, fasteners and corners in strict accordance with the printed instructions of the wallboard manufacturer. Control temperature and ventilation for best results.
- B. Wall and Ceiling Bureau level 5 smooth finish gypsum wallboard complete and ready for painting. Correct all defects rejected by painter. After painter has applied a prime coat or finish coat, it may be necessary to re-sand or resurface the wall as defects may not appear until painting is applied. The reworking of a wall will be done with no additional cost to the Owner. The General Contractor's and Project Coordinator's decision on the acceptability of finish painted surfaces will be final.

3.6 BACKER BOARD INSTALLATION FOR CERAMIC TILE

- A. Install in accordance with manufacturer's instructions.

END OF SECTION 092000

SECTION 092600
WALL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM E84-75 standard method of test for surface burning characteristics of building materials.

1.2 SUBMITTALS

- A. Submit shop drawing under provisions of Section 013300.
- B. Submit complete installation details, location schedule, color chart.
- C. Submit samples under provisions of Section 013300.
- D. Submit 6" long, full size, sample complete with aluminum retainer, mounting hardware, and caps.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.
- C. Manufacturer of wall and door protection systems
 - 1. Construction Specialties, Inc.
 - 2. IPC
 - 3. Balco

2.2 MATERIALS

- A. Corner Guard: Surface mounted C/S Acrovyn SSM-20; 2 inch x 2 inch width; nominal wall thickness .078"; 4'-0" length with closure caps, unless otherwise indicated.
- B. Adhesive recommended by manufacturer.

2.3 FINISH

- A. Vinyl/acrylic shall have matte finish, pebblette grain surface.
- B. Colors as selected by Engineer/Architect.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install all items parallel to or perpendicular to building lines.
- B. All fastener devices shall be concealed.
- C. Corner guards shall extend from top of base unless otherwise indicated on the drawings.
- D. All items shall be anchored with hardware furnished by manufacturer in strict accordance with manufacturer's specifications.
- E. Maximum spacing of fasteners 16" o.c.
- F. Secure all closure caps.
- G. Adhesively install protective wall covering with trim as required for a complete installation.

END OF SECTION 092600

SECTION 093000 CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Repair and replacement of wall and floor systems at areas of work to receive new ceramic tile.
 - 2. New floor tile at areas of work as indicated.
 - a. Glazed ceramic floor tile.
 - b. Bull nose base tiles.
 - c. Substrate preparation.
- B. Related Sections:
 - 1. Division 3, Section "Cast in Place Concrete."
 - 2. Division 6, Section "Rough Carpentry"
 - 3. Division 7, Section "Joint Sealants"
 - 4. Division 22, Section "Plumbing" & "Plumbing Fixtures".

1.3 REFERENCED STANDARDS

- A. In addition to the Codes and Standards listed in Division 1 of the published Specifications, standards and methods of the trade cited below (current edition) shall apply to work of this section.
 - 1. Tile Council of North America, Inc. (TCNA) "Handbook for Ceramic Tile Installation", latest edition.
 - 2. ANSI A108.1A – American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar.
 - 3. ANSI A108.5 – Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex –Portland Cement Mortar.
 - 4. ANSI A108.10 – Installation of Grout in Tilework.
 - 5. ANSI A118.1 – American National Standard Specifications for Dry-Set Portland Cement Mortar.
 - 6. ANSI A118.4 – American National Standard Specifications for Latex Portland Cement Mortar.
 - 7. ANSI A118.6 – American National Standard Specifications for Ceramic Tile Grouts.

1.4 ADA REQUIREMENTS

- A. Conform to applicable code for installing work in conformance with ADA and Title 24 CBC.
 - 1. Coefficient of friction of floor tile shall be 0.6 or greater when tested in accordance with ASTM C1028.

1.5 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for all grouts, adhesives, and for membrane system.
- B. Samples for Verification Purposes; Submit the following:
 - 1. Each type of tile selected, mounted on a square board four tile minimum with joints filled using selected grout.
- C. Certification: Submit Master Grade Certificates for each delivery of each tile type, signed by the tile manufacturer and installer.
- D. Qualifications Documentation: Written confirmation that companies executing work in this section comply with experience requirements.
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods and sealers.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with ASNI / TCA A137.1
- B. Conform to TCA Handbook for Ceramic Tile Installation.
- C. Material Source: Furnish each type, finish, and color of tile product and accessory materials from a single source.
- D. Installer: A company with not less than ten (10) installations of tile work similar in size and complexity to the work of this project.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ASNI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in dry locations within acceptable temperatures per the manufacturers' requirements.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.
- B. Do not install adhesives in unventilated environment.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents:
 - 1. Tile and Trim Units: Furnish not less than 5 percent of total product installed, maintenance stock for each type, color, pattern and size of tile product installed.

PART 2 - PRODUCTS

2.1 CERAMIC TILE

- A. As manufactured by Dal-Tile, American Olean, or equivalent as approved by Owner.
- B. All ceramic tile is to be in colors selected by the Owner from the manufacturer's full range of colors and patterns in the specified products.
 - 1. Floor tile shall be 12" x 12" glazed.
 - 2. Provide all accessories such as wall trim, cove base, matching inside and outside corners.
 - 3. Verify size, type, color and availability of each type of tile scheduled for install.

2.2 WATERPROOF MEMBRANE

- A. Laticrete 9235 system, fluid applied waterproof membrane or equivalent as approved by Owner.

2.3 WALL TILE BACKER BOARD

- A. Densshield backer is to be installed by the gypsum wall board contractor see specification section 092900.
- B. Mold resistant tile backer board with glass-mat facings and acrylic coating that blocks moisture from entering the wall cavity in accordance with ASTM D 3273. DensShield ½" tile backer board as manufactured by Georgia Pacific, or equivalent as approved by Owner.
 - 1. Fasteners: Type W or Type S, High-Lo, Bugle head, rust resistant.
 - 2. Glass fiber tape: 2" wide glass fiber mesh tape, type as recommended by manufacturer.

2.4 MORTAR

- A. Dry-Set Portland Cement Mortar: ANSI A118.1
 - 1. Manufacturers: Provide products complying with requirements of the contract documents and made by one of the following:
 - a. American Olean Tile Company.
 - b. Bostik, Inc.
 - c. Custom Building Products
 - d. Tec Inc. / H.B. Fuller Company
 - e. Jamo, Inc.
 - f. Mapei Corporation
 - g. Laticrete International, Inc.
 - h. W.R. Bonsal Company
- B. Latex-Portland Cement Mortar: One-component dry grout mix, field-mixed with water; or two component, dry grout mix and liquid latex additive, field mixed; complying with ANSI A118.4.
 - 1. All components premeasured and prepackaged.
 - 2. Dry latex additive: Polyvinyl acetate or ethylene vinyl acetate.
 - 3. Liquid latex additive: Manufacturer's standard water emulsion.
 - 4. Mix in accordance with manufacturer's recommendations.
 - 5. Manufacturers: Provide products complying with requirements of the Contract Documents and made by one of the following:
 - a. American Olean Tile Company
 - b. Bostik, Inc.
 - c. Custom Building Products
 - d. Tec Inc. / H.B. Fuller Company
 - e. Jamo, Inc.
 - f. Mapei Corporation
 - g. Laticrete International, Inc.
 - h. W.R. Bonsal Company

2.5 GROUT

- A. Latex Portland-Cement Grout: One-component dry grout mix, field-mixed with water, complying with ANSI A118.6.
 - 1. All components premeasured and prepackaged.
 - 2. Dry latex additive: Polyvinyl acetate or ethylene vinyl acetate.
 - 3. Mix in accordance with manufacturer's recommendations.
 - 4. Color: To match existing and as approved by Architect.
 - 5. Manufacturers: Provide products complying with requirements of the Contract Documents and made by one of the following:
 - a. American Olean Tile Company
 - b. Bostik, Inc.
 - c. Custom Building Products
 - d. Tec, Inc. / H.B. Fuller Company
 - e. Jamo, Inc.

2.6 MISCELLANEOUS MATERIALS

- A. Edge strips; fabricated from the following material with half radius to match thickness of tile at all exposed edges and corners, and means for securing strip to substrate:
 - 1. Stainless steel.
- B. Tile Sealer: “Sealer’s Choice”, with no sheen appearance, Aqua Mix.
 - 1. Or equivalent as approved by Owner.

2.7 MIXING MORTAR AND GROUT

- A. Mix mortar and grout to comply with referenced standards and manufacturer’s mixing procedures.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy film, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations as indicated on Drawings.
 - 2. Verify that installation of grounds, anchors, recessed frames, plumbing fixtures, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Engineer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Floor Preparation:
 - 1. Remove coating, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
 - 2. Provide concrete substrates for floor tile installed with mortar that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards.
 - a.Fill cracks, holes and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer’s written instructions. Use product specifically recommended by tile-setting material manufacturer.
 - b.Remove protrusions, bumps, and ridges by sanding or grinding.

- B. Blending: For tile exhibiting color variations within ranges selected during Sample Submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at project site before installing.

3.3 INSTALLATION, GENERAL

- A. Tile Installation Standard: ANSI A108 series, for setting and grouting materials listed.
- B. Installation Methods: Comply with TCA “Handbook for Ceramic Tile Installation”, for type of applications indicated.
- C. Install tile under or behind equipment and fixtures.
- D. Carefully cut, drill, and grind tile to fit around items projecting through tile surface, so that escutcheons or cover plates conceal cut edges.
- E. Joint Patterns: Layout tile according to patterns indicated on Drawings, or if not show, in a grid pattern with floor joints aligning with wall and trim joints. Install joints straight and uniform width.
 - 1. Sheet mounted tile: Install with joint dimension between sheets the same width as the joint within the sheet for a continuous, uniform installation.
- F. Sealant-Filled Joints: Install expansion, control, and isolation joints where indicated on Drawings. Saw-cut joints are unacceptable.
 - 1. Expansion installation joint method: TCA EJ 171.
- G. Grout Installation Standards:
 - 1. Ceramic tile grouts (Sand-Portland-Cement, dry-set, commercial Portland cement, and Latex-Portland-Cement): ANSI A108.10.
- H. Edge Strips: Install where indicated and where exposed edge of tile meets other finishes flush with top of tile.

3.4 WATERPROOF MEMBRANE INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer’s written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.
- B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 TILE APPLICATIONS

- A. Tile applications shall be performed per TCA method indicated on Drawings for location.
 - 1. Floor tile at areas of new tile installation – TCA F122

3.6 CLEANING AND PROTECTION

- A. Clean tile surfaces after installation is complete.
 - 1. Wipe latex-portland cement residue from tile with a damp cloth or sponge as soon as possible after tile installation.

- B. Replace any broken, chipped, marred, or otherwise damaged tile before final acceptance.
- C. Protection: Apply neutral protective cleaner to tile after installation if recommended by tile manufacturer. Overlay completed tile installation with kraft paper for protection from subsequent construction activities.
 - 1. Do not allow any traffic on completed tile floor for a minimum of seven (7) days after completion.
- D. Apply grout sealer per manufacturer requirements.
- E. Remove protection, rinse, and dry tile installations before final review and acceptance.

END OF SECTION 093000

SECTION 096700
EPOXY FLUID APPLIED FLOORING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies standard performance and high performance fluid-applied flooring systems.

1.02 REFERENCES

A. Reference Standards:

1. ASTM International (ASTM):
 - a. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
 - b. ASTM D645 Standard Test Method for Thickness of Paper and Paperboard.
 - c. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - d. ASTM D2240 Standard Test Method for Rubber Property Durometer Hardness.
 - e. ASTM D4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - f. ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- B. Pre-installation Meetings: Conduct pre-installation meeting prior to commencing to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's installation instructions and manufacturer's warranty requirements.

1.04 ACTION SUBMITTALS

- A. General: Submit listed submittals in accordance with Contract Conditions.
- B. Product Data: Submit specified products as follows:
1. Manufacturer's product data, including manufacturer's SPEC-DATA product sheet.
 2. Manufacturer's installation instructions.
 3. Catalog pages illustrating products to be incorporated into project.
 4. Material Safety Data Sheets (MSDS).
- C. Samples: Submit as follows:
1. 12 inches × 12 inches (305 × 305 mm) samples of each fluid-applied flooring system specified to show color and texture with specified coats cascaded.

1.05 INFORMATION SUBMITTALS

- A. General: Submit listed submittals in accordance with Contract Conditions.
- B. Test and Evaluation Reports:
 - 1. Certified test reports showing compliance with specified performance characteristics and physical properties.
- C. Manufacturer's Instructions: Submit manufacturer's storage and installation instructions.
- D. Source Quality Control: Submit documentation verifying that components and materials specified in this Section are from single manufacturer.
- E. Qualification Statements:
 - 1. Submit letter of verification for Manufacturer's Qualifications.
 - 2. Submit letter of verification for Installer's Qualifications.

1.06 MAINTENANCE MATERIAL SUBMITTALS

- A. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

1.07 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: 10 years' experience manufacturing components similar to or exceeding requirements of project.
 - 2. Installer: Experienced in performing work of this section and has specialized in installation of work similar to that required for this project.

1.08 DELIVERY, STORAGE & HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Deliver material in accordance with manufacturer's written instructions.
 - 2. Deliver materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.
- B. Storage and Handling Requirements:
 - 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Packaging Waste Management:

1.09 SITE CONDITIONS

- A. Ambient Conditions: Assemble and erect components only when temperatures are above 55 degrees F.
- B. Maintain materials, substrates and surrounding air temperature between 65 degrees F and 73 degrees F prior to, during, and 48 hours after completion.

PART 2 PRODUCTS

2.01 REFLECTOR ENHANCER FLOORING SYSTEM

A. Manufacturer: Elite Crete Systems, Inc. (or equal)

1. Contact: 1061 Transport Drive, Valparaiso, IN 46383; Telephone: 888-323-4445, Telephone: 219-465-7671, Fax: 219-531-0898; E-mail: info@elitecrete.com; Website: www.elitecrete.com.
2. Single Source Responsibility: Provide components and materials specified in this section from a single manufacturer.
3. Substitution Limitations: Substitutions: In accordance with Contract Conditions.

B. Standard Performance:

1. Primer: UZIN PEV460 or equal
2. REFLECTOR Enhancer Coat: [E100-PT1] Owner Specified Epoxy.
 - a. Percent Solids ASTM D3960: 100.
 - b. VOC Content ASTM D3960: 0 percent.
 - c. Compressive Strength (ASTM D645): Not less than 12,000 psi.
 - d. Tensile Strength (D638): Not less than 7100 psi.
 - e. Abrasion Resistance (ASTM D4060): Not more than 30 mg loss, CS-Wheel, 1 kg load at 1000 cycles.
 - f. Flexural Strength (ASTM D790): Not less than 7500 psi.
 - g. Shore D Hardness (ASTM D2240): Not less than 89 (7 days).
3. Polyurethane Clear Top Coat: VRI Clear Epoxy.
 - a. Percent Solids ASTM D3960: 100.
 - b. VOC Content ASTM D3960: 0 percent.
 - c. Compressive Strength (ASTM D645): Not less than 12,000 psi.
 - d. Tensile Strength (D638): Not less than 7100 psi.
 - e. Abrasion Resistance (ASTM D4060): Not more than 30 mg loss, CS-Wheel, 1 kg load at 1000 cycles.
 - f. Flexural Strength (ASTM D790): Not less than 7500 psi.
 - g. Shore D Hardness (ASTM D2240): Not less than 89 (7 days).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to fluid-applied flooring installation.

3.02 PREPARATION

- A. Surface Preparation: Prepare surface in accordance with manufacturer's written recommendations and coordinate with

3.03 APPLICATION

- A. Coordinate application of components in accordance with manufacturer's written instructions.

3.04 CLEANING

- A. Perform cleanup in accordance with manufacturer's written instructions.

3.05 PROTECTION

- A. Protect installed product from damage during construction.
- B. Repair damage to adjacent materials caused by installation.

END OF SECTION

SECTION 099100 PAINTING

PART 1 GENERAL

1.1 FIELD QUALITY CONTROL

- A. Request review of first finished room, space, or trim of each color scheme required by the Project Coordinator for color, texture, and workmanship. Lighting type and intensity shall match lighting of finished work.
- B. If approved, sample area will serve as a minimum standard for work throughout the project.

1.2 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Prepare three 8x10 inch samples of all finishes. When possible, apply finishes on identical type materials to which they will be applied on job.
- C. Identify each sample as to finish, formula, color name and number, and sheen name.
- D. Final color acceptance will not occur until after Project Coordinator's review of field samples.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation, and instructions for mixing and/or reducing.
- B. Provide adequate storage facilities. Store paint materials per manufacturer requirements or at minimum ambient temperature of 45 degrees Fahrenheit (in absence of manufacturer recommendation) in well ventilated area.
- C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture contents of surfaces are below the maximums established by the manufacturer for each type of coating.
- B. Ensure temperature of or on the substrate or the temperature of the air in the vicinity of the painting work is above forty (40) degrees Fahrenheit. Interior latex paints shall not be applied below forty-five (45) degrees Fahrenheit unless so authorized in writing by the manufacturer. Epoxy paints and other special resin coatings shall not be applied below seventy (70) degrees Fahrenheit unless otherwise noted on the manufacturer's printed instructions.
- C. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above forty-five (45) degrees Fahrenheit for twenty-four (24) hours before, during, and forty-eight (48) hours after application of finishes.
- D. Provide minimum twenty-five (25) foot candles of lighting on surfaces to be finished.

1.5 EXTRA STOCK

- A. Leave on premises, where directed by the Owner, not less than five (5) gallons of each color used.

- B. Containers to be tightly sealed and clearly labeled for identification.
- C. Provide Owner with formulas for future duplication.

1.6 FIELD SAMPLES

- A. Provide samples (prior to mixing the entire job) under provisions of Section 013300.
- B. Provide a twenty (20) foot hall field sample panel for each hall wall color; full height, illustrating installed color, texture, and finish. Include painting of door frames.
- C. Provide complete field sample of one room, include accent paint.
- D. Locate where directed.
- E. Accepted sample may remain as part of the Work.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which can be incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.
- C. Standards established by a specifically listed product shall include but not be limited to visual matching. The final judgment whether a product proposed by the Factory/Engineering Firm, visually matches the specified product satisfactorily will be determined by the Engineer.

2.2 MATERIALS

- A. Paint and Coatings: Type and brand listed herein.
- B. Paint Accessory Materials: (Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified) of high quality and approved manufacturer.
- C. Paints: Ready-mixed except field catalyzed coatings. Pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
- D. Paints to have good flowing and brushing properties and be capable of drying or curing free of streaks or sags.
- E. Paint sheen shall fall within the following gloss ranges when tested in accordance with ASTM D-523, 60 degree gloss meter: Flat below 15, Eggshell 15 to 20, Satin 15-35, Semi-Gloss 30-65, Gloss over 65.

PART 3 EXECUTION

3.1 INSPECTION

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to the General Contractor and Project Coordinator any condition that may potentially affect proper application. Do not commence work until such defects have been corrected.

- B. Correct defects and deficiencies in surfaces which may adversely affect work of this Section.

3.2 PROTECTION

- A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted.
- C. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and remove daily from site.
- D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned, and replaced on completion of work in each area. Do not use solvents to clean hardware that may remove permanent lacquer finish.
- E. Protect labels on fire rated doors and frames.

3.3 PREPARATION

- A. Remove mildew, by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.
- B. Remove surface contamination from aluminum surfaces requiring a paint finish by steam, high pressure water, or solvent washing. Apply etching primer or acid etch. Apply paint immediately if acid etching.
- C. Remove contamination, acid etch, and rinse new concrete floors with clear water. Ensure required acid-alkali balance is achieved. Allow to thoroughly dry.
- D. Remove contamination from gypsum board surfaces and prime to show defects, if any. Paint after defects have been remedied.
- E. Remove surface contamination and oils from galvanized surfaces and wash with solvent. Apply coat of etching type primer. Touch up factory hot-dipped finish to eliminate defects.
- F. Remove surface contamination and oils from zinc coated surfaces and prepare for priming in accordance with metal manufacturer's recommendations.
- G. Remove dirt, loose mortar, scale, powder, and other foreign matter from concrete and concrete block surfaces which are to be painted or to receive a clear seal. Remove oil and grease with a solution of trisodium phosphate, rinse well and allow to thoroughly dry.
- H. Remove stains from concrete and concrete block surfaces caused by weathering of corroding metals with a solution of sodium metasilicate after being thoroughly wetted with water. Allow to thoroughly dry.
- I. Fill hairline cracks, small holes, and imperfections on plaster surfaces with patching plaster. Smooth off to match adjacent surfaces. Wash and neutralize high alkali surfaces where they occur.
- J. Remove grease, rust, scale, dirt, and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting, or any other necessary method. Ensure steel surfaces are satisfactory before paint finishing.
- K. Clean unprimed steel surfaces by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Paint after defects have been remedied.

- L. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather out edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- M. Sand runs and drips from shop primed surfaces. Feather out edges and re-prime to provide a smooth surface.
- N. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coat knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand between coats. Back prime interior and exterior woodwork.

3.4 APPLICATIONS

- A. Apply each coat at proper consistency and in strict accordance with manufacturer's instructions.
- B. Each coat of paint is to be slightly darker than the preceding coat.
- C. Sand lightly between coats as required to achieve specified finish.
- D. Do not apply finishes on surfaces that are not sufficiently dry.
- E. Allow each coat of finish to dry before applying the following coat, unless directed otherwise by the manufacturer.
- F. Where clear finishes are required, ensure tint fillers match wood. Work fillers well into the grain before set. Wipe excess from the surface.
- G. Back-prime interior and exterior woodwork, which is to receive stain and/or varnish finish, with gloss varnish reduced twenty-five (25) percent with mineral spirits.
- H. Prime top and bottom edges of wood and metal doors with enamel undercoat when they are to be painted.
- I. Prime top and bottom edges of wood doors with gloss varnish when they are to receive a stain or clear finish.
- J. Spray apply interior and exterior metals to provide a smooth surface void of sags and runs.
- K. Recoat as required to eliminate holidays and provide full uniform coverage at no cost to the Owner.
- L. At intersection of different colors/sheens, provide straight, crisp cut in.

3.5 MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Refer to mechanical and electrical sections with respect to painting and finishing requirements, color coding, and identification banding of equipment, ducting, piping and conduit. Mechanical and electrical Contractors are responsible for painting as outlined in their respective sections.
- B. All exposed-to-view grilles, covers and access panels shall be painted to match adjacent surfaces. Remove grilles, covers, and access panels for mechanical and electrical systems from location and paint separately.
- C. Paint exposed-to-view interior surfaces of air ducts, behind louvers, and grilles.
- D. Finish paint primed equipment to color selected.
- E. Prime and paint insulated and bare pipes, conduits, boxes, hangers, brackets, collars and supports, except where items are plated or covered with a pre-finished coating.
- F. Replace identification markings on mechanical or electrical equipment when painted over or splattered.

- G. Paint exposed conduit and electrical cabinets occurring in finished areas except fire alarm panels. Color and texture to match adjacent surfaces.
- H. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.
- I. Color code equipment, piping, conduit and exposed ductwork in accordance with requirements indicated. Color banding and identification (flow arrows, naming, numbering, etc.).
- J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.6 CLEANING

- A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or splattered.
- B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Upon completion of work leave premises neat and clean, to the satisfaction of the General Contractor.

3.7 PAINTING AND FINISH SCHEDULE (All colors are custom as selected by the Project Coordinator)

- A. Interior Wood – Cedar/Pine
 - 1. Finish – two (2) coats Fast Dry Sanding Sealer.
 - 2. Finish – two (2) coats Fast Dry Oil Varnish - Satin.
- B. Interior Wood Veneer – Cedar/Pine
 - 1. Semitransparent or solid color stain with oil varnish overcoat, three (3) different colors as approved by the Project Coordinator.
- C. Interior Wood – Hardwood
 - 1. Two (2) coats Stain
 - 2. Two (2) coats Fast Dry Sanding Sealer.
 - 3. Two (2) coats Fast Dry Oil Varnish – Gloss.
 - 4. Two (2) coats Fast Dry Varnish – Satin.
- D. Drywall (refer to Room Finish Schedule, paint type Eggshell)
 - 1. Primer finish – one (1) coat latex mold and mildew prevention, commercial grade.
 - 2. Paint finish – two (2) coats low odor acrylic, commercial grade.
- E. Drywall (refer to Finish Schedule, paint type Semi-Gloss)
 - 1. Primer finish – one (1) coat latex mold and mildew prevention, commercial grade.
 - 2. Paint finish – two (2) coats low odor acrylic, commercial grade.
- F. Drywall (refer to Room Finish Schedule, paint type Epoxy)
 - 1. Primer finish – one (1) coat latex mold and mildew prevention, commercial grade.
 - 2. Paint finish – two (2) coats Water based Catalyzed epoxy.
- G. Miscellaneous Interior Metals and Metal Fabrications: (Hollow metal frames, doors, electrical panel doors, metal fabrications, mechanical grilles, access panels, ladders, vision panel frames, etc.)
 - 1. Primer finish – one (1) coat DuPont 67FD Alkyd Primer.
 - 2. Paint finish – two (2) coats DuPont Tufcote 72P Acrylic Enamel.

- H. Pre-primed Epoxy Sheet Metal and Miscellaneous Exterior Metals (handrails, guardrails, fences and gates, HM door frames, HM doors, bollards, gutters, downspouts, steel column/beams/ornamentation, flashing, parapet caps, etc.)
 - 1. Primer finish – one (1) coat Galvite HS Primer B50 (not required at pre-primed epoxy sheet metal).
 - 2. Paint finish – two (2) coats DTM Acrylic Semi-Gloss Enamel B66 series.
- I. Exterior Siding and Trim – Fiber Cement Board
 - 1. Finish – two (2) coats Mason’s SelectWoodperfect Series coating, acrylic polymer, Project Coordinator approved custom mix as related to mockup review per Section 07460. Finish to provide natural cedar appearance.
- K. Interior M.D.O. Plywood
 - 1. Primer finish – one (1) coat Sherwin Williams 200 Wallboard Primer, B28W200 series.
 - 2. Paint finish – two (2) coats Sherwin Williams Health Spec Low Odor Latex Egg-shell B9 series.

3.8 COLORS

- A. Approximately ten (10) different colors will be utilized in the project.
- B. Approximately twenty five (25) percent of the wall surfaces will be painted with moderately deep accent colors.

END OF SECTION 099100

SECTION 099300
STAINING & TRANSPARENT FINISHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Bio-Based Penetrating Wood Stain for Vertical and Horizontal Surfaces

1.2 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Supply two (2) color charts with all available colors from manufacturer.
- D. Supply (2-ounce) samples of selected stain color for visual inspection and acceptance as applied on designated substrate surface.
- E. Executed Warranties.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Products shall comply with federal, state, and local volatile organic compounds (VOC) regulations.
- B. Mock-Ups: Provide stain sample material for mock-ups specified in affected sections to finalized color acceptance or technique modification to desired architectural look.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products of this section in manufacturer's unopened packaging until installation.
- B. Maintain storage area conditions for products of this section in accordance with manufacturer's instructions until installation.

1.5 PROJECT CONDITIONS

- A. Do not apply stain to surfaces below 50 degrees F (10 degrees C) or above 120 degrees F (49 degrees C) unless otherwise recommended by the manufacturer.
- B. Do not apply stain outdoors when rain is predicted within twenty-four (24) hours or less than one (1) day after surface has been wet. Certain variances are possible with manufacturer instructions.
- C. Do not stain in high or gusty winds.

1.6 WARRANTY

- A. Provide a warranty against failure due to incorrect application for a period of no less than five (5) years from the date of Substantial Completion.

- B. Provide the manufacturer's limited warranty against failure of sealer installation due to failure of sealer material for a period of no less than five (5) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Eco Safety Products, LLC, at 1542 E. Victory Street, Suite 3, Phoenix, AZ 85040. tel: 602.305.9397 fax: 602-305-6431. email: info@eco-safety.com website: www.ecoprocoat.com Products are also available at select dealers throughout the U.S.
- B. Minwax® Company, 10 Mountainview Road, Upper Saddle River, NJ 07458. Phone: 800-523-9299.
- C. Rustoleum, 6361 Box Springs Boulevard, Riverside, California 92507-0716
- D. Requests for substitution will be considered in accordance with provisions of Section 012500.

2.2 MATERIALS

- A. Bio-Based Penetrating Wood Stain: Waterborne, breathable, bio-based penetrating stain.
 - 1. Resistance to Water Penetration.
 - 2. Mildew Resistance.
 - 3. Chemical Resistance.
 - 4. UV Resistance. Non-Yellowing
 - 5. Solids Content: 35 percent, minimum.
 - 6. Flammability: Non-flammable.
 - 7. Non-Hazardous: Meets all environmental air quality requirements, No chemical compounds listed as carcinogens under OSHA, ACGIH, NTP, IARC, or Other.
 - 8. VOC Content: Less Than 25 g/l
 - 9. Freeze/Thaw Stability: Stable.
 - 10. DOT Regulation: Non-Regulated

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrates to receive stain are prepared in accordance with manufacturer's instructions.

3.2 PREPARATION

- A. Protect adjacent surfaces to prevent accidental application to surfaces not indicated to receive stain; remove accidental applications from surfaces immediately, following manufacturer's instructions.
- B. Preparation of existing surfaces:

- a. Remove loose or deteriorated materials, including, but not limited to, scale, spalling, paint, or other coatings.
- b. Clean with detergent-based materials, as recommended by manufacturer's instructions; cleaning with solvent-based or oil-based cleaners is prohibited.
- c. Sand existing surfaces to remove existing stains or coatings for proper colorization and adhesion.

3.3 APPLICATION

- A. Apply stain in accordance with manufacturer's instructions for indicated project conditions; for multi-coat applications, allow specified curing time between subsequent coats.
- B. Application of finish sealer is recommended by manufacturer for horizontal traffic applications. Application of specialty finish coats over sealer is acceptable per manufacturer instructions. (lacquers, varnish, polyurethanes, etc.).
- C. Apply Wood Stain on the following compatible vertical or horizontal surfaces:
 1. Log Homes.
 2. Wood Decks.
 3. Wood Cabinets.
 4. Wood Furniture.
 5. Wood Beams.
 6. Wood Trim.
 7. Wood Fences.
 8. Wood Paneling.
 9. Wood Floors.
 10. Wood Ceilings.

3.4 PROTECTION

- A. Protect all surface areas during the construction project to prevent contamination of work.
- B. Repair or refinish any damaged or contaminated areas at Contractor's expense and at no additional cost to the Owner.
- C. Avoid standing water and chemical cleaning during the manufacturers designated curing period.

END OF SECTION 099300

DIVISION 10
FIRE EXTINGUISHERS, CABINETS, ETC.

SECTION 105220

FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 GENERAL

1.1 REFERENCES

- A. NFPA 10 - Portable Fire Extinguishers.

1.2 QUALITY ASSURANCE

- A. Conform to NFPA 10 requirements for extinguishers.

1.3 SUBMITTALS

- A. Submit product data under provisions of Section 01300.
- B. Include physical dimensions, operational features, color and finish, anchorage details, location, and details.
- C. Submit manufacturer's installation instruction under provisions of Section 01300.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit manufacturer's operation and maintenance data under provisions of Section 01700.
- B. Include test, refill or recharge schedules, procedures, and re-certification requirements including requirements applicable to the Work.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 01600.
- C. Manufacturers of fire extinguishers and cabinets
 - 1. Larsen's Manufacturing Company
 - 2. Modern Metal Products
 - 3. L. Industries

2.2 EXTINGUISHERS

- A. Multi Purpose Dry Chemical Type: Steel tank, multi-purpose dry chemical; with pressure gauge, classification 2A-10B:C, 5 lb. nominal capacity.

2.3 CABINETS

- A. Cabinet: Formed sheet steel, 20 gauge semi-recessed type, 2-1/2" projection with rolled edge, rough opening size 25 x 10-1/2 x 3 inches, Model 2409-R3, manufactured by Larsen's.
- B. Door: Steel, 20 gauge thick, reinforced for flatness and rigidity; lock with full break glass (tempered) access.
- C. Mounting Hardware: Appropriate to cabinet.

2.4 FABRICATION

- A. Form body of cabinet with tight inside corners and seams.
- B. Pre-drill holes for anchorage.
- C. Hinge doors for 180 degree opening with continuous piano hinge.

2.5 FINISHES

- A. Extinguisher: Polyester/epoxy paint finish.
- B. Cabinet and Door: White baked acrylic enamel, factory finish coat.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install cabinets plumb and level at locations shown on the drawings with bottom of cabinet interior at 3'-4" A.F.F. unless otherwise indicated. Mount to avoid conflict with handrails.
- B. Secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION 105220

DIVISION 12
FURNISHINGS

SECTION 123200
MANUFACTURED WOOD CASEWORK

PART 1. GENERAL

1.1. DESCRIPTION

- A. This section specifies wood veneer casework as detailed on the construction documents, including related components and accessories required to form integral units. Wood casework items shown on the construction documents, but not specified below are to be included as part of the work under this section, and applicable portions of the specification are to apply to these items.

1.2. RELATED WORK

- A. Section 061000 Rough Carpentry.
- B. Section 064400 Ornamental Woodwork.
- C. Section 123600 Countertops.
- D. Division 22 Plumbing.
- E. Division 26 Electrical.

1.3. SUBMITTALS

- A. Submit in accordance with Section 013300; shop drawings, product data, and samples.
- B. Manufacturer's Literature and Data:
 - 1. Adhesive cements.
 - 2. Casework hardware.
 - 3. Casework materials.
- C. Samples:
 - 1. Wood Face Veneer or Hardwood Plywood.
- D. Shop Drawings (1/2 full size):
 - 1. Each casework type, showing details of construction, including materials, hardware and accessories.
 - 2. Fastenings and method of installation.
- E. Certification:
 - 1. Manufacturer's qualifications specified.
 - 2. Installer's qualifications specified.

1.4. QUALITY ASSURANCE:

- A. Approval by Engineer is required of manufacturer and installer based upon certification of qualifications specified.
- B. Manufacturer's qualifications:
 - 1. Manufacturer is regularly engaged in design and manufacture of modular wood veneer casework, casework components and accessories of scope and type similar to indicated requirements for a period of not less than five (5) years.
 - 2. Manufacturer has successfully completed at least three (3) projects of scope and type similar to indicated requirements.
 - 3. Submit manufacturer's qualifications and list of projects, including owner contact information.
- C. Installer Qualifications:
 - 1. Installer has completed at least three (3) projects in last five (5) years in which these products were installed.
 - 2. Submit installer qualifications.

1.5. WARRANTY

- A. Construction Warranty: General Contractor standard one year warranty for materials and workmanship.
- B. Manufacturer Warranty: Manufacturer shall warranty their wood casework for a minimum of five (5) years from date of installation and final acceptance by the Owner. Submit manufacturer warranty.

1.6. APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. ASTM International (ASTM):
 - A240/A240M-14.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - A1008/A1008M-13.....Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy
 - C1036-11E1(R2012).....Flat Glass
- C. Builders Hardware Manufacturers Association (BHMA):
 - A156.1-13 Butts and Hinges

- A156.9-10 Cabinet Hardware
- A156.5-14 Auxiliary Locks and Associated Products
- A156.11-14 Cabinet Locks
- D. Composite Panel Association (CPA):
 - A208.1-09 Particleboard
 - A208.2-09 Medium Density Fiberboard (MDF) for Interior Applications
- E. U.S. Department of Commerce Product Standards (Prod. Std):
 - PS 1-09 Construction and Industrial Plywood
- F. Hardwood, Plywood and Veneer Association (HPVA):
 - HP-1-09 Hardwood and Decorative Plywood
- G. Architectural Woodwork Institute (AWI):
 - Architectural Woodwork Standards, Edition 2 Certification Program - 2014
- H. American Society of Mechanical Engineers (ASME):
 - A112.18.1-12 Plumbing Fixture Fittings
- I. National Electrical Manufacturers Association (NEMA):
 - LD 3-05 High Pressure Decorative Laminates
- J. Underwriters Laboratories Inc. (UL):
 - 437-08(R2013) Key Locks.

PART 2. PRODUCTS

2.1. PLYWOOD, HARDWOOD FACE VENEER:

- A. HPVA HP-1, Premium Grade plain sliced Red Oak or Rotary cut Select White Birch.

2.2. PLASTIC LAMINATE:

- A. NEMA LD 3.
- B. Exposed decorative surfaces, both sides of cabinet doors, and for items having plastic laminate finish. General purpose Type HGL.
- C. Cabinet Interiors Including Shelving: Both of following options to comply with NEMA LD 3 as a minimum.
 - 1. Plastic laminate clad plywood, no MDF allowed.
 - 2. Thermafoil.

3. Low pressure laminate (LPL).
 - D. Backing sheet on bottom of plastic laminate covered wood tops. Backer Type BKL.
 - E. Post Forming Fabrication, Decorative Surface: Post forming Type HGP.
- 2.3. PLYWOOD, SOFTWOOD:
- A. Prod. Std. PS1, five (5) ply construction from 13 mm to 28 mm (1/2 inch to 1-1/8 inch) thickness, and seven (7) ply for 31 mm (1 1/4 inch) thickness.
- 2.4. GLASS:
- A. ASTM C1048 Kind FT Type I, Class 1, Quality q3.
 - B. For Doors: 6 mm (1/4 inch) thick; except where laminated glass is shown on construction documents.
 - C. For Shelves: // 6 mm (1/4 inch) // // 9 mm (3/8 inch) // thick.
 - D. Laminated Glass: Fabricate of two (2) sheets of 3 mm (1/8 inch) thick clear ASTM C1172 Kind LT glass, laminated together with a 1.5 mm (0.060 inch) thick vinyl interlayer, to a total overall thickness of 8 mm (5/16 inch).
- 2.5. HARDWARE:
- A. Hinged Doors:
 1. Provide doors 915 mm (36 inches) and more in height with minimum three (3) hinges and doors less than 915 mm (36 inches) in height with two (2) hinges. Each door is to close against two (2) rubber bumpers (minimum).
 2. Hinges: Fabricate hinges with minimum 1.8 mm (0.072 inch) thick chromium plated steel leaves, and with minimum 3.5 mm (0.139 inch) diameter stainless steel pin. Hinges to be five (5) knuckle design with 63 mm (2-1/2 inch) high leaves and “hospital” type tips.
 3. Concealed Hinges: BHMA A156.9, Type B01602, 170 degrees of opening, self-closing.
 4. Fasteners: Provide full thread wood screws to fasten hinge leaves to door and cabinet frame. Finish screws to match finish of hinges.
 - B. Door Catches:
 1. Friction or Magnetic type, fabricated with metal housing.

2. Provide one (1) catch for cabinet doors 1220 mm (48 inches) high and under, and two (2) for doors over 1220 mm (48 inches) high.
- C. Drawer and Door Pulls:
1. Doors and drawers to have flush pulls, fabricated of either chromium-plated brass, chromium plated steel, stainless steel, or anodized aluminum. Drawer and door pulls to be of a design that can be operated with a force of 22.2 N (5 pounds) or less, with one (1) hand and not require tight grasping, pinching or twisting of the wrist.
- D. Drawer Slides:
1. Full extension steel slides with nylon ball-bearing rollers.
 2. Slides to have positive stop.
 3. Equip drawers with rubber bumpers.
- E. Sliding Doors:
1. Each door to be supported by two ball bearing bronze or nylon rollers, or sheaves riding on a stainless steel track at top or bottom, and to be restrained by a nylon or stainless steel guide at the opposite end.
 2. Plastic guides are not acceptable.
 3. Each door to have rubber silencers set near top and bottom of each jamb.
- F. Shelf Standards (Except For Fixed Shelves):
1. Bright zinc-plated steel for recessed mounting with screws, 16 mm (5/8 inch) wide by 5 mm (3/16 inch) high providing 13 mm (1/2 inch) adjustment, complete with shelf supports.
- G. Gate Bolt:
1. Surface mounted barrel type with strike.
- H. Hinged Gates:
1. Gates to have two (2) double-acting hinges, size as required for gate size and weight, per manufacturer.
- I. Castors:
1. Locking type rated for 79 kg (175 lbs.) each.
- J. Floor Glides:

1. Non-skid material minimum 25 mm (1 inch) diameter with minimum 16 mm (5/8 inch) height adjustment.

2.6. MANUFACTURED PRODUCTS

- A. When two (2) or more units are required, use products of one (1) manufacturer.
- B. Manufacturer of casework assemblies to assume complete responsibility for the final assembled unit.
- C. Provide products of a single manufacturer for parts which are alike.

2.7. FABRICATION:

- A. Casework to be of the flush overlay design and, except as otherwise specified, be of Premium Grade construction and of component thickness in conformance with AWI Quality Standards.
- B. Fabricate casework of factory finished wood veneer as follows:
 1. Where shown, all semi-concealed surfaces to be plastic laminated.
 2. Horizontal and vertical reveals between doors and drawer for reveal overlay design to be 19 mm (3/4 inch) unless otherwise shown.
 3. Glazed doors to have 6 mm (1/4 inch) thick glass, set in glazing compound.
 4. Sliding doors to have stops to prohibit bypass and be removable without use of tools.
- C. Provide 1.2 mm (18 gage) sheet steel sloping tops for casework where shown on construction drawings. Fasten sloping tops with oval-head screws inserted from interior. Exposed ends of sloping tops to have flush closures fastened as recommended by manufacturer.
- D. Support Members for Tops of Tables and Countertops:
 1. Construct as detailed on construction documents.
 2. Provide miscellaneous steel members and anchor as shown on construction drawings.
- E. Legs For Counters:
 1. Fabricate legs for counters of 1.6 mm (0.0635 inch) thick, 38 mm (1-1/2 inch) square tubular stainless steel.
 2. Secure legs to counter tops and provide legs at bottom with shoes not less than 25 mm (1 inch) in height.

3. Fabricate shoes of stainless steel, aluminum or chromium plated brass.

PART 3. EXECUTION

3.1. COORDINATION:

- A. Begin only after work of other trades is complete, including wall and floor finish completed, ceilings installed, light fixtures and diffusers installed and connected and area free of trash and debris.
- B. Verify location and size of mechanical and electrical services as required and perform cutting of components of work installed by other trades.
- C. Verify reinforcement of walls and partitions for support and anchorage of casework.
- D. Coordinate with other Divisions and Sections of the specification for work related to installation of casework systems to avoid interference and completion of service connections.

3.2. INSTALLATION:

- A. Install casework in accordance with manufacturer's written instructions.
 1. Install in available space; arranged for safe and convenient operation and maintenance.
 2. Align cabinets for flush joints except where shown otherwise.
 3. Install with bottom of wall cabinets in alignment and tops of base cabinets aligned level, plumb, true, and straight to a tolerance of 3.2 mm in 2438 mm (1/8 inch in 96 inches).
 4. Install corner cabinets with hinges on corner side with filler or spacers sufficient to allow opening of drawers.
- B. Support Rails:
 1. Install true to horizontal at heights shown on construction documents; maximum tolerance for uneven floors is plus or minus 13 mm (1/2 inch).
 2. Shim as necessary to accommodate variations in wall surface not exceeding 5 mm (3/16 inch) at fastener.
- C. Wall Strips:

1. Install true to vertical and spaced as shown on construction documents.
 2. Align slots to assure that hanging units will be level.
- D. Plug Buttons:
1. Install plug buttons in predrilled or pre-punched perforations not used.
 2. Use chromium plate plug buttons or buttons finish to match adjacent surfaces.
- E. Seal junctures of casework systems with mildew-resistant silicone sealants.
- 3.3. CLOSURES AND FILLER PLATES:
- A. Close openings larger than 6 mm (1/4 inch) wide between cabinets and adjacent walls with flat, steel closure strips, scribed to required contours, or machined formed steel fillers with returns, and secured with sheet metal screws to tubular or channel members of units, or bolts where exposed on inside.
 - B. Where ceilings interfere with installation of sloping tops, omit sloping tops and provide flat steel filler plates.
 - C. Secure filler plates to casework top members, unless shown otherwise on construction documents.
 - D. Secure filler plates more than 152 mm (6 inches) in width top edge to a continuous 25 x 25 mm (1 x 1 inch) 0.889 mm (1/16 inch) thick steel formed steel angle with screws.
 - E. Anchor angle to ceiling with toggle bolts.
 - F. Install closure strips at exposed ends of pipe space and offset opening into concealed space.
 - G. Finish closure strips and fillers with same finishes as cabinets.
- 3.4. FASTENINGS AND ANCHORAGE:
- A. Do not anchor to wood ground strips.
 - B. Provide hat shape metal spacers where fasteners span gaps or spaces.
 - C. Use 6 mm (1/4 inch) diameter toggle or expansion bolts, or other appropriate size and type fastening device for securing casework to walls or floor. Use expansion bolts shields having holding power beyond tensile and shear strength of bolt and breaking strength of bolt head.
 - D. Use 6 mm (1/4 inch) diameter hex bolts for securing cabinets together.

- E. Use 6 mm (1/4 inch) by minimum 38 mm (1-1/2 inch) length lag bolt anchorage to wood blocking for concealed fasteners.
- F. Use not less than No. 12 wood screws with not less than 38 mm (1-1/2 inch) penetration into wood blocking.
- G. Space fastening devices 305 mm (12 inches) on center with minimum of three (3) fasteners in 915 or 1220 mm (3 or 4 foot) unit width.
- H. Anchor floor mounted cabinets with a minimum of four (4) bolts through corner gussets. Anchor bolts may be combined with or separate from leveling device.
- I. Secure cabinets in alignment with hex bolts or other internal fastener devices removable from interior of cabinets without special tools. Do not use fastener devices which require removal of tops for access.
- J. Where units abut end to end, anchor together at top and bottom of sides at front and back. Where units are back to back, anchor backs together at corners with hex bolts placed inconspicuously inside casework.
- K. Where type, size, or spacing of fastenings is not shown on construction documents or specified, show on shop drawings proposed fastenings and method of installation.

3.5. ADJUSTMENTS:

- A. Adjust equipment to insure proper alignment and operation.
- B. Replace or repair damaged or improperly operating materials, components or equipment.

3.6. CLEANING:

- A. Immediately following installation, clean each item, removing finger marks, soil and foreign matter.
- B. Remove from job site trash, debris and packing materials.
- C. Leave installed areas clean of dust and debris.

3.7. INSTRUCTIONS:

- A. Provide operational and cleaning manuals and verbal instructions.
- B. Provide in service training both prior to and after facility opening. Coordinate in service activities with Engineer.

- C. Commencing at least seven (7) calendar days prior to opening of facility, provide one (1) four (4) hour day of on-site orientation and technical instruction on use and cleaning procedures application to products and systems specified herein.

END SECTION 123200

SECTION 123623
SOLID SURFACE FABRICATIONS

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- B. This Section includes the following horizontal and trim solid surface product types:

- 1. Countertops with sinks
- 2. Laboratory countertops
- 3. Lavatory tops with undermount bowls
- 4. Lavatory tops with integral bowls
- 5. Reception areas/nurses stations
- 6. Vanity tops
- 7. Tabletops
- 8. Bar tops
- 9. Seats
- 10. Cold cafeteria surfaces
- 11. Hot cafeteria surfaces
- 12. Windowsills
- 13. Thermoforming
- 14. Cove backsplashes
- 15. Color inlays

- C. Related Sections include the following:

- 1. Division 1 Section "LEED Requirements" for additional LEED requirements.
- 2. Division 5 Section "Metal Fabrications" for Blocking.
- 3. Division 6 Section "Rough Carpentry" for Blocking.
- 4. Division 9 Section "Wall Cladding."
- 5. Division 10 Section "Toilet Partitions."
- 6. Division 15 Section "Plumbing Fixtures."

- D. Alternates:

- 1. Refer to Division 1 Section "Alternates" for description of work in this Section affected by alternates.

1.3 DEFINITION

- A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.4 SUBMITTALS

- A. Product data:
 - 1. For each type of product indicated.
- B. Shop drawings:

1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
 - a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
 - b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
 - c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.
- C. Samples:
 1. For each type of product indicated.
 - a. Submit minimum 6-inch by 6-inch sample in specified gloss.
 - b. Cut sample and seam together for representation of inconspicuous seam.
 - c. Indicate full range of color and pattern variation.
 2. Approved samples will be retained as a standard for work.
- D. Product data:
 1. Indicate product description, fabrication information and compliance with specified performance requirements.
- E. LEED submittals:
 1. Credit EQ 4.1:
 - a. Manufacturer's product data for installation adhesives, including printed statement of VOC content and material safety data sheets.
- F. Manufacturer certificates:
 1. Signed by manufacturers certifying that they comply with requirements.
- G. NSF/ANSI standards:
 1. Refer to www.nsf.org for the latest compliance to NSF/ANSI Standard 51 for food zone — all food types.
- H. Maintenance data:
 1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions.
 - a. Maintenance kit for finishes shall be submitted.
 2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.
- B. Applicable standards:
 1. Standards of the following, as referenced herein:
 - a. American National Standards Institute (ANSI)
 - b. American Society for Testing and Materials (ASTM)
 - c. National Electrical Manufacturers Association (NEMA)
 - d. NSF International
 2. Fire test response characteristics:

- a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Flame Spread Index: 25 or less.
 - 2. Smoke Developed Index: 450 or less.
- C. Coordination drawings shall be prepared indicating:
 - a. Plumbing work.
 - b. Electrical work.
 - c. Miscellaneous steel for the general work.
 - d. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
- 1. Content:
 - a. Project-specific information, drawn accurately to scale.
 - b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
 - c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
 - d. Provide alternate sketches to designer for resolution of such conflicts.
 - 1. Minor dimension changes and difficult installations will not be considered changes to the contract.
- 2. Drawings shall be produced in 1/2-inch scale for all fabricated items.
- 3. Drawings must be complete and submitted to the Engineer within thirty (30) calendar days after award of contract for record only.
 - a. No review or approval will be forthcoming.
 - b. Coordination drawings are required for the benefit of contractor's fabricators/installers as an aid to coordination of their work so as to eliminate or reduce conflicts that may arise during the installation of their work.
- D. Job mock-up:
 - 1. Prior to fabrication of millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.
 - a. Build the mock-up to comply with the contract documents and install in a location as directed by the Engineer.
 - b. Notify the Engineer two weeks in advance of the date of when the mock-up will be delivered.
 - c. Should mock-up not be approved, re-fabricate and reinstall until approval is secured. Remove rejected units from project site.
 - d. After approval, the mock-up may become a part of the project.
 - e. This mock-up, once approved, shall serve as a standard for judging quality of all completed units of work.
- E. Pre-installation conference:
 - 1. Conduct conference at project site to comply with requirements in Division 1.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver no components to project site until areas are ready for installation.
- B. Store components indoors prior to installation.

- C. Handle materials to prevent damage to finished surfaces.
 - 1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 WARRANTY

- A. Provide manufacturer's warranty against defects in materials.
 - 1. Warranty shall provide material and labor to repair or replace defective materials.
 - 2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.
 - 3. Warranty shall be transferable to subsequent owner for remainder of warranty period.
- B. Optional Installed Warranty:
 - 1. To qualify for the optional Installed Warranty, fabrication and installation must be performed by a DuPont Certified Fabrication/Installation source who will provide a brand plate for the application.
 - 2. This warranty covers all fabrication and installation performed by the certified/approved source subject to the specific wording contained in the Installed Warranty Card.
- C. Manufacturer's warranty period:
 - 1. Ten years from date of substantial completion.

1.8 MAINTENANCE

- A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. Subject to compliance with requirements, provide products by one of the following:
 - a. Corian surfaces from the DuPont company (basis of design).
 - b. Wilsonart LLC.
 - c. Formica.

2.2 MATERIALS

- A. Solid polymer components
 - 1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
 - 2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.
- B. Thickness: 1/2 inch.
- C. Acceptable edge treatments:
 - 1. Bullnose
 - 2. Roman Ogee
 - 3. Large Ogee

4. Double Bevel
5. Double Round

D. Inlays:

1. Fabricate using manufacturer's approved method.
2. Rout 1/8" deep max. groove for inlay to pattern indicated on designer's drawings.
3. Fill groove using methods approved by manufacturer, avoiding air bubbles or voids.
4. Overfill inlay area.
5. Allow area to fully cure.
 - a. Do not overheat inlay while sanding.
6. Finish and touch up to uniform appearance.

E. Backsplash & Sidesplash: Applied.

F. Performance characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5×10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2×10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale ASTM D 785
	56	Barcol Impressor ASTM D 2583
Thermal Expansion	3.02×10^{-5} in./in./°C (1.80×10^{-5} in./in./°F)	ASTM D 696
Gloss (60° Gardner)	5–75 (matte—highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture—1/2 lb. ball: 1/4" slab—36" drop, 1/2" slab—144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	$\Delta E^*_{94} < 5$ in 1,000 hrs.	ASTM G 155

Specific Gravity †	1.7	
Water Absorption	Long-term: 0.4% (3/4"), 0.6% (1/2"), 0.8% (1/4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50" Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

† Approximate weight per square foot: 1/4" (6 mm) 2.2 lbs., 1/2" (12.3 mm) 4.4 lbs.

Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks and lavatories.

NEMA results based on the NEMA LD 3-2000

2.3 ACCESSORIES

- A. Joint adhesive: Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
- B. Sealant: Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.
- C. Sink/lavatory mounting hardware: Manufacturer's standard bowl clips, panel inserts and fasteners for attachment of undermount sinks/lavatories.
- D. Conductive tape: Manufacturer's standard aluminum foil tape, with required thickness, for use with cutouts near heat sources.
- E. Insulating felt tape: Manufacturer's standard for use with conductive tape in insulating solid surface material from adjacent heat source.

2.4 FACTORY FABRICATION

- A. Shop assembly
 1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
 2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Reinforce with strip of solid polymer material, 2" wide.
 3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
 4. Rout and finish component edges with clean, sharp returns. Rout cutouts, radii and contours to template. Smooth edges. Repair or reject defective and inaccurate work.
- B. Thermoforming:
 1. Comply with manufacturer's data.
 2. Heat entire component. Material shall be uniform, between 275 and 325 degrees Fahrenheit during forming.
 3. Form pieces to shape prior to seaming and joining.
 4. Cut pieces to finished dimensions.
 5. Sand edges and remove nicks and scratches.

2.5 FINISHES

- A. Color/Particulate: Select from the manufacturer's standard color chart. Selection to be from most common/available color/particulate. Special Order and long lead time items will not be considered.
- B. Finish: Provide surfaces with a uniform finish. Matte; gloss range of 5–20.

PART 3 — EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data. Provide product in the largest pieces available. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Exposed joints/seams shall not be allowed. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top. Cut and finish component edges with clean, sharp returns. Rout radii and contours to template. Anchor securely to base cabinets or other supports. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches and clean entire surface. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.
- B. Coved backsplashes and applied side splashes: Install applied side splashes using manufacturer's standard color-matched silicone sealant. Adhere applied side splashes to countertops using manufacturer's standard color-matched silicone sealant.
- C. Integral sinks/vanities: Provide solid surface materials bowls and/or lavatories sinks with overflows in locations shown on the drawings. Secure sinks and lavatory bowls to tops using manufacturer's recommended sealant, adhesive and mounting hardware to maintain warranty.

3.3 REPAIR

- A. Repair or replace damaged work which cannot be repaired to the Engineer's satisfaction.

3.4 CLEANING AND PROTECTION

- A. Keep components clean during installation.
- B. Remove adhesives, sealants and other stains.

END SECTION 123623

DIVISION 22
PLUMBING

**SECTION 224000
PLUMBING**

SEE APPROVED PLANSHEETS

SECTION 224200
TOILET AND MISCELLANEOUS ACCESSORIES

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM A366 - Cold-Rolled Carbon Steel Sheets, Commercial Quality.

1.2 SUBMITTALS

- A. Submit manufacturer's product data under provisions of Section 013300.
- B. Data to illustrate each accessory at large scale and show installation method.
- C. Submit manufacturer's installation instructions under provisions of Section 013300.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.

1.4 PROTECTION

- A. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this Section.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements of the Contract Documents and provided the manufacturer meets the standards established by the specifically listed product, manufacturers offering products which maybe incorporated in the work include, but are not limited to those identified in this section or indicated on the drawings, provided substitution prior approval, in accordance with Instructions to Bidders, was given.
- B. Substitutions under provisions of Section 012500.

C. Manufacturers of Toilet Accessories

1. Bradley Corp.
2. Bobrick

D. Manufacturer of Tackboards and Markerboards

1. Claridge Products and Equipment, Inc

2.2 **MATERIALS**

- A. Sheet Steel: ASTM A366, cold rolled stretcher leveled; 125 oz/sq. ft. (38 g/sq m) galvanized coating.
- B. Stainless Steel Sheet: ASTM A167, commercial grade, 22 gage (0.80 mm).
- C. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.
- D. Adhesive: Epoxy type contact cement.
- E. Fasteners, Screws, and Bolts: Hot dip galvanized. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 **FINISHES**

- A. Stainless Steel: No. 4 stain luster or polished finish.

2.4 **FABRICATION**

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from one sheet of stock, free of joints.
- C. Provide steel anchor plates and anchor components for installation on building finishes.
- D. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- E. Back paint components where contact is made with building finishes to prevent electrolysis.
- F. Hot dip galvanize ferrous metal anchors and fastening devices.
- G. Shop assemble components and package complete with anchors and fittings.

PART 3 EXECUTION

3.1 PREPARATION

- A. Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates and rough-in measurements as required.
- B. Before starting work notify Engineer/Architect in writing of any conflicts detrimental to installation or operation of units.
- C. Provide proper backing to support accessories.

3.2 INSTALLATION

- A. Install fixtures, accessories and items in accordance with manufacturer's instructions.
- B. Install true, plumb, and level, securely and rigidly anchored to substrate.
- C. Use security type fasteners.

3.3 SCHEDULE OF ACCESSORIES

- A. Locate as indicated on the drawings.
- B. Surface mounted paper towel dispenser (P.T.D.)
 - 1. At locations under upper wall cabinets: Bradley 252
 - 2. At other locations: Bradley 250-15
 - 3. At recessed locations Bradley 229.
- C. Soap Dispenser (S.D.)
 - 1. At wall mounted locations U.N.O.: Bradley 6542
 - 2. At deck mounted locations: Bradley 6324
- D. Double Toilet Paper Holder (T.P.H.): Bradley 5263-52, with shelf.
- G. Hook and Bumper (at toilet partition doors): Bradley 915.

H. Mirror: Stainless Steel Channel Frame (M1-1)

1. Bradley 781, 18" x 36" and 18" x 24". Framed with shelf, Bradley 7815, 42" x 36"
2. Bobrick type B-165 2430

I. Grab Bars: Bradley 8120 Series. Size as indicated on the drawings.

J. Feminine Napkin Disposal: Bradley 4781-15.

K. Feminine Napkin Vendor: Bradley 401.

L. Toilet Seat Cover Dispenser: Bradley 5831.

M. Mop Strip: Bradley 9954-36".

N. Tackboards: Claridge Series 700 Maple framed with Fabricork tack surface.
Colors as selected by Engineer/Architect.

END OF SECTION 224200

**SECTION 230000
MECHANICAL**

SEE APPROVED PLANSHEETS

DIVISION 26
ELECTRICAL

SECTION 260100 ELECTRICAL REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions apply to this section.

1.2 INCLUDED

- A. This section covers electrical work, complete. Work includes furnishing, installing, testing, documenting, and starting up equipment in accordance with these Specifications, the accompanying Plans, and the directions of the Engineer.

1.3 INTENT OF PLANS

- A. Electrical plan drawings show only general locations of equipment, devices, and raceway unless specifically dimensioned. The Contractor is responsible for the proper routing of raceway, subject to the approval of the Engineer.
- B. Make adjustments as necessary to wiring, conduit, disconnects, branch circuit protection, and other affected material or equipment to accommodate actual equipment supplied for this project.

1.4 CODES, PERMITS, AND REGULATIONS

- A. Do all work and install materials and equipment in accordance with the requirements of the California Electrical Code (CEC), applicable State and local laws and ordinances, and the power company.
- B. Conflicts, if any, that may exist among the above items will be resolved at the discretion of the Engineer.
- C. Wherever the requirements of the Specifications or Plans exceed those of the items above, the requirements of the Specifications or Plans shall govern.

1.5 SUBMITTALS

- A. Refer to the Special Provisions for additional submittal guidelines. Before any material is fabricated or shipped, furnish to the Engineer full details, shop drawings, dimensions, catalog cuts, schematic (elementary) diagrams, and other descriptive matter as required to fully describe the equipment specified under the Section.

- B. For service entrance equipment, meter base, and other related materials, obtain written approval of submittals from the serving utility before submitting to the Engineer.

PART 2 – PRODUCTS

- A. Unless otherwise indicated, provide all first-quality new materials, free from any defects, and suitable for the intended use and the space provided. Provide materials approved by UL wherever standards have been established by that organization.
- B. Furnish and install all incidental items not specifically shown or specified which are required by good practice to provide the complete systems specified herein.
- C. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of materials or equipment need not be products of the same manufacturer.

2.1 STANDARD PRODUCTS

- A. Unless otherwise indicated, provide materials and equipment which are products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest design that conforms to these Specifications.

2.2 EQUIPMENT FINISH

- A. Unless otherwise indicated, finish for electrical equipment and enclosures shall be manufacturer's standard gray or ANSI 61 gray over a primer and rust inhibitor.

2.3 OUTLET AND DEVICE BOXES

- A. Sheet Steel: One-piece drawn type, zinc- or cadmium-plated.

2.4 JUNCTION AND PULL BOXES

- A. Outlet Boxes Used as Junction or Pull Box: As specified under Article OUTLET AND DEVICE BOXES.
- B. Large Sheet Steel Box: NEMA 1.
 - 1. Box: Code-gauge, galvanized steel.
 - 2. Cover: Full access, screw type.
 - 3. Machine Screws: Corrosion-resistant.
- C. Large Weatherproof: NEMA 3R.
 - 1. Box: Galvanized steel.

2. Cover: Screw with provisions for pad locking.
3. Embossed mounting holes on back of enclosure.
4. No gasketing.
5. Manufacturers:
 - a. Hoffman.
 - b. Or equal.

D. Concrete Pull Box:

1. Box: Precast Concrete.
2. Extensions: Precast concrete, 12 inches deep, provide minimum of two per box.
3. Cover: Steel traffic cover, clearly and permanently label box ELECTRICAL, TELEPHONE, or TELEMETRY, as applicable.
4. Size: Sized in accordance with CEC, but minimum size 17"H × 30"W with depth as required or as shown.
5. Manufacturers:
 - a. Cook Concrete Products.
 - b. Brooks Products, Inc.
 - c. Penn-Cast Products, Inc.
 - d. Or equal.

2.5 MULTI-SERVICE IN-FLOOR BOXES

- A. Size: Number of gangs as required.
- B. Type: Multiple service for power and data as shown with separation barrier.
- C. Cover:
1. Material: Brass.
 2. Approved for use on carpet, tile, or wood covered floors.
 3. Hinged flip cover.
- D. Manufacturers:
1. Wiremold, Omnibox Series.
 2. Hubbell.
 3. Or equal.

2.6 CONDUIT AND TUBING

- A. Galvanized Rigid Steel Conduit (GRS):
1. Meet requirements of ANSI C80.1 and UL 6.

2. Material: Hot-dip galvanized, with chromated protective layer.

B. Electric Metallic Tubing (EMT):

1. Meet requirements of ANSI C80.3 and UL 797.
2. Material: Hot-dip galvanized, with chromated and lacquered protective layer.

C. PVC Schedule 40 Conduit:

1. Meet requirements of NEMA TC2 and UL 651.
2. UL listed for concrete encasement, underground direct burial, concealed or direct sunlight exposure, and 90°C insulated conductors.

D. Flexible Metal, Liquid-Tight Conduit:

1. UL 360 listed for 105°C insulated conductors.
2. Material: Galvanized steel, with an extruded PVC jacket.

E. Galvanized Steel Flexible Conduit:

1. Hot-dip galvanized.
2. UL 1 and UL 1479.

F. Raceway Warning Tape:

1. Heavy-gauge, yellow plastic tape of 6-inch minimum width for use in trenches containing electric circuits.
2. Utilize tape made of material resistant to corrosive soil.
3. Printed warning that an electric circuit is located below the tape.

2.7 FITTINGS

A. Galvanized Rigid Steel:

1. Meet requirements of UL 514B.
2. Type: Threaded, galvanized. Setscrew fittings not permitted.
3. Material: Malleable iron with insulated throat.

B. Electric Metallic Tubing:

1. Meet requirements of UL 514B.
2. Type: Set screw.

C. PVC Conduit:

1. Meet requirements of NEMA TC-3 and UL 514B.
2. Type: PVC, slip-on.

D. Flexible Metal, Liquid-Tight Conduit:

1. Insulated throat and sealing O-rings.

E. Galvanized Steel Flexible Conduit:

1. Cast, screw-in type or two-screw clamp type.

2.8 CONDUCTORS

A. All conductors shown on the Plans shall be new unless otherwise indicated.

B. Conductor Type:

1. 120 VAC and 277 VAC lighting: Solid copper.
2. 120 VAC receptacle circuits: Solid copper.
3. All other circuits: Stranded copper.

C. Insulation: Type THHN/THWN, 90°C dry or 75°C wet.

2.9 CONDUCTOR ACCESSORIES

A. Tape:

1. General Purpose, Flame Retardant: 7-mil, vinyl plastic, rated for 90°C minimum meeting requirements of UL 510.
2. Flame Retardant, Cold and Weather Resistant: 8.5 mil, vinyl plastic.

B. Cable Ties:

1. Nylon, adjustable, and self-locking.

C. Heat Shrinkable Insulation:

1. Thermally stabilized, crosslinked polyofin.

2.10 WIRING DEVICES

A. Duplex Receptacle:

1. NEMA WD 1 and FS W-C-596.
2. Specification grade, two-pole, three-wire grounding type with screw type terminals suitable for No. 10.

3. High strength thermoplastic base color.
4. Color: To be determined.
5. Contact Arrangement: Contact to be made on two sides of each inserted blade without detent.
6. Rating: 120 VAC, 20 A.
7. Configuration: 5-20 R.
8. Manufacturers:
 - a. Bryant.
 - b. Leviton.
 - c. Pass and Seymour.
 - d. Or equal.

B. Ground Fault Interrupter (GFI) Receptacle:

1. NEMA WD 1.
2. Rating: 120 VAC, 20 A.
3. Configuration: 5-20 R.
4. Protection: Trips at 5 mA and capable of interrupting 1,000 A without damage.
5. Color: To be determined.
6. Provision for testing.
7. Manufacturers:
 - a. Bryant.
 - b. Leviton.
 - c. Pass and Seymour.
 - d. Or equal.

C. Low Voltage ON/OFF Dimming Switch with Occupancy Sensor:

1. Range: 20 feet.
2. Type: PIR/Microphonics Dual Technology (PDT).
3. nLight enabled to operate over nLight network.
4. Dimming control.
5. Adjustable time delay, factory set at 10 minutes.
6. Control Mode: Auto ON/Auto OFF (fully automatic).
7. Color: To be determined.
8. Manufacturer: Sensor Switch nWSX PDT LV DX.

D. Low Voltage ON/OFF Switch with Occupancy Sensor:

1. Range: 20 feet.
2. Type: PIR/Microphonics Dual Technology (PDT).
3. nLight enabled to operate over nLight network.
4. Adjustable time delay, factory set at 10 minutes.
5. Control Mode: Auto ON/Auto OFF (fully automatic).
6. Color: To be determined.

7. Manufacturer: Sensor Switch nWSX PDT LV.

E. Low Voltage General Purpose Relay:

1. Voltage: 120 VAC.
2. Maximum Load: 16A at 120 VAC.
3. Relay Type: Latching.
4. nLight enabled to operate over nLight network.
5. Occupancy tracking for control.
6. Manufacturer: Sensor Switch nPP16.

F. Low Voltage Occupancy Sensor:

1. Range: Large motion with 24 feet radial coverage.
2. Type: PIR/Microphonics Dual Technology (PDT).
3. nLight enabled to operate over nLight network.
4. Adjustable time delay.
5. Control Mode: Auto ON/Auto OFF (fully automatic).
6. Manufacturer: Sensor Switch n CM PDT.

2.11 DEVICE PLATES

A. Plastic:

1. Material: Nylon high impact material noncombustible.
2. Color: To match associated wiring device.
3. Mounting Screw: Oval-head metal, color matched to plate.
4. UL 514C.
5. Arrangement: Provide the number of gang devices as shown on Plans.

B. Weatherproof:

1. For Receptacles:
 - a. Provide rainproof protection while outlet is in use.
 - b. Die-cast zinc housing with polyester powder coat paint for corrosion resistance.
 - c. Stainless steel screws and springs.
 - d. Fully gasketed.
 - e. UL Listed tamper resistant and capable of accepting a padlock.
 - f. NEMA 3R rated while in use.
 - g. Manufacturers:
 - i. TayMac Corp.
 - ii. Or equal.

2.12 SERVICE ENTRANCE EQUIPMENT

A. Provide a service entrance panel pull section, meter base, and other materials as required by the electric utility, which will provide service to the facility, for installation of metering equipment and attachment of service conductors.

B. Ratings:

1. The assembly shall be rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault current as shown on the Plans.

C. Construction:

1. The entire assembly shall be front accessible and shall consist of utility pull section, main circuit breaker, and utility metering.
2. All metering shall be in accordance with utility requirements.
3. The service section shall include:
 - a. Main lugs mounted at the top of the section for overhead feed or for used with an underground pull section.
 - b. A metering and current transformer compartment with busing for utility bar type current transformers.
4. Provide pull sections as required with lug landing kits providing studs for incoming cables per utility company.

D. Bus:

1. All bus bars shall be tin-plated aluminum. Main horizontal bus bars shall be mounted with all three phases arranged in the same vertical plane. Bus sizing shall be based on NEMA standard temperature rise criteria of 65°C over a 40°C ambient (outside the enclosure).
2. Provide a full capacity neutral bus where a bus is indicated on the Plans.
3. A copper ground bus (minimum ¼- ×2-inch), shall be furnished firmly secured to each vertical section structure, and shall extend the entire length of the switchboard.
4. All hardware used on conductors shall be high-tensile strength and zinc-plated. All bus joints shall be provided with conical spring-type washers.

E. Enclosures:

1. Outdoor: NEMA 3R enclosure.
 - a. Outdoor enclosure shall be non-walk-in and meet applicable NEMA 3R requirements of UL.
 - b. Enclosure shall have flat roof.
 - c. Doors shall have provisions for padlocking.

F. Finish:

1. All exterior and interior steel surfaces of the switchboard shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish of the switchboard shall be ANSI 61 light gray.

2.13 LIGHTING AND POWER DISTRIBUTION PANELBOARD

A. NEMA PB 1, CEC, and UL 67.

B. Panelboard and Circuit Breakers: Suitable for use with 75°C wire at full CEC, 75°C ampacity.

C. Short-Circuit Current Equipment Rating: Fully rated; series connected unacceptable.

D. Rating: Applicable to a system with available short-circuit current at the value shown on the Plans.

E. Cabinet:

1. NEMA 1, Industrial Use, unless otherwise shown.
2. Material: Galvanized sheet steel.
3. Wiring Gutter: Minimum 4-inch square; both sides, top and bottom.
4. Front:
 - a. Fastened with adjustable clamps.
 - b. Trim Size:
 - i. Surface Mounted: Same as box.
 - ii. Flush Mounted: $\frac{3}{4}$ -inch larger than box on all sides.
 - c. Finish: Rust inhibitor prime, with manufacturer's standard baked enamel or lacquer.
5. Interior:
 - a. Factory assembled, complete with circuit breakers.
 - b. Capable of circuit breaker replacement without disturbing adjacent circuit breakers or without removing main bus.
 - c. Spaces: Cover openings with easily removable metal cover.
6. Door Hinges: Concealed.
7. Locking Device:
 - a. Flush type.
 - b. Doors over 30 inches in height: Multipoint.

- c. Identical keylocks, with two milled keys each lock.
- 8. Circuit Directory: Metal frame with transparent plastic face and enclosed card on interior of door.

F. Bus Bar:

- 1. Material: Tin-plated aluminum, full sized throughout length. Provide bolted connections with Belleville washers.
- 2. Provide for mounting of future circuit breakers along full length of bus regardless of number of units and spaces shown. Machine, drill, and tap as required for current and future positions.
- 3. Ground: Copper, installed on panelboard frame, bonded to box with at least one terminal screw for each circuit.
- 4. Lugs and Connection Points:
 - a. Suitable for either copper or aluminum conductors.
 - b. Solderless main lugs for main, neutral, and ground bus bars.
 - c. Subfeed or through-feed lugs as shown.
- 5. Bolt together and rigidly support bus bars and connection straps on molded insulators.

G. Circuit Breakers:

- 1. NEMA AB 1 and UL 489.
- 2. Thermal-magnetic, quick-make, quick-break, molded case, of the indicating type showing ON/OFF and TRIPPED positions of operating handle.
- 3. Noninterchangeable, in accordance with CEC.
- 4. Provisions for handle padlocking, unless otherwise shown.
- 5. Bolt-on circuit breakers in all panelboards.
- 6. Multi-pole circuit breakers designed to automatically open all poles when an overload occurs on one pole.
- 7. Do not substitute single-pole circuit breakers with handle ties for multiple breakers.
- 8. Do not use tandem or dual circuit breakers in normal single-pole spaces.

H. Surge Protection Device: See Section PANELBOARD SURGE PROTECTIVE DEVICE (SPD).

I. Manufacturers:

- 1. Eaton.
- 2. Square D.
- 3. Or equal.

2.14 PANELBOARD SURGE PROTECTIVE DEVICE (SPD)

A. SPD shall have the following features:

1. Connect to panelboard main bus via cabling to circuit breaker. Maximum cable length shall be 12". Longer cable lengths are not acceptable.
2. Integral to panelboard. The panelboard and surge protective device manufacturer shall be the same.
3. Local LED display with status and fault indicating lights on the front of the panelboard.
4. Maximum Continuous Operating Voltage: 275 Vrms for 120/240 VAC system.
5. Peak Surge Currents: 200 kA.
6. Noise Attenuation: 38 dB normal mode, 34 dB common mode.
7. Response Time: Less than 1 nanosecond.
8. Protection Mode: Normal mode – dedicated L-N and L-L; Common mode-dedicated L-G and N-G.
9. UL listed 1449 3rd edition.
10. System Voltage: As shown on the Plans.

2.15 DISCONNECT SWITCH, INDIVIDUAL, 0 TO 600 VOLTS

A. NEMA KS 1.

B. Quick-make, quick-break, motor rated, load-break, heavy-duty (HD) type with external markings clearly indicating ON/OFF positions.

C. Suitable for use with 75°C wire at full CEC, 75°C ampacity.

D. Enclosure: NEMA 12, Industrial Use, NEMA 3R, Denoted by WP, unless otherwise shown.

E. Interlock: Enclosure and switch to prevent opening cover with switch in the ON position.

F. Lockable in the open position. Provide tag reading "DO NOT OPEN UNDER LOAD."

G. Rating:

1. Fused: Fuse rating as shown on the Plans.
2. Non-fused: Switch rating as shown on the Plans.

2.16 PHOTOCCELL

A. Provide photocell as indicated on the Plans.

2.17 LUMINAIRES

A. Luminaires as shown on the Plans, with proper hangers, pendants, canopies, lamps, etc., necessary for complete installation.

B. "Feed thru" or separate junction boxes.

- C. Wire leads not smaller than 18 AWG and with all electrical components easily accessible and replaceable without removing the luminaire from the ceiling.
- D. Special Requirements:
 - 1. Pole and luminaire combinations capable of withstanding, without damage, 100-mile per hour steady winds. Extruded aluminum, poles of size, type, and finish shown on the Drawings. Concrete pole bases. See detail.
 - 2. Luminaires installed outdoors with SUITABLE FOR WET LOCATIONS label and a removable prewired ballast.
 - 3. Swinging luminaries with a safety cable attached to the structure and the luminaire at each support capable of supporting four times the vertical load.
- E. Manufacturer: See types listed on Plans.

PART 3 – EXECUTION

- A. Perform work in a workmanlike manner by craftsmen skilled in the particular trade. Perform work in accordance with the Plans, Specifications, manufacturer's recommendations, and the best practice of the trade. Completed work shall present a neat and finished appearance.
- B. Coordinate electrical work with the Owner and the work of other trades to avoid conflicts, errors, delays, and unnecessary interference during construction.

3.1 PROTECTION DURING CONSTRUCTION

- A. Following installation, protect materials, equipment, and insulation from corrosion, physical damage, and moisture. Cap conduit runs during construction with manufactured seals. Keep openings in boxes or equipment closed during construction.

3.2 MATERIAL AND EQUIPMENT INSTALLATION

- A. Follow the manufacturer's installation recommendations unless otherwise indicated. Follow the Engineer's decision, wherever any conflict arises between the manufacturer's instructions, State or other codes and regulations, and these Contract Documents. Keep copy of the manufacturer's installation instructions available on the jobsite for review at all times.

3.3 CUTTING AND PATCHING

- A. Do not cut or notch any structural member or building surface without specific approval of the Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical materials and equipment. Following such work, restore surfaces neatly to new condition using skilled craftsmen of the trades involved.

3.4 CLEANING AND TOUCH-UP PAINTING

- A. Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from the premises and from the interior and exterior of all devices and equipment. Refinish damaged surfaces to new condition using skilled craftsmen of the trades involved.

3.5 RACEWAY SYSTEM

- A. Unless otherwise specified or indicated, wiring shall consist of insulated conductors installed in raceways of the types indicated:
- B. Diameter: As shown on Plans.
- C. Exterior, Exposed: Galvanized Rigid Steel.
- D. Interior, Exposed: Electric Metallic Tubing.
- E. Interior, Concealed (Not Embedded in Concrete): Electric Metallic Tubing.
- F. Direct Earth Burial: PVC Schedule 40.
- G. Under Slabs-On-Grade: PVC Schedule 40.
- H. All conduit penetrations through concrete floor slabs shall be galvanized rigid entire depth of floor slab.
- I. For equipment where flexible connection is required to minimize vibration:
 - 1. Flexible metal, liquid-tight conduit.
 - 2. Length: 18-inch minimum, 60-inch maximum of sufficient length to allow movement or adjustment of equipment.
- J. Box Type (All Raceway Systems):
 - 1. Exterior Locations: Weatherproof Type 3R.
 - 2. Interior Dry Locations: Sheet steel, Type 1.
 - 3. Buried Raceway: Concrete pullbox.
- K. Install pull boxes where shown and where necessary to terminate, tap-off, or redirect multiple conduit runs.
- L. Install pull boxes where necessary in raceway system to facilitate conductor installation.
- M. Install pull boxes in underground conduit runs with large changes in elevation to relieve hydraulic pressure in the conduit.

- N. Install pull boxes in conduit runs at least every 150 feet or after the equivalent of three right-angle bends.
- O. Use outlet boxes as junction and pull boxes wherever possible and allowed by applicable codes.
- P. Install plumb and level.
- Q. Support boxes independently of conduit by attachment to building structure or structural member.
- R. Install bar hangers in frame construction, or fasten boxes directly with wood screws on wood, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws or welded threaded studs on steelwork.
- S. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.

3.6 RACEWAY INSTALLATION

- A. Conduit and tubing sizes shown are based on the use of copper conductors.
- B. All installed work shall comply with NECA 5055.
- C. Crushed or deformed raceways not permitted.
- D. Maintain raceway entirely free of obstructions and moisture.
- E. Immediately after installation, plug or cap raceway ends with watertight and dust-tight seals until time for pulling in conductors.
- F. Group raceways installed in same area.
- G. Proximity to Heated Piping: Install raceways minimum 12 inches from parallel runs.
- H. Follow structural surface contours when installing exposed raceways. Avoid obstruction of passageways.
- I. Run exposed raceways parallel or perpendicular to walls, structural members, or intersections of vertical planes.
- J. All metal conduit to be reamed, burrs removed, and cleaned before installation of conductors, wires, or cables.
- K. Do not install raceways in concrete equipment pads, foundations, or beams.

- L. Horizontal raceways installed under floor slabs shall lie completely under slab, with no part embedded within slab.
- M. Install concealed, embedded, and buried raceways so that they emerge at right angles to surface and have no curved portion exposed.
- N. For empty conduits install a nylon pull cord to be used for future installations.

3.7 RACEWAY PENETRATIONS

- A. Make at right angles, unless otherwise shown.
- B. Notching or penetration of structural members, including footings and beams, not permitted.
- C. Fire-Rated Walls, Floors, or Ceilings: Fire-stop openings around penetrations to maintain fire-resistance rating.
- D. Apply single layer of wraparound duct band to all metallic conduit protruding through concrete floor slabs to a point 2 inches above concrete surface.
- E. Entering Structures:
 - 1. Heating, Ventilating, and Air Conditioning Equipment:
 - a. Penetrate equipment in area established by manufacturer.

3.8 RACEWAY SUPPORT

- A. Support from structural members only, at intervals not exceeding CEC requirements, and in any case not exceeding 10 feet. Do not support from piping, pipe supports, or other raceways.
- B. Wall brackets and associated hardware in contact with concrete or masonry shall be stainless steel. Provide galvanized steel at all other locations. Strap hangers and ceiling trapeze including hardware, shall be galvanized steel.
- C. Provide and attach wall brackets, strap hangers, or ceiling trapeze as follows:
 - 1. Wood: Wood screws.
 - 2. Hollow Masonry Units: Toggle bolts.
 - 3. Concrete or Brick: Expansion shields, or threaded studs driven in by powder charge, with lock washers and nuts.
 - 4. Steelwork: Machine screws.

- D. Nails or wooden plugs inserted in concrete or masonry for attaching raceway not permitted. Do not weld raceways or pipe straps to steel structures. Do not use wire in lieu of straps or hangers.

3.9 RACEWAY BENDS

- A. Install concealed raceways with a minimum of bends in the shortest practical distance.
- B. Make bends and offsets of longest practical radius.
- C. Install with symmetrical bends or cast metal fittings.
- D. Avoid field-made bends and offsets, but where necessary, make with acceptable hickey or bending machine. Do not heat metal raceways to facilitate bending.
- E. Make bends in parallel or banked runs from same center or centerline with same radius so that bends are parallel.
- F. Factory elbows may be installed in parallel or banked raceways if there is change in plane of run, and raceways are same size.
- G. PVC Conduit:
 - 1. Bends 30° and Larger: Provide factory-made elbows.
 - 2. 90° Bends: Provide galvanized rigid steel elbows; except on utility service runs if not allowed by the utility.
 - 3. Use manufacturer's recommended method for forming smaller bends.
- H. Flexible Conduit: Do not make bends that exceed allowable conductor bending radius of cable to be installed or that significantly restricts conduit flexibility.

3.10 EXPANSION/DEFLECTION FITTINGS

- A. Provide on all raceways at structural expansion joints.

3.11 PVC CONDUIT

- A. Solvent Welding:
 - 1. Provide manufacturer recommended solvent; apply to all joints.
 - 2. Install such that joint is watertight.
- B. Adapters:
 - 1. PVC to Metallic Fittings: PVC terminal type.
 - 2. PVC to Rigid Metal Conduit: PVC female adapter.

C. Belled End Conduit: Bevel the unbelled end of the joint prior to joining.

3.12 TERMINATION AT ENCLOSURES

A. Sheet Metal Boxes, Cabinets, and Enclosures:

1. Galvanized Rigid Steel Conduit:

- a. Provide one lock nut each on inside and outside of enclosure.
- b. Install grounding bushing.
- c. Provide bonding jumper from grounding bushing to equipment ground bus or ground pad; if neither ground bus nor pad exists, connect jumper to lag bolt attached to metal enclosure.
- d. Install insulated bushing on ends of conduit where grounding is not required.
- e. Provide insulated throat when conduit terminates in sheet metal boxes having threaded hubs.

2. Electric Metallic Tubing: Provide gland compression, insulated connectors.

3. Flexible Metal Conduit: Provide two screw type, insulated, malleable iron connectors.

3.13 UNDERGROUND RACEWAYS

A. Cover: Maintain minimum 2-foot cover above conduit, unless otherwise shown.

B. Make routing changes as necessary to avoid obstructions or conflicts.

C. Installation with other piping systems:

1. Crossing and parallel runs: Maintain minimum 12-inch separation unless otherwise indicated.
2. Installation over valves or couplings not permitted.

3.14 CONDUCTORS

A. Do not splice incoming service conductors and branch power distribution conductors No. 6 AWG and larger unless specifically indicated or approved by ENGINEER.

B. Connections and Terminations:

1. Install wire nuts only on solid conductors.
2. Install nylon self-insulated crimp connectors and terminators for circuit conductors No. 6 AWG and smaller.
3. Install uninsulated crimp connectors and terminators for circuit conductors No. 4 AWG through No. 2/0 AWG.
4. Install uninsulated, bolted, two-way connectors and terminators for circuit conductors No. 4/0 AWG and larger.

5. Tape insulate all uninsulated connections.
6. Place no more than one conductor in any single-barrel pressure connection.
7. Install crimp connectors with tools approved by connector manufacturer.
8. Compression Lugs:
 - a. Attach with a tool specifically designed for purpose.
 - b. Tool shall provide complete, controlled crimp and shall not release until crimp is complete.
 - c. Do not use plier type crimpers.

C. Do not use soldered mechanical joints.

D. Splices and Terminations:

1. Indoors: Use general purpose, flame retardant tape.
2. Outdoors: Use flame retardant, cold- and weather-resistant tape.

E. Cap spare conduit with UL listed end caps.

F. Cabinets and Panels:

1. Remove surplus wire, bridle and secure.
2. Where conductors pass through openings or over edges in sheet metal, remove burrs chamfer edges, and install bushings and protective strips of insulating material to protect the conductors.

3.15 GROUNDING

- A. Unless otherwise indicated, ground all exposed noncurrent-carrying metallic parts of electrical equipment, raceway systems, and the neutral of all wiring systems in accordance with the CEC, State, and other applicable laws and regulations.
- B. Provide grounding points (foundation ground points) at each building and structure. Grounding electrode shall be No. 4 minimum size with a 20-foot-minimum-length piece of reinforcing steel by thermite welding.
- C. Make ground connections by brazing, thermite welding, or with approved pressure terminals or mechanical grounding devices, except inaccessible connections shall be made by thermite welding.
- D. The point of contact of each thermite weld shall be wire brushed or filed to a bare metal surface. Thermite welding cartridges and molds shall be used in accordance with the manufacturer's recommendations. After the welds have been made and cooled, slag shall be brushed from the welded area and the joint thoroughly cleaned. Use materials made by Burndy, Erico (Cadweld), or equal.

3.16 LIGHTING FIXTURES

- A. Deliver lamps to the project in their original cartons. After construction of the total project is completed, wash fixtures, clean lamps, touch up any paint scratches or chips, remove labels from fixture lenses, and replace noisy ballasts.

3.17 TESTING, GENERAL

- A. Testing, test plans, and test reports shall be provided by the Contractor as specified herein. The Contractor shall provide labor, instruments, and other material to complete the test.

3.18 OPERATIONAL READINESS TEST (ORT)

- A. The entire installed electrical system shall be certified (inspected, tested, and documented) that it is ready for operation. The objective of this test is to demonstrate that the electrical system is complete and ready for use.

This test shall consist, as a minimum of:

1. Insulation Resistance Test:

- a. Perform insulation resistance test on each conductor No. 6 and larger with respect to ground. Applied potential to be 1,000 VDC for one minute.
- b. Record test values and submit to the Engineer. Insulation resistance to be 50 megohm minimum.
- c. Measure insulation resistance of complete circuits with the circuit breakers open.
- d. Notify the Engineer one week prior to the insulation test.

2. Grounding System:

- a. Verify ground system is in compliance with Plans and Specifications.
- b. Perform fall-of-potential test or alternative in accordance with IEEE Standard 81-1991 on the main grounding electrode or system.
- c. Perform point-to-point tests to determine the resistance between the main grounding system and all major electrical equipment frames.
- d. The resistance between the main grounding electrode and ground should be no greater than 5 ohms. Investigate point-to-point resistance values which exceed 0.5 ohms.

3. Demonstration:

- a. Demonstrate proper circuiting.
- b. Demonstrate proper switching of fixtures.
- c. Demonstrate that all receptacles are energized, polarity correct and properly grounded.
- d. Demonstrate that all fixtures are operating and all lamps are lit.

- e. Demonstrate proper operation of GFCI receptacles (use GFCI Tester).
 - f. Demonstrate proper panel relabeling.
4. Lighting System: The lighting system shall be tested and documented for conformance to the Plans in accordance with 2016 Title 24 Non-residential Compliance Manual. Acceptance testing shall include, but not be limited to:
- a. Wiring for multi-level lighting control.
 - b. Location of lighting control devices.
 - c. Documentation for each device with programmed settings.
 - d. Occupancy sensing devices.
 - e. Automatic shut-off controls.

B. Forms: Example ORT forms are provided in the supplement at the end of this section.

3.19 SUPPLEMENTS

A. Supplements listed below are part of this specification.

- 1. No. 1 — Example ORT forms.

SUPPLEMENT NO. 1

**EXAMPLE
ORT FORMS**

PACE ENGINEERING

OPERATION READINESS TEST (ORT) - GROUND RESISTANCE TEST

GROUND RESISTANCE TEST REPORT

Project:		Location:		Date:	
				Tested By:	
Test Method:	Two Point	Test Equipment Used:			
	Fall of Potential				
GROUND DESIGNATION	OHMS	GROUND DESIGNATION	OHMS	GROUND DESIGNATION	OHMS
NOTES:					

DIVISION 27
COMMUNICATIONS

SECTION 270000
SPECIAL SYSTEMS

PART 1 GENERAL

1.1 SCOPE

- A. Furnish all material, equipment, labor, tools and supervision to provide the complete and functioning special systems for this project as shown on the drawings and specified herein.

1.2 CONTRACT DOCUMENTS

- A. Only equipment devices have been shown on the contract documents. Individual conduits and conductors are not shown on the drawings. Unless specifically specified otherwise, provide complete system wiring to include all conductors installed in conduit raceways between all equipment. Refer to Raceway System Layout, Submittal Requirements.

1.3 SUBMITTALS

- A. See Section 013300, regarding submittal format, copies, etc. The following information is intended to augment those provisions referenced above.
- B. Drawings and Diagrams: Submittals shall contain 1/8-inch = 1-foot-scale floor plans showing all raceway layouts, equipment and devices with complete wire count of all wiring proposed for installation under this contract. All devices shall be numbered and located on the drawings. Provide riser diagrams showing all interconnections and wire types and counts. For clarity, Contractor is encouraged to show wire count in coded form relating to the system or function. Refer to "Raceway System Layout Submittal" for additional submittal requirements. Drawings shall be provided on AutoCAD Release 2004.
- C. Raceway System Layout Submittal: Special system equipment suppliers shall submit through the Contractor for approval by the Engineer a complete set of reproducible floor plans indicating their proposed raceway routing. Layout shall show all devices and indicate wiring and conduit requirements between all equipment. Floor plans shall consist of reproducible sepia drawings showing only the floor plan and raceway system layout.
- D. Equipment and Materials: Submittals shall contain a complete list of equipment and materials, including manufacturer's descriptive and technical literature, system performance charts, curves and calculations, catalog cuts and installation instructions.

- E. Submit for approval, complete layout of entire fire alarm system showing terminal-to-terminal wiring, all equipment, and complete system operation sequence. This information shall first be submitted for approval to Project Owners Representative. Sufficient time must be allowed for these approvals prior to ordering equipment and installation of rough-in work.

1.4 QUALITY ASSURANCE/STANDARDS

- A. Requirements: System components and performance must meet Federal Communication Commission Part 76, and National Electrical Code minimum requirements.
- B. License and Bonding: All special systems equipment shall be supplied and installed by a licensed and bonded Contractor holding a valid State Electrical Contractor's License.
- C. Manufacturer: All major communication system equipment shall be of a single manufacturer, supplied and installed by an authorized factory distributor. Specific system manufacturers are listed under Part 2, "Products," of the Special Systems section.
- D. System Materials: Each special systems contractor shall furnish and install all materials, even though not specifically mentioned herein, which are necessary for the proper integration of the system, so that the system shall perform the functions listed herein in compliance with all the specified requirements.
- E. Experience: Each special systems contractor shall have been regularly engaged in the design and installation of similar systems of equal complexity to the one specified for a period of at least five (5) years.
- F. Authorizations: Each special systems contractor shall have been authorized for a minimum of five (5) years by the manufacturer of the equipment to provide sales, service, and local warranty repairs for the equipment supplied. The special systems Contractor must make all final equipment installation hook-ups, perform testing, place system into proper operation, and provide one-year warranty on portion of system being modified. Selling equipment only for installation, hook-up and warranty by the Electrical Subcontractor will not be allowed.
- G. Financial Resources: Each special systems contractor shall, upon request, be able to illustrate to the satisfaction of the Engineer, that he has sufficient financial resources so as not to endanger in any way, in the sole judgment of the Engineer, full and timely compliance with the documents and specifications.
- H. Service: Each special systems contractor shall maintain a fully equipped service organization with stocks and have direct factory access to the manufacturer's standard parts and be capable of system inspection, troubleshooting, maintenance, and service to the system. Each system

contractor shall guarantee availability of 24-hour local service by factory trained personnel of the equipment manufacturer.

- I. Responsibility: Each special systems contractor shall accept responsibility for the complete design and installation of the system as described herein.
- J. Prior Approvals: Approval request to prequalify for bidding of equipment not as specified herein must be received by the Owner's Consulting Engineer not less than ten days prior to bid opening. Proposals shall include but shall not be limited to the following: complete technical data and such samples as required to indicate that the submitted components are equivalent to the specified equipment in all material aspects; the Contractor will itemize on a separate enclosure any variation from the specification (refer to the section, paragraph, and item of the specification and clearly state the variation); a list of similar previous completed projects with the names and telephone numbers of the owners; number of years in the communications business; service staff and qualifications; list of Contractor-owned test equipment; documentation supporting that the Contractor represents the products proposed; and the Contractor's license number. Demonstration of the proposed equipment shall be presented at the Owner's offices at no cost or inconvenience to the Owner's personnel.
- K. Alternative Proposals: Alternative proposals which are approved for bidding purposes only will be published by addenda. Proposals not complying with the prior approval requirements and conditions set forth above will not be considered.

1.5 SCHEDULING AND COORDINATION

- A. Scheduling: Schedule work and location of equipment with other trades to avoid conflict and delays.
- B. Coordination: Coordinate exact location of all devices and equipment with the architectural drawings before rough-in. Locate all junction boxes and system splices to allow for the easiest possible access by maintenance personnel.

1.6 MAINTENANCE

- A. Maintenance: Any malfunctioning components shall be restored on-site to normal operation within twenty-four (24) hours and shall be replaced with new equipment.
- B. Inventory: Maintain a complete inventory of all parts necessary to provide service according to the specified warranty requirements.

PART 2 PRODUCTS

2.1 GENERAL

- A. Refer to Section 270720 for specific system requirements.

2.2 EQUIPMENT GENERAL

- A. All equipment and material shall be new and the standard products of one manufacturer supported by a local service organization and shall be listed by Underwriters' Laboratories, Inc. or Factory Mutual Insurance Corporation.

PART 3 EXECUTION

3.1 RACEWAYS AND WIRING

- A. Requirements: All wiring shall be run in continuous metallic raceways. See Section 260000 for raceway and outlet box requirements.
- B. Wiring: Provide complete wiring per manufacturer's requirements in conduit, as specified for lighting and power. Conductors shall be copper. The Contractor shall verify all wiring requirements with manufacturer prior to submitting a bid. Wiring in raceways shall not exceed 40 percent conduit fill
- C. Raceways: Only equipment devices have been shown on the Contract Documents. Individual conduits and conductors are not shown on the drawings. Unless specifically specified otherwise, Contractor shall provide complete wiring system to include all conductors installed in metallic-conduit raceways between all equipment shown and specified herein with quantity and size of conductors and raceways as determined by the equipment manufacturer.
- D. Raceway System Layout Submittal: Equipment supplier shall submit for approval to the Engineer through the Contractor a complete set of floor plans in the quantity as required by Submittal Section 270000, indicating their proposed raceway routing. Layout shall show all devices and indicate wiring and conduit requirements between all equipment. Floor plans shall consist of drawings showing only the floor plan and raceway system layout.
- E. Splices: No splices shall be installed in conduit or any inaccessible place. All splices shall be made on terminal blocks specifically designed for that purpose. All terminations must be identified.
- F. Color Coding: All wiring shall be color coded (and identified with wire markers where not consolidated into single cables, neatly bundled and bound in tied harnesses terminated with push-in plugs where specified or on punch blocks where not otherwise specified).
- G. Rack Wiring: Wiring within signal/communications equipment racks and cabinets is to be accomplished using telephone rack wiring techniques reflecting the highest professional standards. All wiring shall be consolidated and laced. All corners shall be squared and tie downs employed. Fabrication

work not meeting these standards will be unacceptable. All conductors must be identified with wire markers that relate to the system shop drawing.

3.2 OPERATIONS AND MAINTENANCE MANUALS

- A. Provide operations and maintenance manuals in accordance with Section 017800, of the specification.
- B. In addition to the requirements of Section 27000, the following shall be provided:
 - 1. Shop drawings showing the "as-built" locations of all components, conduit runs and cables utilized. Refer to "Record Drawings" in Section 27000, for additional requirements.
 - 2. Certified results of all systems tests.

3.3 LABEL AND IDENTIFICATION

- A. Equipment Cabinets: Identify signal and communications systems equipment cabinets with an engraved phenolic plastic nameplate as described in Section 260000 "Electrical Identification"
- B. Junction Boxes: Refer to Section 260000. Mark covers of all concealed signal and communications systems junction boxes with a distinctive letter and color using a permanent label or marker. All fire alarm system wiring shall utilize red color.
- C. Wiring: Wires and cables shall be identified at each end by permanent printed sleeve or tape-type markers. T & B Shrink-Kon, HVM series labels or equal. Handwritten labels will not be accepted. The designation marked on the cables shall match those shown on the shop drawings.

3.4 TESTING AND ACCEPTANCE

- A. Start-Up: The Communication System Contractor shall be responsible for the start-up, commissioning, and troubleshooting of the signal and communications systems. Notify the Project Coordinator and Engineer of the date and time of commission testing at least two weeks prior to testing. The Project Coordinator may elect to have the testing witnessed by their personnel or an authorized representative. Start-up and testing of the system by the Electrical Subcontractor is not acceptable.
- B. Test Results: Upon completion of the testing, the completed test documentation shall be sent to the Project Coordinator stating that the adjustment and commissioning of the system is complete. A copy of each test shall be included in the Operations and Maintenance Manual.
- C. Deficiencies: In the event that defects or deficiencies are found, they are to be corrected to the satisfaction of the Project Coordinator.

- D. Acceptance: Signal and communications systems will not be accepted on a device-by-device or area-by-area basis, but only as a fully completed and operational system. Beneficial usage shall start upon successful completion of the system test and acceptance by the Owner.

3.5 TRAINING

- A. General: Each manufacturer's representative is to include sufficient hours in this bid to cover the cost of fully instructing the Owner or his designated representatives to the satisfaction of the General Contractor in the use and operation of each system.
- B. Training: Orient the training specifically to the systems installed, rather than a general training course. Instructors shall be thoroughly familiar with all aspects of the specific system and its components.

3.6 PROVISIONS

- A. Provide the training necessary to ensure competence in the operation of the system by the personnel. Provide instructors, literature, and necessary equipment to train the personnel.

END OF SECTION 270000

SECTION 270720 FIRE ALARM SYSTEM

PART 1 GENERAL

1.1 GENERAL

- A. Refer to Section 270000, "Special Systems" for general requirements that apply to this section. Comply with all requirements of Section 270000.
- B. The fire alarm system shall comply with all state and local requirements.

1.2 SCOPE OF WORK

- A. Provide all labor, equipment and material necessary for a complete fire detection and alarm system. Including the installation of **“California Fire Marshall approved Carbon Monoxide Detector Alarm system”** All components shall be listed, labeled or approved for their application as fire alarm equipment by Underwriters' Laboratories, Inc.
- B. Comply with applicable provisions of current NFPA 72 and NFPA 101 standards, local building codes and meets requirements of local authorities having jurisdiction.
- C. Comply with **“California Carbon Monoxide Poisoning Prevention Act 2010”**.

1.3 SYSTEM TYPE

- A. The system shall operate as a low-voltage, intelligent, point identification fire management system. The fire detection and control system shall monitor intelligent (analog) and addressable (digital) devices, point identify the alarm location and transmit a signal to the monitoring agency.
- B. The fire alarm control panel shall allow for loading and editing special instructions and operating sequences as required. The system shall be capable of on site programming to accommodate and facilitate expansion, building parameter changes or changes as required by local codes. All software operations shall be stored in a nonvolatile programmable memory within the fire alarm control panel. Loss of primary and secondary power shall not erase the instructions stored in memory.
- C. The Carbon Monoxide alarm system shall be approved by California Fire Marshall.

1.4 SYSTEM OPERATION

- A. System operation shall be such that actuation of any manual pull station, heat detector, smoke detector, sprinkler system water flow switch, or other approved device, shall cause the following to occur:

1. All audible alarm indicating appliances shall sound a continuous fire alarm signal until silenced by the alarm silence switch at the control panel.
 2. All visual alarm indicating appliances strobes shall be activated.
 3. Any subsequent zone alarm shall reactivate the alarm indicating appliances.
 4. All doors normally held open by door control devices shall release after a ten second time delay.
 5. Transmit a supervised signal to an Owner-selected 24-hour monitoring company.
 6. Annunciate a LCD message displaying the type, point label, condition and a location for the first alarm immediately without the need for operator response at control and remote annunciation panels. Subsequent events will be logged into queues for display by user selection.
 7. Close all combination fire/smoke dampers.
- B. An alarm shall be displayed on an 80-character alphanumeric display and on the remote printer. The top line of characters shall be the point label and the second line shall be the device type identifier. The system alarm red LED shall flash on the control panel and the remote annunciator shall indicate the specific device in alarm. A subsequent alarm received from another zone after acknowledged shall flash the system alarm LED on the control panel and remote annunciator. The LCD display and the printer shall show the new alarm information. An alarm tone shall occur within the control panel and remote annunciator until acknowledged.
- C. The alarm-indicating appliance may be silenced by entering the locked control cabinet and operating the alarm silence switch. A subsequent alarm condition shall reactivate the signals.
- D. The activation of any system smoke detector shall initiate an alarm verification operation whereby the panel will reset the activated detector and wait for a second alarm activation. If within one minute after resetting, a second alarm is reported from the same or any other smoke detector, the system shall process the alarm as described previously. (The time period of alarm verification reset shall be programmable from 0-60 seconds.) If no second alarm occurs within the alarm verification time window, the system shall resume normal operation. The alarm verification shall operate only on smoke detector alarms. Other activated initiating devices shall be processed immediately. The alarm verification operation shall be selectable by device, not just by zone. The control panel shall have the capability to display the number of times a zone or detector has gone into verification mode. Information shall be vectored to the display or remote printer.
- E. The control panel shall have a dedicated supervisory trouble condition indicator and acknowledge switch.
1. The activation of any standpipe or sprinkler valve tamper switch shall activate the system supervisory service audible signal and illuminate the LED at the control panel and remote annunciator. Differentiation between valve tamper activation and open circuits or ground conditions shall be provided.

2. Activating the acknowledge-switch will silence the audible signal while maintaining the supervisory service LED.
 3. Restoring the valve to the normal position shall cause the supervisory service LED to extinguish, thus indicating restoration to normal position.
- F. A manual evacuation switch shall be provided at the alarm panel to operate the systems alarm indicating devices. Other control circuits shall not be activated, however, a true alarm shall be processed as described previously.
- G. Alarm and trouble conditions shall be immediately displayed on the control panel from alphanumeric display at the remote printer and at the remote annunciator. If more than one alarm or trouble area is in the system, the operator may scroll to display new alarms.
- H. The control panel shall be capable of supplying a minimum of 3.5 amps at 24 VDC filtered and regulated. The power supply must be expandable to the total ampacity required by the system.
- I. All functions of the control panel shall be field programmable for maximum flexibility and expandability.

1.5 POWER REQUIREMENTS

- A. The control panel shall receive 120 VAC power as noted on the plans via a dedicated circuit.
- B. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in the normal supervisory mode for a period of 48 hours with five minutes of alarm operation at the end of this period. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging shall be automatic.
- C. All circuits requiring system-operating power shall be 24 VDC and shall be individually fused at the control panel.

1.6 SHOP DRAWINGS

- A. The Contractor shall submit for approval complete system shop drawings. The shop drawings shall first be submitted for approval to the Project Owners Representative within 30 days after contract award. Sufficient time must be allowed for these approvals prior to ordering equipment and installation of rough-in work.
- B. The shop drawings shall provide the following information (as a minimum):
 1. Title sheet with the following information: Owner's name, address and telephone number; manufacturer's name, address and telephone number;

statement of scope of work, property tax account numbers for all parcels involved and legal description of property.

2. Riser diagram showing all initiating and indicating circuits and the quantity of devices on each circuit.
3. Floor plans showing all devices with their addresses and all terminal-to-terminal wiring.
4. Battery calculations.
5. System operating sequence.
6. Wiring diagram for each type of device.
7. Wiring schedule.
8. Legend providing a detailed description and the catalog number of each type of device. All back box requirements shall be clearly identified.
9. Shop drawings shall utilize the final room numbers established by the Owner, not the room and building numbers showing the architectural floor plans.

1.7 MANUFACTURER

- A. Notifier AFP 300 Series, Simplex or Edwards. All part numbers refer to Notifier. Or approved equal.
- B. Carbon Monoxide Detector system shall be approved by California Fire Marshall

PART 2 EQUIPMENT

2.1 CABLE

- A. Per manufacturer requirements.

2.2 RACEWAYS

- A. Provide metallic raceways as specified in Section 260000 for all fire alarm system wiring.

2.3 FIRE ALARM CONTROL PANEL

- A. Construction shall be modular with solid-state microprocessor based electronics. An 80-character minimum alphanumeric display shall indicated alarms, supervisory service conditions and any troubles. Provide Notifier AFP 300 Series.
- B. The control panel shall contain the following:
 - 1. 80-character LCD displays.
 - 2. Minimum of two indicating appliance circuits.
 - 3. Nonvolatile EEPROM memory.
 - 4. Multiple password levels.
 - 5. RS232 port for programming, printer and video display unit input/output.
- C. Programming:
 - 1. Programming shall be accomplished using a standard IBM compatible computer, either desk or laptop.
 - 2. The resident program shall be stored in nonvolatile EEPROM memory.
 - 3. The system shall have the capability to store the system program on a hard or floppy disk for future changes, upgrades or replacement.
 - 4. Software will allow the user to reprogram system points, add system points, add or change point descriptions and update the data file. System output functions shall be field programmable to allow custom operations.

2.4 PERIPHERAL DEVICES

- A. Manual Stations: Shall be double-action and shall be constructed of die-cast aluminum with raised white lettering and a smooth high-gloss red finish. When the station is operated, the handle shall lock in a protruding manner to facilitate quick visual identification of the activated station. The station shall be capable of being reset using a screwdriver. Stations requiring a special key for operation shall not be permitted.
- B. Smoke Detectors: Shall be listed to UL Standard 268 and shall be documented compatible with the control equipment to which it is connected. The smoke detectors shall be photoelectric type with a plug-in base and visual indication of detector actuation. All detectors are to be addressable and intelligent with the capability of alarm verification, sensitivity adjustment by detector and maintenance alert circuitry.
- C. Duct Smoke Detectors: Shall be photoelectric type and shall operate at air velocities of 300-2000 feet per minute. An integral filter system shall be included to reduce dust and residue accumulation. An airflow monitor shall be included to indicate the presence and direction of airflow through the detector. Each duct

detector will be provided with an addressable monitor module for individual identification at the control panel.

- D. Thermal Detector: Addressable combination rate-of-rise and fixed-temperature (135°) detector employing electronic, dual thermistors.
- E. Heat Detector: Nonaddressable 135° or 190° (as shown on drawings) fixed-temperature detector employing a fusible alloy element. Provide monitor module(s) to monitor detectors within a specific area.
- F. General Alarm Signals: Shall be electronic horn/strobes. They shall be solid-state construction and shall produce a broadband horn sound output of 96 dBA (103 peak dBA) and 10' in an anechoic chamber. The units shall have a temporal tone pattern and adjustable volumes. Set all units to lowest volume level prior to installation. The strobes shall produce 8,000 peak candlepower at one flash per second. Mounting shall be flush type or as shown on the drawings. Screw terminals shall be provided for in/out field wiring of up to #12 gauge wire. All models shall be UL listed for fire protective service and must meet current ADA requirements. All horn/strobes shall be synchronized. Notifier SpectrAlert Series (wall mount) or SC/PC series (ceiling mount).
- G. Remote Annunciator: Shall be graphic type with controls to allow silencing, resetting and activating of alarms. Operation of the indicating LEDs shall be through programmable outputs from the main fire alarm control panel. Communication between the main fire alarm control panel and the remote annunciator shall be via an RS232 link. Zone schedule shall be coordinated with the Owner or his/her representative.
- H. Monitor Modules: Provide addressable monitor modules as required for devices that do not have integral intelligence. Notifier MMX series.
- I. Water Flow Switches: Provided by Division 21 and wired by Division 26. Coordinate requirements.
- J. Sprinkler Valve Tamper Switches: Provided by Division 21 and wired by Division 26. Coordinate requirements
- K. Magnetic Door Holders: Provided by Division 8 and wired by Division 26. Holders shall be powered from the fire alarm system. Coordinate requirements.

PART 3 EXECUTION

3.1 GENERAL

- A. Install protective dust covers over all smoke and thermal detectors immediately after installation. Remove covers only as required for testing. Immediately after final acceptance test, reinstall covers and do not remove until the building has been thoroughly cleaned by the General Contractor.

3.2 PROGRAMMING

- A. Provide the Owner with a list of device names and addresses (point summary) for his review prior to programming the system. System shall be programmed using the final room and building numbers established by the Owner, not the room and building numbers shown on the Architectural floor plans.
- B. The Owner must have complete access to the system program. Provide a copy of the system program on a disk in addition to a hard copy for use by the Owner.
- C. Provide the Owner with the complete list of system passwords.

3.3 TRAINING

- A. Instruct the Owner in the operation, maintenance and programming of the system. Refer to Section 16010.

3.4 FINAL ACCEPTANCE

- A. Only after satisfactory test of entire fire alarm system installation, including the work in the existing building, in the presence of the Owner's representative and the Fire Marshal, and after receipt of the manufacturer's representative's letter of certification as specified.

3.5 LABELING

- A. All duct detectors shall be labeled with a phenolic nameplate as specified in Division 26. Nameplate shall indicate the identification number of the fan/HVAC unit and the detector address.
- B. All remote alarm indicators shall be labeled with a phenolic nameplate as specified in Division 26. Nameplate shall indicate the identification number of the fan/HVAC unit and the detector address.
- C. All smoke detectors and thermal detectors shall be neatly and permanently labeled on the inside of the detector base with the detector address.
- D. All pull stations shall be neatly and permanently labeled in a concealed location with the device address.

3.6 DUCT DETECTOR INSTALLATION

- A. Provide a duct type smoke detector at each supply and return fan with a capacity greater than 2000 CFM. Install detectors ahead of return fan fresh air intake and down stream from supply fan filters.
- B. Install duct detector sampling tubes such that they extend through the duct. Install a removable cap on the end of the sampling tube which can be removed and used as a smoke injection point to facilitate detector testing.
- C. Install duct detectors such that they are readily accessible for testing.

3.7 FAN SHUTDOWN

- A. Provide all required connections from duct detector auxiliary SPDT relay to fan motor starter to shut down fan upon activation of the fire alarm system.
- B. Provide the necessary connections to shut down the associated supply fan when the damper goes into alarm.

3.8 FIRE SMOKE DAMPERS (FSD)

- A. Provide relays with 120-volt rated contacts controlled from the FACP such that the dampers close upon fire alarm and are powered open once the alarm is cleared. Provide all required connections from the relays to the fire smoke dampers. Refer to mechanical drawings for quantity and location of dampers.
- B. Provide the necessary connections to shut down the associated supply fan when the damper goes into alarm.

3.9 AUTOMATIC REPORTING

- A. The system shall report both alarm and trouble signals per applicable requirements of NFPA 72C "Remote Station Signaling Systems for Fire Alarm and Supervisory Service," and local fire department requirements.
- B. Provide the following connections from the FACP to the monitoring panel:
 - 1. Waterflow
 - 2. Sprinkler Supervision
 - 3. General Alarm
 - 4. General Trouble

3.10 SPARE CAPACITY

- A. Initiating Circuits: Each initiating circuit shall be configured such that a minimum of ten additional initiating devices (smoke detectors, thermal detectors, pull stations etc.) can be added.
- B. Indicating Circuits: Each indicating circuit shall be configured such that a minimum of five additional indicating devices (strobes, horn/strobes, horns, etc.) can be added.

3.11 AS-BUILT DRAWING

- A. The Contractor shall provide as-built shop drawings (hard copy & disk) at the end of the project. The drawings shall show the as-built locations of all components, conduit runs, cables utilized, and address of each device. Refer to Sections 260000 and 270000.

END OF SECTION 270720

SECTION 271000
TELECOMMUNICATIONS SYSTEM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Refer to Section 261000, "Electrical Requirements," for general requirements that apply to this section. Comply with all requirements of Section 261000.

1.2 SCOPE

- A. Provide all raceway provisions for the installation of the telephone/data and radio system equipment and wiring. Installation shall conduit, outlet boxes, outlet box plates and mounting boards.

1.3 DISTRIBUTION

- A. General: Telephone/Data, and Radio distribution shall consist of a combination of conduits, boxes and sleeves, as specified and as shown on the drawings.
1. Contractor Furnished: All raceway(s), boxes and conduit shall be furnished and installed by the contractor.
 2. Owner-Furnished: All telephone equipment, data equipment, Radio equipment, cable installation and cable terminations shall be furnished and installed by the Owner.
- B. Coordination: Coordinate entire installation with the Owner's telephone/data and radio service representative(s).

1.4 TELEPHONE/DATA AND RADIO OUTLETS

- A. General: Telephone/Data will share the same outlet except for wall phones which shall be telephone only. Radio shall be separate conduit.
- B. Outlets:
1. Telephone/Data and Radio Outlets: Provide 4 11/16" square x 2 1/8" deep box with two gang plaster ring. Mount at same height as receptacles unless noted otherwise.
 2. Wall Phones: Provide 4 11/16" square x 2 1/8" deep box with single-gang plaster ring. Mount at +48" unless noted otherwise.

1.5 CONDUIT SIZES

- A. In general, conduit will be shared with telephone and data with radio in a separate conduit. Minimum conduit size shall be 1" for telephone/data and 1 1/2" for Radio conduit. Stub conduit from telephone/data and radio boxes into the accessible ceiling space for extension of fire-rated cables to the telephone/data terminal board and Radio equipment by the Owner.

PART 2 EQUIPMENT

2.1 CONDUIT AND OUTLET BOXES

A. As specified under Section 261000.

2.2 EXECUTION

A. Refer to Section 261000, "Electrical Requirements," for general requirements that apply to this section. Comply with all requirements of Section 261000.

END OF SECTION 271000

DIVISION 31
EARTHWORK

**SECTION 311100
CLEARING & GRUBBING**

PART 1 GENERAL

1.1 Description

- A. This section includes protection of facilities, clearing site of incidental paving, surface debris, grasses, trees, and other plant life in preparation for site excavation work and general development.

PART 2 MEASUREMENT

- A. Payment for this item shall be on a lump sum basis per bid schedule 004100.

PART 3 PRODUCTS (not used)

PART 4 EXECUTION

4.1 Protection

- A. Locate, identify, and protect existing facilities scheduled to remain in place from damage during clearing and grubbing practices.
- B. Identify and protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect benchmarks from damage and displacement.

4.2 Clearing

- A. Clear only those areas required in order to accommodate proposed developments. Do not adversely impact adjacent property, frontage improvements, or other property features or improvements.

4.3 Removal

- A. Remove paving, brush, trees, and other debris as required and dispose of off-site in strict accordance with applicable laws and regulations.

END OF SECTION 311100

SECTION 312200 GRADING

PART 1 GENERAL

1.1 DESCRIPTION

- A. This Section includes regulatory requirements, protection, site grading, excavation, backfilling, compaction, quality control, and restoration.

1.2 MEASUREMENT

- A. Site Grading: Paid as a Lump Sum as included in the Bid Schedule Section 004100 including all work as described in Section 011000.

1.3 REFERENCES

- A. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.5 Kg) Rammer and 12 inch (300 mm) Drop.
- B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.5 Kg) Rammer and 18 inch (450 mm) Drop.
- D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
- F. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

1.4 SUBMITTAL REQUIREMENTS

- A. In accordance with the requirements of Section 6705 of the Labor Code of the State of California, submit a detailed plan to the Engineer before excavation, showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches 5 feet or more in depth.
- B. Plan must be submitted and approved by the Engineer prior to start of work.

1.5 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.
- B. Structure: Foundation, manhole, septic tank, cleanout, catch basin, vault, or culvert.
- C. Solid Rock: Large continuous masses of igneous, metamorphic, or sedimentary rock, which in the opinion of the Engineer cannot be excavated without drilling and blasting. Soil that is capable of being excavated with rippers is not considered solid rock.
- D. Loose Rock: Boulders and other detached stones, with a minimum volume of 1 cubic yard.

1.6 FIELD MEASUREMENTS

- A. Verify that survey benchmarks, control points, and intended elevations are as shown on drawings.

1.7 PROTECTION

- A. Barricade open excavations.

- B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- C. Provide safe conditions for workers and passers-by.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 PREPARATION

- A. Notify Underground Service Alert (800) 227-2600 in Northern California prior to excavation. Comply with their notice requirements.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, rock outcropping, and other features remaining as final landscaping.
- D. Protect benchmarks, existing structures, fences, and paving from excavating equipment and vehicular traffic.
- E. Maintain and protect utilities and structures to remain.

3.2 EXCAVATION

- A. Use open cut method on all excavation unless otherwise shown on the drawings, required by permit, or approved in writing by the Engineer.
- B. Stockpile excavated material on site. Any material not utilized for construction purposes may be spread onsite or removed from the site as designated by the Engineer.

3.3 CLASSIFICATION OF EXCAVATION

- A. All excavation with equipment commonly used in the industry is classified as common excavation (except for drilling and blasting).

3.4 FIELD QUALITY CONTROL

- A. The Owner, at its discretion, may acquire the services of a certified soils testing laboratory to perform baseline Modified Proctor density tests in accordance with Cal 216 or latest revision:
 - 1. Tests may be performed at locations approved by the Engineer.
 - 2. Test results from tests prior to construction will be made available to the contractor.
 - 3. Testing is at the Owner's expense.
- B. Compaction testing will be determined at the Engineer's discretion.
- C. If work does not meet specified requirements, remove, replace, and retest. All re-testing is at the contractor's expense. Compaction tests shall be used as the basis for determination of acceptability of work performed under this contract.

3.5 PROTECTION OF FINISHED WORK

- A. If vehicular traffic has altered finished work, reshape and re-compact.

END OF SECTION 312200

**SECTION 312300
EXCAVATION AND FILL**

PART 1 GENERAL

1.1 DESCRIPTION

- A. This Section includes requirements for excavation, backfilling, compaction, quality control, and restoration.

1.2 MEASUREMENT

- A. Excavation and Fill: Cost to be per Cubic Yard per Bid Schedule Section 004100. Includes all labor material and equipment necessary for the excavation and fill to the lines and grades shown on the project plans for construction. Fill shall be compacted per this section. Measurement shall be made by weight tickets or performing field surveys after initial site grading and after fill is complete, and shall be measured by the in-place volume or by other methods agreed upon between the Contractor and the Engineer. No allowance will be made for shrink/swell of fill material during excavation or transport. No separate payment will be made for fill materials utilizing onsite soils.
- B. Trenching & Backfilling: Cost to be included in other items. Includes excavating trenches and backfilling for all pipe and utilities in the project area.

1.3 REFERENCES

- A. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.5 Kg) Rammer and 12 inch (300 mm) Drop.
- B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.5 Kg) Rammer and 18 inch (450 mm) Drop.
- D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
- F. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

1.4 SUBMITTAL REQUIREMENTS

- A. In accordance with the requirements of Section 6705 of the Labor Code of the State of California, submit a detailed plan to the Engineer before excavation, showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches 5 feet or more in depth.
- B. Submit the plan to the Engineer prior to start of excavation.

1.5 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.
- B. Structure: Foundation, manhole, septic tank, cleanout, catch basin, vault, or culvert.
- C. Solid Rock: Large continuous masses of igneous, metamorphic, or sedimentary rock, which in the opinion of the Engineer cannot be excavated without drilling and blasting. Soil that is capable of being excavated with rippers is not considered solid rock.

- D. Loose Rock: Boulders and other detached stones, with a minimum volume of 1 cubic yard.

1.6 FIELD MEASUREMENTS

- A. Verify that survey benchmarks, control points, and intended elevations are as shown on drawings.

1.7 PROTECTION

- A. Barricade open excavations.
- B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- C. Provide safe conditions for workers and passers-by.

PART 2 PRODUCTS

2.1 IMPORTED PIPE EMBEDMENT

- A. Use crushed stone or gravel that is free of shale, clay, friable material, and debris. Grade in accordance with ASTM C136, within the following limits:

Sieve Size	Percent Passing
1 in	100
3/4 in	90 to 100
3/8 in	20 to 55
No. 4	0 to 10
No. 8	0 to 5

2.2 IMPORTED STRUCTURAL FILL

- A. Use imported soil (if required) that has angular fragments and a low expansion index (less than 30 per ASTM D 4829). Use imported fill that complies with the requirements of Caltrans Class 2 Aggregate Sub-base:

Sieve Size	Percent Passing (Contract Compliance)
3 in (75mm)	100
1½ in (63mm)	87 to 100
No. 4 (4.75mm)	45 to 100
No. 200 (.075mm)	0 to 34

PART 3 EXECUTION

3.1 PREPARATION

- A. Notify Underground Service Alert (800) 227-2600 in Northern California prior to excavation. Comply with their notice requirements.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, rock outcropping, and other features remaining as final landscaping.

- D. Protect benchmarks, existing structures, fences, and paving from excavating equipment and vehicular traffic.
- E. Maintain and protect utilities and structures to remain.

3.2 EXCAVATION

- A. Use open cut method on all excavation unless otherwise shown on the drawings, required by permit, or approved in writing by the Engineer.
- B. Stockpile excavated material on site. Any material not utilized for construction purposes may be spread onsite or removed from the site as designated by the Engineer.

3.3 CLASSIFICATION OF EXCAVATION

- A. All excavation with equipment commonly used in the industry is classified as common excavation (except for drilling and blasting).

3.4 TRENCH EXCAVATION

- A. Cut trenches sufficiently wide to enable installation and inspection. Remove water or materials that interfere with work. When groundwater is encountered the Contractor must submit a dewatering plan to the Engineer for approval.
- B. Maintain trench sides as vertical as possible--between 12 inches and 24 inches wider than the outside diameter of the pipe barrel--below pipe level.
- C. Excavate trench width above the pipe as wide as necessary for shoring, sheeting, and installation.
- D. Center trench excavation on pipe alignment for a minimum clearance of 6 inches on each side of the pipe.
- E. Hand trim for bell and spigot pipe joints. Remove loose matter.
- F. Restore over-excavated areas. If the trench bottom is over-excavated below the intended grade, fill over-excavation with imported pipe embedment and compact to density equivalent to the in situ material.
- G. Remove lumped subsoil, boulders, and rock up to $\frac{1}{2}$ yd³ (measured by volume).
- H. Excavate for additional trench depth when soil prevents adequate pipe support. Refill addition with imported pipe embedment. Remove large rock, boulders, and large stones to provide 3 inches of soil cushion on all sides of the pipe and pipe accessories.
- I. Length of trench that may be left open at any one time is 100 yards. Do not leave trench open over night.
- J. Stockpile excavated material in designated area on site, and remove excess material from site.

3.5 STRUCTURE EXCAVATION

- A. Excavate for structures down to the levels indicated on the drawings or as directed by the Engineer. Excavate as large as necessary to accommodate the work forms. When necessary over-excavate to remove unsuitable soil and replace with engineered fill. Comply with all safety regulations.
- B. Excavate a sufficient distance from walls and footings to provide forming except where concrete for walls or footings is directly against excavated surfaces.
- C. Do not excavate below depths indicated in the drawings. Restore over-excavated areas to proper elevation by filling with imported structural fill. Do not interfere with 45 degree

bearing splay of foundations.

- D. Hand-trim the bottom of the excavation to prevent disturbing the soil below the required depth.

3.6 BACKFILLING

- A. Use care to prevent disturbance or damage to utilities or structures in trench.
- B. Maintain optimum moisture content to attain required compaction density.
- C. Remove surplus fill materials from site.
- D. Leave fill material stockpile areas free of excess fill materials.

3.7 TRENCH BACKFILLING

- A. Use excavated soil as embedment unless Engineer determines it unsuitable. Unsuitable material is defined as incapable of being compacted to specified density with optimum moisture content, solid or loose rock, lump material larger than 1 inch, organic matter, or debris.
- B. Use excavated soil as final backfill unless the Engineer determines it unsuitable. Unsuitable final backfill material is solid or loose rock larger than 6 inches or lumps larger than 3 inches. Do not use organic matter or debris.
- C. Backfill pipe embedment material in uniform layers on all sides of the pipe in lifts not to exceed 6 inches.
- D. Use the following methods when placing final backfill material unless otherwise required by permits or authority.

<u>Compact</u>	<u>Not to Exceed (In loose measure)</u>
Roadways	6 inches thick
Rights-of-way and outside roadway	12 inches thick
Unimproved surfaces	24 inches thick

3.8 STRUCTURE BACKFILLING

- A. Place structure fill material in uniform layers on all sides of the structure 6 inches thick.
- B. Do not fill structure material until the structure footing or other portions of the structure have been inspected.
- C. Use excavated soil as final backfill material unless Engineer determines it unsuitable. Unsuitable final backfill material is solid or loose rock larger than 6 inches or lumps larger than 3 inches. Do not use organic matter or debris.

3.9 COMPACTION

- A. Compact final backfill to the percentage of maximum density determined by Cal 216 and as provided in "Percent of Maximum Density" table below, unless otherwise specified by the Owner.

Percent of Maximum Density				
Location	Bedding	Haunching	Initial Backfill	Final Backfill
Roadways, Improved Surfaces	95	95	95	95
Roadway Rights-of-Way Outside of Roadway Prism	90	90	90	90
Unimproved Surfaces, Fields, Etc.	90	90	80	80
Backfill Around Structures	95	95	95	95

3.10 FIELD QUALITY CONTROL

- A. The Owner, at its discretion, may acquire the services of a certified soils testing laboratory to perform baseline Modified Proctor density tests in accordance with Cal 216 or latest revision:
 1. Tests may be performed at locations approved by the Engineer.
 2. Test results from tests prior to construction will be made available to the contractor.
 3. Testing is at the Owner's expense.
- B. Compaction testing will be determined at the Engineer's discretion.
- C. If work does not meet specified requirements, remove, replace, and retest. All re-testing is at the contractor's expense. Compaction tests shall be used as the basis for determination of acceptability of work performed under this contract.

3.11 PROTECTION OF FINISHED WORK

- A. If vehicular traffic has altered finished work, reshape and re-compact.

END OF SECTION 312300

SECTION 312500 EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- A. Clearing and Grubbing: Section 311100
- B. Grading: Section 312200.
- C. Excavation and Fill: Section 312300.
- D. Division 32.
- E. Division 33.

1.2 REFERENCES

- A. Erosion and Sediment Control Guidelines: Conform to the latest edition of EPA Standards and Specifications for Erosion and Sediment Control”. Refer to these guidelines for construction and maintenance of all items (Temporary and Permanent Structural, Vegetative and Biotechnical) included in the Storm Water Pollution and Prevention Plan (SWPPP).
- B. Storm Water Management: Conform to the latest edition of EPA Stormwater Management Design Manual.

1.3 RESPONSIBILITY

- A. A Storm Water Pollution and Prevention Plan (SWPPP) has been prepared for this project. Install and maintain the temporary storm water and diversion control items as shown on the drawings before starting any grading or excavation and maintain compliance of all Storm Water Pollution Plan/NPDES regulations. Provide any temporary sediment and erosion control measures that may be required within limits of the work, including any staging areas, throughout construction in conformance with the plan, and as directed by the Owner’s Representative. Place the permanent control practices required before the removal of the temporary storm water diversion and control items.
- B. During construction conduct operations in such a manner as to prevent or reduce to a minimum any damage to any water body from pollution by debris, sediment, chemical or other foreign material, or from the manipulation of equipment and/or materials in or near a stream or ditch flowing directly to a stream. Any water which has been used for wash purposes or other similar operations which become polluted with sewage, silt, cement, concentrated chlorine, oil, fuels, lubricants, bitumens, or other impurities shall not be discharged into any water body.
- C. In the event of conflict between these specifications and the regulation of other Federal, State, or local jurisdictions, the more restrictive regulations shall apply.
- D. The Contractor shall adhere to all requirements of the Storm Water Pollution Prevention Plan. Comply with all applicable regulatory requirements.
- E. The Contractor will submit copies of certificates documenting that on-site workers have completed a Erosion & Sediment Control training as required.

1.4 DESCRIPTION

- A. The Work shall consist of furnishing, installing, inspecting, maintaining, and removing soil and erosion control measures as shown on the contract documents or as ordered by the Director's Representative during the life of the contract to provide erosion and sediment control.
- B. Temporary structural measures provide erosion control protection to a critical area for an interim period. A critical area is any disturbed, denuded slope subject to erosion. These are used during construction to prevent offsite sedimentation. Temporary structural measures shall include check dams, construction road stabilization, stabilized construction entrance, dust control, earth dike, level spreader, perimeter dike/swale, pipe slope drain, portable sediment tank, rock dam, sediment basin, sediment traps, silt fence, storm drain inlet protection, straw/hay bale dike, access waterway crossing, storm drain diversion, temporary swale, turbidity curtain, water bars or other erosion control devices or methods as required.
- C. Permanent structural measures also control protection to a critical area. They are used to convey runoff to a safe outlet. They remain in place and continue to function after completion of construction. Permanent structural measures shall include debris basins, diversion, grade stabilization structure, land grading, lined waterway (rock), paved channel, paved flume, retaining wall, riprap, rock outlets, and stream bank protection or other erosion control devices or methods as required.
- D. Vegetative measures shall include brush matting, dune stabilization, grassed waterway, vegetating waterway, mulching, protecting vegetation, seeding, sod, straw/hay bale dike, stream bank protection, temporary swale, topsoil, and vegetating waterways.
- E. Biotechnical measures shall include wattling (live fascines, brush matting, brush layering, live cribwall, and branchpacking) vegetated rock gabions, live staking, tree revetment, and fiber rolls.
- F. Weekly inspections will be completed by the Director's Representative. Comply with and correct all deficiencies found as a result of these inspections. At the end of the construction season when soil disturbance activities will be finalized or suspended until the following spring, the frequency of the inspections may be reduced. If soil disturbance is completely suspended and the site is properly stabilized, a minimum of monthly inspections must be maintained. The stabilization activities must be completed before snow cover or frozen ground. If vegetation is required, seeding, planting and/or sodding must be scheduled to avoid die-off from fall frosts and allow for proper germination/establishment. Weekly inspections must resume no later than March 15.

1.5 DEFINITIONS – TEMPORARY STRUCTURAL MEASURES

- A. Check Dam: Small barrier or dam constructed of stone, bagged sand or gravel to reduce velocity of flow.
- B. Construction Road Stabilization: Stabilization of construction roads to control erosion.
- C. Stabilized Construction Entrance: A stabilized pad of aggregate underlain with geotextile where traffic enters a construction site to reduce or eliminate tracking of sediment to public roads.
- D. Dust Control: Prevent surface and air movement of dust from disturbed soil surfaces.
- E. Earth Dike: A temporary berm or ridge of compacted soil, located to channel water to a sediment trapping device.

- F. Level Spreader: A non-erosive outlet for concentrated runoff to disperse flow uniformly across a slope.
- G. Perimeter Dike/Swale: A temporary ridge of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area to prevent runoff from entering a disturbed area and preventing sediment laden runoff from leaving a construction site.
- H. Pipe Slope Drain: A structure placed from the top of a slope to the bottom of a slope to convey runoff without causing erosion.
- I. Portable Sediment Tank: A compartmented tank to which sediment laden water is pumped to retain sediment before pumping the water to adjoining drainage ways.
- J. Rock Dam: A rock embankment located to capture sediment.
- K. Sediment Basin: A barrier constructed across a drainage way to intercept and trap sediment.
- L. Sediment Traps: A control device formed by excavation to retain sediment at a storm inlet or other points of collection.
- M. Silt Fence: A barrier of geo-textile fabric installed on contours across the slope to intercept runoff by reducing velocity. Replace after 1 year.
- N. Storm Drain Inlet Protection: A semi-permeable barrier installed around storm inlets to prevent sediment from entering a storm drainage system.
- O. Straw/Hay Bale Dike: Intercept sediment laden runoff by reducing velocity. Replace after 3 months.
- P. Access Waterway Crossing: A structure placed across a waterway to provide circulation for construction purposes.
- Q. Storm drain Diversion: The redirection of a storm drain line or outfall channel for discharge into a sediment trapping device.
- R. Temporary Swale: A temporary excavated drainage swale.
- S. Turbidity Curtain: A flexible, impenetrable barrier used to trap sediment when construction occurs within water bodies or along a shoreline.
- T. Water Bars: A ridge or channel constructed diagonally across a sloping road or right-of-way.

1.6 DEFINITIONS – PERMANENT STRUCTURAL MEASURES

- A. Diversion: A parabolic or trapezoidal swale with a supporting ridge on the lower side constructed across a slope to intercept and convey runoff to stable outlets at non-erosive velocities.
- B. Debris Basin: A barrier or dam constructed across a waterway to form a basin for catching and storing sediment or debris that gives protection downstream.
- C. Grade Stabilization Structure: A structure to stabilize the grade by providing channel linings that can withstand high velocities.
- D. Lined Waterway (rock): A waterway lined with stone to dispose of high velocity runoff.
- E. Paved Channel (concrete): A waterway lined with concrete to dispose of high velocity runoff.
- F. Paved Flume: A concrete lined channel to convey water down a steep slope.
- G. Retaining Wall: A structural wall constructed to prevent soil movement down steep slopes.
- H. Riprap: A layer of stone designed to protect slopes that are subject to erosion.
- I. Rock Outlets: Rock placed at the outlet end of culverts, conduits or channels.

- J. Stream Bank Protection: Stabilization of eroding stream banks through use of riprap, gabions or pre-cast concrete units.

1.7 DEFINITIONS – VEGETATIVE MATERIALS MEASURES

- A. Brush Matting: Hardwood brush layered along a stream bank with a grid of stakes and wire. This acts as a mulch for seedlings established in the bank.
- B. Dune Stabilization:
- C. Grassed or Vegetating Waterway: A parabolic or trapezoidal channel below adjacent ground level stabilized by vegetation to convey water without causing erosion.
- D. Mulches: Hay, straw, wood cellulose, fiber mats, flexible growth medium and other materials approved by the Director's Representative.
- E. Protecting Vegetation: Protecting trees, shrubs, ground cover and other vegetation from damage.
- F. Temporary Seeding: Erosion control protection to a critical area for an interim period. A critical area is any disturbed, denuded slope subject to erosion.
- G. Permanent Seeding: Grasses established and combined with shrubs to provide perennial vegetative cover on disturbed, denuded, slopes subject to erosion.
- H. Sod: Used where a quick vegetative cover is required.
- I. Straw/Hay Bale Dike: Intercept sediment laden runoff by reducing velocity. Replace after 3 months.
- J. Stream Bank Protection: Stabilization of eroding stream banks through use of vegetation.
- K. Temporary Swale: A temporary excavated drainage swale.
- L. Topsoil: Placed before permanent seeding or sod is installed.

1.8 DEFINITIONS – BIOTECHNICAL MATERIALS MEASURES

- A. Vegetative Rock Gabions: A combination of vegetation and rock gabions for slope stabilization. Live branch cuttings are layered through the gabion protruding beyond the face of the gabion.
- B. Live Fascines: Bundles of branches staked into shallow trenches which are then filled with soil. They are oriented along a contour and placed in multiple rows.
- C. Brush Matting: Hardwood brush layered along a stream bank with a grid of stakes and wire. This acts as a mulch for seedlings established in the bank.
- D. Live Staking: Large stakes sharpened at the bottom end and forced vertically into the ground.
- E. Brush Layering: Stabilize slope areas above the flow line of stream banks. Long branches are placed with cut ends into a terraced slope.
- F. Live Crib Wall: A combination of vegetation and structural elements used along streams where flowing water is a hazard. Layers of logs are alternated with long branches protruding out between them.
- G. Tree Revetment: Used for bank stabilization by placing tree trunks and branches overlapped and anchored to absorb energy, reduce velocity and capture sediment.
- H. Branch Packing: Alternates live branch cuttings and tamped backfill to repair small localized holes in slopes. Used for areas less than 4' deep and 6' wide.
- I. Fiber Roll: A coconut fiber, straw, or excelsior woven roll encased in a netting of jute, nylon, or burlap to dissipate water energy and provide a medium for introduction of

herbaceous vegetation. Anchor into a bank and provide suitable backfill behind the roll where vegetation can be planted.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Plant Materials for biotechnical slope protection: Locate stands of specified species and obtain approval to harvest material from these stands or obtain from managed production beds that are maintained for commercial distribution. Install all plant materials within 8 hours of cutting or provide proper storage.
 - 1. Shrub willows: “Streamco” purpleosier willow, and “Bankers” dwarf willow, Redosier Dogwood.
- B. Seeding: Permanent see Section 329219.

2.2 COMPANIES-TEMPORARY STRUCTURAL

- A. The following companies are manufacturers of temporary structural products. See highlighted notes to determine the specific products manufactured by each company.
 - 1. Mirafi, 365 South Holland Drive, Pendergrass, Ga, 30567, (888) 795-0808, www.mirafi.com.
 - 2. North American Green, 14649 Highway 41 North, Evansville, IN 47725, (800) 772-2040, www.nagreen.com.
 - 3. Siltdam Inc., P.O. Box 960, Brockton MA, 02303, (800) 699-2374, www.spilldam.com.
 - 4. Nedia Enterprises, Inc., 22187 Vantage Pointe Place, Ashburn, VA 20148, (888) 725-6999, www.nedia.com.
 - 5. Belton Industries, 5600 Oakbrook Parkway, Norcross GA., 30093, (800) 225-4099, www.beltonindustries.com.
 - 6. KriStar, 1219 Briggs Ave., Santa Rosa, CA 95401, (800) 579-8819, www.kristar.com.
 - 7. Rolanka International Inc., 155 Andrew Drive, Stockbridge GA 30281, (800) 760-3215, www.rolanka.com.
 - 8. Apex Resources Inc., 12910 Shelbyville Road, Louisville, KY 40243 (888) 677-2739, www.apexr.com.
 - 9. MonoSol, LLC, 707 E. 80th PL., Merrillville, IN 46410 (800) 237-9552, www.terraloc.com.
 - 10. Brockton Equipment Inc., P.O. Box 960, Brockton, MA 02303 (800) 699-2374, www.spilldam.com.
 - 11. Aer-Flo Inc., 4455 18th St. East, Bradenton, FL 34203 (800) 823-7356, www.aerflo.com.
 - 12. Contech Construction Products Inc., 9025 Centre Point Drive, Suite 400, West Chester, Ohio 45069, (800) 338-1122, www.contech-cpi.com.

2.3 COMPANIES-PERMANENT STRUCTURAL

- A. Gabions, retaining walls, stone mattresses:
 - 1. Contech Construction Products Inc., 9025 Centre Point Drive, Suite 400, West Chester, Ohio 45069, (800) 338-1122, www.contech-cpi.com.

2.4 COMPANIES-VEGETATIVE

- A. Nedia Enterprises, Inc., 22187 Vantage Pointe Place, Ashburn, VA 20148, (888) 725-6999, www.nedia.com.
- B. Agrecol Corporation, 2918 Agriculture Drive, Madison, Wi, 53718, (608) 226-2544, www.agrecol.com.

2.5 COMPANIES-BIOTECHNICAL

A. BIODEGRADABLE BLANKETS

- 1. Rolanka International Inc., 155 Andrew Drive, Stockbridge GA 30281, (800) 760-3215, www.rolanka.com.
- 2. Nedia Enterprises, Inc., www.nedia.com.
- 3. Kristar (800) 579-8819.

PART 3 EXECUTION

3.1 WORK AREAS

- A. The Director's Representative has the authority to limit the surface area of erodible earth exposed by earthwork operations and to direct the Contractor to provide immediate temporary or permanent erosion measures to minimize damage to property and contamination of watercourses and water impoundments. Under no circumstances will the area of erodible earth material exposed at one time exceed 50,000 sq. ft. The Director's Representative may increase or decrease this area of erodible earth material exposed at one time as determined by his analysis of project, weather and other conditions. The Director's Representative may limit the area of clearing and grubbing and earthwork operations in progress commensurate with the Contractor's demonstrated capability in protecting erodible earth surfaces with temporary, permanent, vegetative or biotechnical erosion control measures.
- B. Schedule the work so as to minimize the time that earth areas will be exposed to erosive conditions. Provide temporary structural measures immediately to prevent any soil erosion.
- C. Provide temporary seeding on disturbed earth or soil stockpiles exposed for more than 7 days or for any temporary shutdown of construction. In spring, summer or early fall apply rye grass at a rate of 1 lb/ 1000 sq.ft. In late fall or early spring, apply certified Aroostook Rye at a rate of 2.5 lbs./ 1000 sq. ft. Apply hay or straw at a rate of 2 bales/ 1000 sq. ft. or wood fiber hydromulch at the manufacturer's recommended rate. Hay or straw shall be anchored.
- D. Coordinate the use of permanent controls or finish materials shown with the temporary erosion measures.
- E. All erosion and sediment control devices must be maintained in working order until the site is stabilized. All preventative and remedial maintenance work, including clean out, repair, replacement, re-grading, re-seeding, or re-mulching, must be performed immediately.
- F. After final stabilization has been achieved temporary sediment and erosion controls must be removed. Areas disturbed during removal must be stabilized immediately.

END OF SECTION 312500

DIVISION 32
EXTERIOR IMPROVEMENTS

**SECTION 320513
TOP SOIL**

PART 1 - GENERAL

1.1 Summary

- A. The Work under this Section includes providing all labor, materials, tools, and equipment necessary for satisfactorily furnishing and placing topsoil.

1.2 Payment

- A. Payment for this item is included in landscaping item

1.3 Submittals

- A. Submit material sample for testing and analysis and or submit test data for material including textural analysis, gradation, organic matter content, ph rating.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil furnished by the Contractor shall consist of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials. It shall be reasonably free from roots, hard clay, coarse gravel, stones larger than one inch in any dimension, noxious weeds, tall grass, brush, sticks, stubble or other material which would be detrimental to the proper development of vegetative growth. Topsoil shall be obtained from naturally well-drained sites where topsoil occurs at least 4 inches deep. Topsoil shall not be obtained from bogs or marshes.
- B. Topsoil shall conform to the following grading:

Sieve Sizes Percentage Passing

1-inch	100%
1/2 inch	95% - 100%
No.4	75% - 100%
No.10	60% - 100%
No.200	10% - 60%

- C. Topsoil shall contain not less than 3%, or more than 20% organic matter, by weight as determined by loss-on-ignition of oven-dried samples in accordance with ASTM D5268. Organic material shall be decomposed and free of wood.
- D. The Engineer shall be notified on the location from which the Contractor proposes to procure topsoil at least fourteen (14) calendar days prior to delivery of topsoil to the Project from that location. The topsoil and its source must be inspected/tested by the

Engineer and approved for use before beginning any procurement, hauling, or work directly including topsoil.

- E. Topsoil sources lacking organic matter may be used if, prior to delivery to the Project, sufficient organic matter in the form of pulverized peat moss or rich organic soil from other sources is thoroughly mixed with the topsoil to provide a product meeting the above requirements.
- F. Organic material for incorporation into topsoil, if required, shall be partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses, or rotted manure. Organic material may require chopping or shredding to insure thorough mixing.
- G. All topsoil shall be fertilized as follows: the application rates of the fertilizer per 1,000 square feet of ground area of topsoil furnished by the Contractor shall be determined by the Engineer, based on soil analysis tests so that the total natural and applied chemical constituents are as follows:
 - a. Nitrogen 1.0 lb. minimum - 1.5 lb. maximum per 500 cubic feet
 - b. Phosphoric Acid 1.0 lb. minimum - 2.0 lb. maximum per 500 cubic feet
 - c. Potassium 1.0 lb. minimum - 2.0 lb. maximum per 500 cubic feet

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. All areas beyond sidewalks and roadway shoulders that are disturbed during construction which are not scheduled to be covered with pavement, concrete, or base course, shall be graded to a neat, uniform gradeline and appearance, as determined by the Engineer, and covered with a neat uniform, six inch minimum thickness of topsoil, unless otherwise shown on the Drawings, or directed by the Engineer.
- B. The topsoil shall be evenly spread on the designated areas to a depth, which, after settlement and compaction, shall be six inches, unless otherwise directed by the Engineer. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work, as determined by the Engineer. Roadway surfaces shall be kept clean during hauling and spreading operations.
- C. After spreading has been completed, large clods, stones larger than one-inch in any dimension, roots stumps, and other litter shall be collected and removed.
- D. The final grading of the topsoil prior to seeding shall be to a tolerance that will not permit ponding of water in excess of one inch in depth.
- E. The Contractor shall provide labor personnel experienced with landscaping work that involves fine grading of topsoil for residential and commercial lawns.
- F. The Engineer will determine the location of those areas requiring finish grading and the time required to bring the graded topsoil to the desirable finish appearance.

- G. The Contractor shall remove and dispose of all excess materials resulting from finish grading of the topsoil. The work required to remove and dispose of this excess material from piles placed adjacent to the work will be considered incidental to other work under the contract.

END OF SECTION 320513

**SECTION 321123
AGGREGATE BASE**

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - B. Aggregate base course
- 1.2 MEASUREMENT
 - A. Aggregate Base: Paid by the Ton. Includes subgrade preparation, supply of aggregate base, preparation and compaction of aggregate base, and testing.
- 1.3 REFERENCES
 - A. State of California, Department of Transportation, Standard Specifications http://www.dot.ca.gov/hq/esc/oe/construction_standards.html, latest edition.
- 1.4 QUALITY ASSURANCE
 - A. Perform Work in accordance with State of California, Department of Transportation, Standard Specifications, current addition.
 - B. Obtain materials from same source throughout the life of the project.
- 1.5 SUBMITTALS
 - A. Contractor must submit mix design to the Engineer for approval prior to placement of material in the field.

PART 2 PRODUCTS

- 2.1 MATERIALS
 - A. Aggregate for Base: Course: 1-1/2"- crushed rock or 3/4"- washed
In accordance with State of California, Department of Transportation, Standard Specifications 2022, Section 26.

PART 3 EXECUTION

- 3.1 PLACING AGGREGATE BASE
 - A. Install Work in accordance with State of California, Department of Transportation, Standard Specifications current edition.
- 3.7 PROTECTION
 - A. Immediately after placement, protect aggregate base from mechanical injury.

END OF SECTION 321123

SECTION 321300
ASPHALTIC CONCRETE PAVING (RIGID)

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Asphaltic concrete paving
 - B. Aggregate base course
- 1.2 MEASUREMENT
 - A. Asphalt Concrete Paving: Paid by the Ton. Includes saw cutting of existing pavement, removal of existing pavement, asphalt concrete pavement, tack coating surfaces, placing, compacting, and rolling, furnishing the mix design, and testing.
 - B. Aggregate Base: Paid by the Ton. Includes subgrade preparation, supply of aggregate base, preparation and compaction of aggregate base, and testing.
- 1.3 REFERENCES
 - A. State of California, Department of Transportation, Standard Specifications, latest edition.
 - B. Division 31: Earthwork
- 1.4 QUALITY ASSURANCE
 - A. Perform Work in accordance with State of California, Department of Transportation, Standard Specifications, current addition.
 - B. Obtain materials from same source throughout the life of the project.
- 1.5 ENVIRONMENTAL REQUIREMENTS
 - A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees Fahrenheit, or when the receiving surface is wet or frozen.
- 1.6 SUBMITTALS
 - A. Contractor shall submit mix design to the Engineer for approval prior to placement of material in the field.

PART 2 PRODUCTS

- 2.1 MATERIALS
 - A. Asphalt Concrete Pavement: Type A, ½ inch Maximum Medium, In accordance with State of California, Department of Transportation, Standard Specifications July 2006, Section 39.
 - B. Aggregate for Base Course: ¾- Class 2, In accordance with State of California, Department of Transportation, Standard Specifications July 2022, Section 26.
 - C. Primer: In accordance with State of California, Department of Transportation, Standard Specifications July 2022.
 - D. Tack Coat: In accordance with State of California, Department of Transportation, Standard Specifications July 2022.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify base conditions under provisions of Section 00500.
- B. Verify the compacted subgrade is ready to support paving and imposed loads.

3.2 PLACING AGGREGATE BASE

- A. Install Work in accordance with State of California, Department of Transportation, Standard Specifications current edition.

3.3 PREPARATION - PRIMER

- A. Apply primer in accordance with State of California, Department of Transportation, Standard Specifications current edition.

3.4 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with State of California, Department of Transportation, Standard Specifications current edition.

3.5 PLACING ASPHALT PAVEMENT

- A. Install Work in accordance with State of California, Department of Transportation, Standard Specifications current edition. Section 39.
- B. Compact pavement by rolling to a minimum of ninety-five percent of the maximum density as determined by nuclear investigation per ASTM D2922. Compaction tests shall be taken at a minimum frequency of one test for every five hundred tons, or one test per shift. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment. Compaction testing will be performed by the Owner, and a log will be kept of tests taken and results obtained.
- C. Perform rolling with consecutive passes to achieve even and smooth finish free of roller marks.

3.6 TOLERANCES

- A. Flatness: Maximum variation of ¼ inch measured with a 10-foot straight edge.

3.7 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees Fahrenheit.

END OF SECTION 321300

SECTION 321600
CURBS, GUTTERS, SIDEWALKS & DRIVEWAYS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Related Sections include the following:
 - 1. Division 03: Concrete.
 - 2. Division 31: Earthwork.
 - 3. Division 32: Exterior Improvements.
 - 4. Division 33: Utilities

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who 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."
- B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities and general public access.

PART 2 PRODUCTS

2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 - 1. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

- A. Reinforcement to meet requirements and products specified in Caltrans Standard Specifications Section 52.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Shall be as defined in Caltrans Standard Specifications Section 40.
- B. Normal-Weight Aggregates: Shall be 3/4" maximum size aggregate in mixes for Curb and Gutter.
- C. Water: ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Provide 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.

2.4 CURING MATERIALS

- A. Curing materials to meet requirements and products specified in Caltrans Standard Specifications.

2.5 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. A.D.A. Detectable Warning Panels
 1. The detectable warning panels shall be either lightweight concrete paver panels or vitrified polymer composite (VPC) panels as described below:
 - a. LIGHTWEIGHT CONCRETE PANEL: The detectable warning panels shall be lightweight concrete paver panel, having a minimum size of 1' x 2' and be at least 3/4" thick. The concrete panels shall be capable of reaching 10,000 psi and be reinforced with high tensile stainless steel pre-stressed tendons. The panel shall include a waterproofing admixture and surface treated with a penetrating silane sealer for resistance and decreased water absorption. The panel shall be safety yellow color throughout the panel.
 - b. VITRIFIED POLYMER COMPOSITE PANEL: Vitrified Polymer Composite (VPC) Cast in Place Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tiles shall be panels having a minimum size of 2' x 2' and shall have a minimum face thickness of 3/16" with a minimum embedment depth of 1- 1/4". The panels shall have a minimum tensile strength of 18,000 psi and a minimum flexural strength of 25,000 psi. Panel shall

be “Federal Yellow”. Panels shall be “Armor-Tile” as manufactured by Engineered Plastics, Inc. or as approved by the Engineer.

- c. STAINLESS STEEL PANEL: The detectable warning panel shall be manufactured of stainless steel and coated with a factory applied durable, skid resistant surface powder coating. The coating shall be UV stable. Panel shall be ADA compliant, safety yellow in color and manufactured by MetaDome, LLC or as approved by the Engineer.
- d. TRUNCATED DOME CONFIGURATION: The detectable warning panel shall consist of surface of truncated domes aligned in a square grid pattern.
 - i. Dome Size – Truncated domes in a detectable warning surface shall have a nominal diameter of 0.9 inches, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches.
 - ii. Dome Spacing – Truncated domes in a detectable warning surface shall have a center-to-center spacing of nominal 2.35 inches.
 - iii. Size – Detectable warning surfaces shall extend twenty-four (24) inches in the direction of travel and the full width of the curb ramp landing.
 - iv. The detectable warning surface shall be located so that the nearest edge is 8” minimum from the face of the curb.
 - v. The panel will be installed according to the manufacturer’s recommendations. All cost for labor, material, and equipment shall be included in the price bid for “Detectable Warning Panels”.

2.6 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 2,500 psi.
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 3 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: 6-1/2 percent plus or minus 1.5 percent for Curb and Gutter
 - 2. Air Content: 6 1/2 percent plus or minus 1.5 percent for sidewalks and driveways.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
- F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
 - 1. Fly Ash or Pozzolan: 20 percent.

2.7 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 deg F 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

3.1 EXAMINATION

- A. Examine exposed sub-grades and sub-base surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared base surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.
 1. Completely proof-roll base in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
 2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.
 3. Base with soft spots and areas of pumping or rutting exceeding depth of 1 inch or as determined by the Engineer require correction according to requirements in Division 31.
 4. In areas that rut less than 1 inch the ruts shall be filled with base material, compacted and brought to grade.
- C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

- A. Remove loose material from compacted sub-base surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement 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.

3.4 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. General: Form construction, isolation, and contraction joints and tool edgings 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 pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- E. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
 1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
- F. 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 (15.25 m), unless otherwise indicated.
 2. Extend joint fillers full width and depth of joint.
 3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) 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. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- G. 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 concrete pavement:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch (6mm) radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
- H. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6- mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from sub-base surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

- C. Moisten sub-base 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.
- F. Do not add water to fresh concrete after testing.
- G. 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.
- H. 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, dowels, and joint devices.
- I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
 - 1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.
- J. Screed pavement surfaces with a straightedge and strike off.
- K. 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.
- L. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- M. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) 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 mix designs.
- N. 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 (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to 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.

3.6 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.
 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.

3.7 CONCRETE PROTECTION AND CURING

- A. Refer to Caltrans Standard Specifications for Concrete Protection and Curing.

3.8 A.D.A. CURB RAMP CONSTRUCTION

- A. Sidewalk curb approach ramps shall be constructed to current A.D.A. standards as detailed in the plans.
- B. Surface Texture: A.D.A. surface texture requirements shall be met with the installation of the A.D.A. compliant detectable warning panels inserted in the sidewalk approach ramps as indicated in the details.
- C. Ramp Coloring: Curb ramp shall be Safety or Federal Yellow to meet A.D.A. contrast requirements and expansion material shall be used adjacent to the curb and gutter section.
- D. Slope
 1. New construction
 - a. Maximum slope shall be 1 foot vertical to 12 feet horizontal. Maximum rise for any run shall be thirty (30) inches or less.
 2. Reconstruction
 - a. Curb ramps reconstructed where space limitations prevent the use of 1:12 slopes may have the following:
 - i. Slopes between 10 and 12 to 1 are allowed a maximum rise of 6 inches.
 - ii. Slopes between 8 and 10 to 1 are allowed for a maximum rise of 3 inches.
 - iii. Slopes greater than 8 horizontal to 1 vertical are not allowed.
 3. Side slope
 - a. When curb ramps are located where pedestrians must walk across the ramp, the ramp shall have flared sides with a maximum slope of 1-foot vertical to 10 feet horizontal.

3.9 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
 1. Elevation: 1/4 inch (6 mm).
 2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).

3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).
4. Joint Spacing: 3 inches (75 mm).
5. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
6. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- 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 1 composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mix 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 mix. 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 mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) 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 1 specimen at 7 days and 2 specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 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 (3.4 MPa).
- D. Test results shall be reported in writing to Architect, 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 Architect 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 Architect.

- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321600

**329200
SEEDING**

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding and mulching all disturbed areas.

B. Related Sections:

1. Section 312200 - Grading
2. Section 312500 – Erosion and Sedimentation Controls

1.2 SUBMITTALS

A. Per Section 013300 - Submittals

B. Product Data: All items proposed to be provided under this Section.

C. Manufacturer's Certificate: Certificate of compliance with these Specifications.

1.3 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. Seed: Conform to all Federal, State, Tribal, and local laws.

1. Deliver to site each variety of seed individually packaged and tagged to show name, net weight, origin, and lot number.

C. Fertilizer: Conform to State and local fertilizer laws.

PART 2 PRODUCTS

2.1 PRODUCT HANDLING

A. At time of delivery, furnish the Engineer invoices of all materials received in order that application rates may be verified/determined.

- B. Immediately remove from the site materials which do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

2.2 FERTILIZER

- A. Provide commercial balanced 10-10-10 fertilizer delivered to the site in sealed bags labeled with the manufacturer's guaranteed analysis.

2.3 GRASS SEED

- A. Provide grass seed which is:
 - 1. Free from noxious weed seeds, and re-cleaned;
 - 2. Grade A recent crop seed;
 - 3. Treated with appropriate fungicide at time of mixing;
 - 4. Delivered to the site in sealed containers with dealer's guaranteed analysis.

2.6 WOOD CELLULOSE FIBER

- A. Provide wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer.
- B. Material to be heat processed so as to contain no germination or growth inhibiting factors.
- C. It shall be dyed (non-toxic) an appropriate color to facilitate metering.

2.7 STRAW MULCH

- A. Provide straw or hay material.
 - 1. Straw to be stalks of wheat, rye, barley or oats;
 - 2. Hay to be timothy, alfalfa, pea vine, or Bermuda.
- B. Material to be reasonably dry and reasonably free from mature seed bearing stalks, roots, bulblets, Johnson Grass, Nut grass, Wild Onion, scotch broom, bramble brush, and other noxious weeds.

2.8 EXCELSIOR FIBER MULCH

- A. To consist of six (6) inches, average length wood fibers cut from sound, green timber.
- B. Make cut in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood.

PART 3 EXECUTION

3.1 GENERAL

- A. Seed following areas immediately upon completion of their construction:
 - 1. Slopes greater than four horizontal to one vertical;
 - 2. Utility rights-of-way adjacent to stream banks.
- B. Areas ready for planting between August 1 and February 28 shall be planted with a temporary cover in accordance with Schedule No. 2. At the acceptable seasons for planting under Schedule No. 1, the turf previously seeded under Schedule No. 2 shall be destroyed by reworking the soil and re-seeded in accordance with Schedule No. 1 as specified herein.

3.2 SEEDING SCHEDULES

- A. Mixtures of different types of seed for the various schedules shall be weighed and mixed in proper proportions in the presence of the Engineer.
- B. Schedule No. 1 - Permanent Seeding - Planting dates March 1 to August 15:
 - Common Name of Seed Pounds / Acre
 - Browntop Millet 15
 - Hulled Bermuda 10
 - Carpetgrass 25
- C. Schedule No. 2 - Temporary Seeding - Planting dates August 16 - February 28:
 - Common Name of Seed Pounds / Acre
 - Rye Grain 30
 - Un-hulled Bermuda 20

3.3 PREPARATION

- A. Bring all areas to proper line, grade and cross section indicated on the plans.
- B. Repair erosion damage prior to commencing seeding operations.
- C. Loosen seed bed to minimum depth of 3 inches.
- D. Remove all roots, clods, stones larger than 2 inches in any dimension, and other debris.

3.4 APPLICATION OF FERTILIZER

- A. Spread uniformly over areas to be seeded at:

1. Rate of 1,000 lbs per acre;
2. Use approved mechanical spreaders.

B. Mix with soil to depth of approximately 3 inches.

3.5 SEEDING AND MULCHING

A. General:

1. Perform seeding during the periods and at the rates specified in the seeding schedules;
2. Do not conduct seeding work when ground is frozen or excessively wet;
3. Produce satisfactory stand of grass regardless of period of the year the Work is performed.

B. Seeding, slopes steeper than four horizontal to one vertical:

1. Conform to Methods EA, WF or WCF as specified hereinafter;
2. Method EA (Emulsified Asphalt):
 - a. Sow seed not more than 24 hours after application of fertilizer;
 - b. Use mechanical seed drills on accessible areas, rotary hand seeders, power sprayers, etc. may be used on steep slopes or areas not accessible to seed drills;
 - c. Cover seed and lightly compact with cultipacker if seed drill does not compact soil;
 - d. Within 24 hours following compaction of seeded areas, uniformly apply 0.2 gallons per square yard of emulsified asphalt over the seeded area.
3. Method WF (Excelsior Fiber Mulch):
 - a. Sow seed as specified for Method EA.;
 - b. Within 24 hours following covering of seeds, uniformly apply excelsior fiber at the rate of 100 pounds per 1000 square feet;
 - c. Material may be applied hydraulically or dry. If applied dry, it shall be thoroughly wetted immediately following placing;
 - d. Seeded areas to be lightly rolled to form a tight mat of the excelsior fibers.
4. Method WCF (Wood Fiber Mulch):
 - a. Apply seed, fertilizer and wood fiber mulch using hydraulic equipment;
 - b. Equipment to have built-in agitation system with capacity to agitate, suspend and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed and water;
 - c. Minimum capacity of slurry tank: 1000 gallons;
 - d. Apply fiber mulch at rate of 35 pounds per 1000 sq. ft.;

- e. Regulate slurry mixture so that amounts and rates of application will result in uniform application of all materials at not less than the specified amounts;
- f. Apply slurry in a sweeping motion, in an arched stream, so as to fall like rain, allowing the wood fibers to build upon each other;
- g. Use color of wood pulp as guide, spraying the prepared seed bed until a uniform visible coat is obtained.

C. Seeding, slopes equal to or flatter than four horizontal to one vertical:

- 1. Sow seed as specified for Method EA, steps a thru c;
- 2. Apply straw or hay mulch at the rate of 100 pounds per 1000 square feet uniformly to the seeded area. Mulch may be applied by hand, by mechanical spreaders, or by blowers;
- 3. Hold mulch in place with a tack coat of emulsified asphalt, applied at the rate of 0.2 gallons per square yard.

3.6 MAINTENANCE

- A. Maintain all seeded areas in satisfactory condition until final acceptance of the Work.
- B. Areas not showing satisfactory evidence of germination within six weeks of the seeding date shall be immediately reseeded, fertilized and/or mulched.
- C. Repair any eroded areas.
- D. Mow as necessary to maintain healthy growth rate until final acceptance of the Work.

3.7 ACCEPTANCE

- A. Permanently seeded areas under Schedule No. 1 will be accepted when the grass attains a height of two inches.
- B. No acceptance will be made of temporary seeded areas under Schedule No. 2. Re-work and re-seed those areas in accordance with Schedule No. 1.

END OF SECTION 329200

DIVISION 33
UTILITIES

**SECTION 331000
WATER SERVICE**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe and fittings for domestic water lateral and service lines.

1.2 MEASUREMENT

- A. Water Lateral: includes all labor, materials, and equipment necessary to install lateral water lines from existing water facilities to new locations as described and depicted in the plan sets. Measurement and payment to be per linear foot of installed water lateral as per the bid schedule.
- B. Water Service: includes all labor, materials, and equipment necessary to install water service facilities including connection to new lateral, installation of meters and pressure regulating valves, pipeline, hose bibs, control valves, and stub-outs for future connection to buildings. Measurement and payment for water services shall be per service as per the bid schedule.
- C. Fire sprinkler includes double check valve for connection to fire sprinkler service as show on the plans.

1.3 RELATED SECTIONS

- A. Division 31.
- B. Section 033000: Concrete.

1.4 REFERENCES

- A. ASTM D2239 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.
- B. ASTM D2466 – Poly (VinylChloride) (PVC) Plastic Pipe (SDR-PR)
- C. AWWA B300 - Standard for Hypochlorites.
- D. AWWA B301 - Standard for Liquid Chlorine.
- E. AWWA C651 - Standards for Disinfecting Water Mains.

1.5 SUBMITTALS

- A. Product and manufacturer data.
- B. Test Reports: Indicate results compared to specified requirements.

1.6 PROJECT RECORD DOCUMENTS

- A. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- B. Bacteriological report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.

2. Time and date of water sample collection.
3. Name of person collecting samples.
4. Test locations.
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Coliform bacteria test results for each outlet tested.
7. Certification that water conforms, or fails to conform, to bacterial standards of EPA.
8. Copies of all reports shall be supplied to the Engineer within 48 hours of test completion.

1.7 QUALITY ASSURANCE

- A. Perform work in accordance with AWWA C651.
- B. Submit name of EPA certified laboratory.
- C. Submit bacteriologist's signature and authority associated with testing.

PART 2 PRODUCTS

2.1 WATER PIPE

- A. Polyethylene Pipe: ASTM D2239, IPS size, for 200 PSI pressure rating.
- B. Joints: Non-Flare Compression equal to Ford Pack Joints.
- C. PVC Pressure Pipe, Schedule 40: ASTM D1785, IPS size, for 200 PSI pressure rating.
- D. Fittings: PVC, Schedule 40, ASTM D2466

2.2 CURB STOPS - UP TO 2 inch

- A. Manufacturer: McDonald Model 6104 - 33 (substitutions permitted).
- B. Brass body, TFE coated brass ball supported by two Buna-N-Seats, IPS ends, 300 PSI rating.

2.3 SADDLES

- A. Manufacturers:
 1. Ford Model S70 and S90
 2. James Jones Co., Model J995 and J996
 3. Substitutions: Will be permitted.

2.4 CORPORATION STOPS

- A. Manufacturers:
 1. Ford FB1101
 2. James Jones Co., Model J1936
 3. Substitutions: Will be permitted.

2.5 COPPERSETTERS

- A. Manufacturers:
 1. Ford Model VH72
 2. Substitutions: Will be permitted.

2.6 CURB BOXES

- A. Manufacturer: McDonald, Minneapolis Pattern - with foot piece, 5½-inch (substitutions

permitted).

2.7 WATER METERS

- A. Manufacturer: Sensus SR-EB11 (substitutions permitted per approval).

2.8 WATER BOXES

- A. Christy Model B9 Box with B9G Lid marked "WATER" (substitutions permitted).

2.9 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Hypochlorite, and AWWA B301, Liquid Chlorine.

PART 3 EXECUTION

3.1 INSTALLATION - WATER SERVICE LINE

- A. Coordinate with the public utility for connection of new water facilities to existing water distribution system. Public utility to make connection of new facilities to existing facilities. Contractor to install all other components of the new water system.
- B. Excavate pipe trench according to Section 312300. Hand trim trench where necessary.
- C. Establish elevations of buried piping for minimum of 36 inches of cover.
- D. Connect the service line to the house plumbing with fittings or adapters manufactured for the conditions encountered to provide a strong, durable, watertight connection. Provide a gate valve and hose bib with vacuum breaker.
- E. Set water meter and box in accordance with the drawings and the requirements of the public utility.
- F. Backfill and compact according to Section 312300.

3.2 DISINFECTION AND BACTERIOLOGICAL TESTING

- A. Examination
 - 1. Verify that piping system has been cleaned, inspected, and pressure tested.
 - 2. Perform scheduling and disinfecting activity with start-up, testing, adjusting, and demonstration procedures, including coordination with related systems.
- B. Execution
 - 1. Provide and attach required equipment to perform the work of this Section.
 - 2. Inject treatment disinfectant into piping system.
 - 3. Maintain disinfectant in system for 24 hours.
 - 4. Flush, circulate, and clean until required cleanliness is achieved; use domestic water.
- C. Pressure Test for Water Main
 - 1. Notify Engineer forty-eight (48) hours prior to pressure testing.
 - 2. Provide required equipment to perform pressure test. Pressure gages used in testing shall be graduated in with no more than 5 PSI increments.
 - 3. Pressure test PVC pipe 2-inches or greater in diameter for 2 hours based on the test section working pressure at the lowest point of elevation.

AVERAGE WORKING PRESSURE OF TEST SECTION	TEST PRESSURE
Less than 65 psi	100 psi
65 to 95 psi	140 psi
Greater than 95 psi	195 psi

4. Leakage rates are total leakage allowed for a two hour test per 50 pipe joints as follows:

Pipe Size	100 psi	140 psi	195 psi
2 inch	0.27 gal	0.32 gal	0.38 gal
4 inch	0.54 gal	0.64 gal	0.75 gal
6 inch	0.81 gal	0.96 gal	1.13 gal

5. Repair leaks and re-test if leakage is above acceptable rates.
6. Leakage rates shall be adjusted proportionally for pipeline lengths greater than or less than 50 pipe joints.
7. The number of pipe joints being tested shall be calculated as the length of pipeline being tested divided by the standard pipe length used on the job, with no allowances for joints caused by the use of couplings or for joints at fittings.

END OF SECTION 331000

SECTION 331100
WATER UTILITY DISTRIBUTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe, fittings, hardware, appurtenances for domestic water mains and typical fire suppression.

1.2 MEASUREMENT AND PAYMENT

- A. Water Main: paid per Section 004100 per Linear Foot actually installed and field verified. Work includes all labor, materials, and equipment necessary to install main water lines from existing water facilities to new locations as described and depicted in the plan sets.
- B. Fire Lines: paid per Section 004100 per Linear Foot actually installed and field verified. Work includes all labor, materials, and equipment necessary to install water service facilities including connection to new mains, installation of meters and pressure regulating valves, pipeline, hose bibs, control valves, and stub-outs for future connection to buildings. Measurement and payment for water services shall be per service as per the bid schedule.

1.3 RELATED SECTIONS

- A. Division 31.
- B. Section 033000: Concrete.

1.4 REFERENCES

- A. ASTM D2239 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.
- B. ASTM D2466 – Poly (VinylChloride) (PVC) Plastic Pipe (SDR-PR)
- C. AWWA B300 - Standard for Hypochlorites.
- D. AWWA B301 - Standard for Liquid Chlorine.
- E. AWWA C651 - Standards for Disinfecting Water Mains.

1.5 SUBMITTALS

- A. Product and manufacturer data.
- B. Test Reports: Indicate results compared to specified requirements.

1.6 PROJECT RECORD DOCUMENTS

- A. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- B. Bacteriological report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.

4. Test locations.
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Coliform bacteria test results for each outlet tested.
7. Certification that water conforms, or fails to conform, to bacterial standards of EPA.
8. Copies of all reports shall be supplied to the Engineer within 48 hours of test completion.

1.7 QUALITY ASSURANCE

- A. Perform work in accordance with AWWA C651.
- B. Submit name of EPA certified laboratory.
- C. Submit bacteriologist's signature and authority associated with testing.

PART 2 PRODUCTS

2.1 WATER PIPE

- A. Polyethylene Pipe: ASTM D2239, IPS size, for 200 PSI pressure rating.
- B. Joints: Non-Flare Compression equal to Ford Pack Joints.
- C. PVC Pressure Pipe, Schedule 40: ASTM D1785, IPS size, for 200 PSI pressure rating.
- D. Fittings: PVC, Schedule 40, ASTM D2466

2.2 CURB STOPS - UP TO 2 inch

- A. Manufacturer: McDonald Model 6104 - 33 (substitutions permitted).
- B. Brass body, TFE coated brass ball supported by two Buna-N-Seats, IPS ends, 300 PSI rating.

2.3 SADDLES

- A. Manufacturers:
 1. Ford Model S70 and S90
 2. James Jones Co., Model J995 and J996
 3. Substitutions: Will be permitted.

2.4 CORPORATION STOPS

- A. Manufacturers:
 1. Ford FB1101
 2. James Jones Co., Model J1936
 3. Substitutions: Will be permitted.

2.5 COPPERSETTERS

- A. Manufacturers:
 1. Ford Model VH72
 2. Substitutions: Will be permitted.

2.6 CURB BOXES

- A. Manufacturer: McDonald, Minneapolis Pattern - with foot piece, 5½-inch (substitutions permitted).

2.7 WATER METERS

- A. Manufacturer: Sensus SR-EB11 (substitutions permitted per approval).

2.8 WATER BOXES

- A. Christy Model B9 Box with B9G Lid marked “WATER” (substitutions permitted).

2.9 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Hypochlorite, and AWWA B301, Liquid Chlorine.

PART 3 EXECUTION

3.1 INSTALLATION - FIRE LINES

- A. Coordinate with the public utility for connection of new water facilities to existing water distribution system. Public utility to make connection of new facilities to existing facilities. Contractor to install all other components of the new water system.
- B. Excavate pipe trench according to Section 312300. Hand trim trench where necessary.
- C. Establish elevations of buried piping for minimum of 36 inches of cover.
- D. Connect the fire line to the building plumbing with fittings or adapters manufactured for the conditions encountered to provide a strong, durable, watertight connection.
- E. Backfill and compact according to Section 312300.

3.2 DISINFECTION AND BACTERIOLOGICAL TESTING

- A. Examination
 - 1. Verify that piping system has been cleaned, inspected, and pressure tested.
 - 2. Perform scheduling and disinfecting activity with start-up, testing, adjusting, and demonstration procedures, including coordination with related systems.
- B. Execution
 - 1. Provide and attach required equipment to perform the work of this Section.
 - 2. Inject treatment disinfectant into piping system.
 - 3. Maintain disinfectant in system for 24 hours.
 - 4. Flush, circulate, and clean until required cleanliness is achieved; use domestic water.
- C. Pressure Test for Water Main
 - 1. Notify Inspector forty-eight (48) hours prior to pressure testing.
 - 2. Provide required equipment to perform pressure test. Pressure gages used in testing shall be graduated in no more than 5 PSI increments.
 - 3. Pressure test PVC pipe 2-inches or greater in diameter for 2 hours based on the test section working pressure at the lowest point of elevation.

AVERAGE WORKING PRESSURE OF TEST SECTION	TEST PRESSURE
Less than 65 psi	100 psi
65 to 95 psi	140 psi
Greater than 95 psi	195 psi

4. Leakage rates are total leakage allowed for a two hour test per 50 pipe joints as follows:

Pipe Size	100 psi	140 psi	195 psi
2 inch	0.27 gal	0.32 gal	0.38 gal
4 inch	0.54 gal	0.64 gal	0.75 gal
6 inch	0.81 gal	0.96 gal	1.13 gal
8 inch	1.08 gal	1.28 gal	1.51 gal

5. Repair leaks and retest if leakage is above acceptable rates.
6. Leakage rates shall be adjusted proportionally for pipeline lengths greater than or less than 50 pipe joints.
7. The number of pipe joints being tested shall be calculated as the length of pipeline being tested divided by the standard pipe length used on the job, with no allowances for joints caused by the use of couplings or for joints at fittings.

END OF SECTION 331000

SECTION 331300
DISINFECTION AND BACTERIOLOGICAL TESTING OF WATER MAIN SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Disinfection of water mains.
- B. Testing and reporting results.

1.2 MEASUREMENT

- A. Payment for disinfection and bacteriological testing of water system shall be incidental to the installation of water main and services.

1.3 RELATED SECTIONS

- A. 312300: Excavation and Fill
- B. 331100: Water Utility Distribution

1.4 REFERENCES

- A. AWWA B300 - Standard for Hypochlorites.
- B. AWWA B301 - Standard for Liquid Chlorine.
- C. AWWA C651 - Standards for Disinfecting Water Mains.
- D. AWWA C652-02: Standards for Disinfection of Reservoirs

1.5 SUBMITTALS FOR INFORMATION

- A. Test Reports: Indicate results compared to specified requirements.

1.6 PROJECT RECORD DOCUMENTS

- A. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- B. Bacteriological report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.
 - 4. Test locations.
 - 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 - 6. Coliform bacteria test results for each outlet tested.
 - 7. Certification that water conforms, or fails to conform, to bacterial standards of EPA.
 - 8. Copies of all reports shall be supplied to the Engineer within 48 hours of test completion.

1.7 QUALITY ASSURANCE

- A. Perform work in accordance with AWWA C651.
- B. Submit name of EPA certified laboratory.
- C. Submit bacteriologist's signature and authority associated with testing.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Hypochlorite, and AWWA B301, Liquid Chlorine.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that piping system has been cleaned, inspected, and pressure tested.
- B. Perform scheduling and disinfecting activity with start-up, testing, adjusting, and demonstration procedures, including coordination with related systems.

3.2 EXECUTION

- A. Provide and attach required equipment to perform the work of this Section.
- B. Inject treatment disinfectant into piping system.
- C. Maintain disinfectant in system for 24 hours.
- D. Flush, circulate, and clean until required cleanliness is achieved; use domestic water.

3.3 PRESSURE TEST FOR WATER MAIN

- A. Notify Inspector 48 hours prior to pressure testing.
- B. Provide required equipment to perform pressure test. Pressure gages used in testing shall be graduated in with no more than 5 PSI increments.
- C. Pressure test PVC pipe 2-inches or greater in diameter for 2 hours based on the test section working pressure at the lowest point of elevation.

AVERAGE WORKING PRESSURE OF TEST SECTION	TEST PRESSURE
Less than 65 psi	100 psi
65 to 95 psi	140 psi
Greater than 95 psi	195 psi

- D. Leakage rates are total leakage allowed for a two hour test per 50 pipe joints as follows:

Pipe Size	100 psi	140 psi	195 psi
2 inch	0.27 gal	0.32 gal	0.38 gal
4 inch	0.54 gal	0.64 gal	0.75 gal
6 inch	0.81 gal	0.96 gal	1.13 gal

- E. Repair leaks and re-test if leakage is above acceptable rates.
- F. Leakage rates shall be adjusted proportionally for pipeline lengths greater than or less than 50 pipe joints.
- G. The number of pipe joints being tested shall be calculated as the length of pipeline being tested divided by the standard pipe length used on the job, with no allowances for joints caused by the use of couplings or for joints at fittings.

END OF SECTION 331300

**SECTION 313700
STORMWATER FACILITIES**

PART 1. GENERAL

1.1. SECTION INCLUDES

- A. This section includes drainage pipe and drainage facilities to be installed.

1.2. MEASUREMENT

- A. Measurement and payment to be per Section 004100 Bid Schedule.

1.3. RELATED SECTIONS

- A. Division 31

1.4. REFERENCES

- A. ASTM D1785 - Poly (VinylChloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- B. ASTM D2241 - Poly (VinylChloride) (PVC) Plastic Pipe (SDR-PR).
- C. ASTM D2466 - Poly (VinylChloride) (PVC) Plastic Pipe Fittings, Schedule 40.
- D. ASTM D2855 - Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- E. ASTM D2239 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.

1.5. QUALITY ASSURANCE

- A. Pipe: Perform Work in accordance with manufacturer's recommended procedures.
- B. Drop Inlets: Construct per the dimensions shown on the project drawings.

1.6. DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products to site.

PART 2. PRODUCTS

2.1. HDPE PIPE

- A. Manufacturers: Hancor or equal
- B. HDPE Pipe: AASHTO M294, TYPE S
 - 1. Fittings: Bell and Spigot with rubber gasket, ADS Pro Link Ultra, WT Pipe, or Bell-Bell Couplers
 - 2. Joints: ASTM M252, Fabricated fittings shall be welded on the interior and exterior at all junction
 - 3. Pipe: Smooth interior wall, corrugated polyethylene pipe
 - 4. Pipe: ADS N-12 approved or equal

PART 3. EXECUTION

3.1. EXAMINATION

- A. Contractor shall verify final grades and elevations of all inlets prior to installation.

3.2. PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.

3.3. BEDDING

- A. Excavate pipe trench in accordance with Section 02300 (Earthwork). Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Backfill around sides and to top of pipe with bedding material and tamp in place.

3.4. INSTALLATION – HDPE PIPE

- A. Install in accordance with State of California, Department of Transportation, Standard Specifications July 2010, Section 64.
- B. Route pipe in straight line
- C. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- D. Establish elevations of buried piping to ensure not less than 24 inches of cover.

END OF SECTION 334200

SECTION 336011

PHONE SERVICE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section includes installation of joint utility trenches with conduits for telephone services.

1.2 RELATED SECTIONS

- A. Section 0100- Project Coordination
- B. Section 0500- Excavating, Trenching and Backfilling

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 MEASUREMENT & PAYMENT

Payment for the associated items shall be considered as incidental to other work on the project, and no separate payment shall be made.. The Contractor is responsible for all communications and coordination with the respective utility companies.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of underground conduit.

PART 2 PRODUCTS

2.1 PLASTIC CONDUIT

- A. Description: NEMA TC 2; Schedule 40 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

PART 3 EXECUTION

3.1 CONDUIT

- A. Requirements:
 - 1. Underground Installation: Schedule 40 PVC
 - 2. Minimum Size: 4 inch - Distribution Conduits
3 inch - Individual Services
2 inch - Phone Services
- B. Mechanically cut conduit with pipe cutters, saws or abrasive wheels only. de-burr cut ends.
- C. Immediately before joining pipe, clean pipe ends to be joined.

END OF SECTION



ATTACHMENTS

TVCE



67 WALNUT WAY
PO BOX 1587
WILLOW CREEK, CA 95573
P:(530)829-3000
F:(530)829-3011

DOWN BY DES BY CHK BY APP BY

DESCRIPTION

DATE

REV

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

TITLE SHEET

HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:

SCALE:
AS SHOWN

PROJECT NO:
427.11

DRAWING NO:

T1



NEW INTERPRETIVE CENTER BUILDING AT TRINIDAD PIER

for:

CHER-AE HEIGHTS

Indian Community of the Trinidad Rancheria

TRINIDAD, HUMBOLDT COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

APPROVALS

APPROVAL BY: TRINIDAD RANCHERIA

APPROVAL BY: CITY OF TRINIDAD

APPROVAL BY: JOSHUA T. MCKNIGHT, RCE NO. 60687
PROJECT ENGINEER



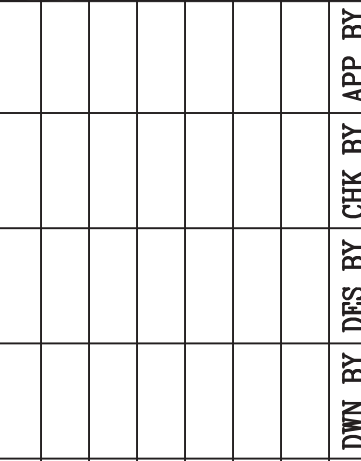
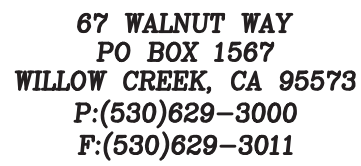
NOTICE:
NOT LESS THAN 48-HOUR NOTICE IS REQUIRED
PRIOR TO STARTING ANY EXCAVATION NEAR
UNDERGROUND UTILITIES BELONGING TO CITY &
PACIFIC GAS & ELECTRIC, CALL (USA)
UNDERGROUND SERVICE ALERT 1-800-227-2600

LEGEND

	PROPERTY LINE
	CENTER LINE
	EXISTING FOGLINE STRIPE
	EXISTING EDGE OF PAVEMENT
	NEW ACCESS DRIVEWAY CENTERLINE
	NEW EDGE OF PAVEMENT
	EXISTING GROUND CONTOUR (INTERVAL)
	EXISTING GROUND CONTOUR (INTERVAL)
	EXISTING ACCESS DRIVEWAY
	NEW DRIVEWAY
	EXISTING CULVERTS
	NEW CULVERTS
	PAVED WATERWAY
	RIP RAP
	FLOW LINE OF DITCH OR WATERWAY
	SURFACE FLOW DIRECTION
	NEW FENCE LINE
	EXISTING FENCE LINE
	EXISTING WATERLINE
	NEW WATERLINE
	EXISTING SEWER LINE
	NEW SEWER LINE
	ROADSIDE SIGNS
	CUT SLOPE
	FILL SLOPE
	EXISTING UTILITY POLE
	EXISTING UTILITY POLE W/ GUY ANCHOR(S)
	EXISTING WATER VALVE
	NEW WATER VALVE
	EXISTING ELECTRIC BOX
	EXISTING WATER METER
	NEW WATER METER
	EXISTING FIRE HYDRANT
	NEW FIRE HYDRANT
	EXISTING STREET LIGHT
	NEW STREET LIGHT
	EXISTING TREE
	EXISTING TREES/BRUSH AREA
	EXISTING ROCKS
	SURVEY CONTROL POINT (SET PK NAIL)
	FOUND CENTERLINE MONUMENT PER PM 3550
	FOUND SURVEY MONUMENT PER PM 3550

ABBREVIATIONS

AC	ASPHALT CONCRETE	FM	FLOW METER	RD	ROAD
ACP	ASBESTOS CEMENT PIPE	FNC	FENCE	RS	REBAR
AD	AREA DRAIN, ALGEBRAIC DIFFERENCE IN GRADE	G	GAS SERVICE	RCE	REGISTERED CIVIL ENGINEER
AG	ABOVE GROUND	GO	GRADE	RCP	REINFORCED CONCRETE PIPE
AGG	AGGREGATE	GND	GROUND	RSE	REINFORCED SOIL EMBANKMENT
APPROX.	APPROXIMATE	GV	GATE VALVE	RSP	ROCK SLOPE PROTECTION
B	BELL FITTING	H	HORIZONTAL	R/W	RIGHT OF WAY
BIT	BITUMINOUS	HD	HEAD	RD	ROAD
BK	BACK	HDPE	HIGH DENSITY POLYETHYLENE PIPE	RT	ROUTE, RIGHT
BULD'G	BUILDING	HORIZ	HORIZONTAL	RW	RAW WATER
BOW	BOTTOM OF WALL	HS	HIGH STRENGTH	S	SLOPE, SOUTH
BVCE	BEGIN VERTICAL CURVE ELEVATION	HM	HUMBOLDT MERIDIAN	SB	SET BACK
BVCS	BEGIN VERTICAL CURVE STATION	HWY	HIGHWAY	SD	STORM DRAIN
BW	BACKWASH	N	NORTH	SEC	SECTION
C	CIVIL	INT-X	INTERSECTION	S.F.	SQUARE FEET
CT	CALTRANS	INV.	INVERT	SHT	SHEET
CB	CATCH BASIN	IRR.	IRRIGATION WATER LINE	SHLDR	SHOULDER
C.I.P.	CAST IN PLACE	JB	ELECTRICAL JUNCTION BOX	SIM	SIMILAR
CL	CLASS	K	LENGTH	SL	SQUARE LIGHT
CL	CENTERLINE	L	LENGTH	SQ	SQUARE
CONC.	CONCRETE	L.F.	LINEAL FEET	SR	STATE ROUTE
COR	CONTRACTING OFFICERS' REPRESENTATIVE	LS	LEFT	STA	STATION
CMP	CORRUGATED METAL PIPE	LT	LEFT	STD	STANDARD
CP	CONTROL POINT	MAX.	MAXIMUM	S.T.	SEPTIC TANK
D	DELTA	MIN.	MINIMUM	SW	SURFACE WASH
DIA	DIAMETER	MJ	MECHANICAL JOINT	T, TEL	TELEPHONE
DIP	DUCTILE IRON PIPE	MOD	MODULAR, MODIFY	TBD	TO BE DETERMINED
D.W., DWY	DRIVEWAY	MP	MILE MARKER POST	TC	TOP OF CONCRETE, TOP OF CURB
DET	DETAIL	MSE	MECHANICALLY STABILIZED EARTH	THD	THREAD, THREADED
DH	DEPARTMENT OF HEALTH	MTN	MOUNTAIN	TOW	TOP OF WALL
DI	DRAINAGE INLET	NGS	NATIONAL GEODETIC SURVEY	TP	TOP OF ASPHALT PAVEMENT
DIA	DIAMETER	(N)	NEW	TYP	TYPICAL
DIM, DIMS	DIMENSIONS	NO	NORTHING, NORTH	TVCE	TRINITY VALLEY CONSULTING ENGINEERS
DN	DOWN SPOUT	NTS	NOT TO SCALE	TW	TOP OF CONC. WALK
(E), EXIST	EXISTING	OC	ON CENTER	UG	UNDERGROUND
EA	EASTING, EAST, ELECTRIC	OHU	OVERHEAD UTILITY LINES	UGV	UNDERGROUND VOLTAGE LINE
EG	EXISTING GROUND	OUT	OUT	VAR	VARIABLE
EL, ELEV	ELEVATION	POB	POINT OF BEGINNING	VC	VERTICAL CURVE
EP	EDGE OF PAVEMENT	POC	POINT OF CURVATURE	VERT	VERTICAL
EVCE	END VERTICAL CURVE ELEVATION	PI	POINT OF INTERSECTION	VOLTAGE	VOLTAGE
EVCS	END VERTICAL CURVE STATION	P/L	PROPERTY LINE	W	WEST, WATER, WIDTH
EXC	EXCAVATION	PB	POINT OF BEGINNING	W/O	WITHOUT
F/C	FACE OF CURB	POLY	POLYMER	WM	WATER METER
FG	FINISH GRADE	PP	POWER POLE/UTILITY POLE	WP	WEATHER PROOF
FH	FIRE HYDRANT	PRC	POINT OF REVERSE CURVE	WR	WATER VALVE
FHWA	FEDERAL HIGHWAY ADMINISTRATION	PRV	PRESSURE RELIEF VALVE	YR	YEAR
FIN	FINISH	PVC	POINT OF TANGENCY		
FL	FLOW LINE, FOGLINE	PVI	POINT OF VERTICAL CURVE		
FLG	FLANGE FITTING	R	RADIUS, RANGE		

[illegible]

DATE OF ISSUE:
MARCH 4, 2020

SCALE:
AS SHOWN

PROJECT NO:
427.11

DRAWING NO:
C1

1. DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN IN THESE DRAWINGS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND ANY APPLICABLE CONTRACT SPECIFICATIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL UTILITIES AS NECESSARY TO SUCCESSFULLY COMPLETE ANY AND ALL CONSTRUCTION ACTIVITIES.
3. ALL EXISTING FENCES AND UTILITIES SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION OR BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL EXISTING AND PROPOSED DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO STARTING WORK.
5. CONTRACTOR SHALL COORDINATE WITH THE TRANSPORTATION DEPARTMENT ON ALL CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITIES, WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE. ANY DAMAGE DONE BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE CONTRACTOR'S SOLE EXPENSE WITHOUT ADDITIONAL COMPENSATION.
7. ALL APPLICABLE FEES TO BE PAID AND PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR BEFORE COMMENCEMENT OF CONSTRUCTION.
8. THE TYPES, LOCATIONS, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE IMPROVEMENT PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, LOCATIONS, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, TWICE CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS.
9. THE CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING THE SAFETY OF THE PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THE CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.
10. TRAFFIC CONTROL FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FEDERAL HIGHWAY ADMINISTRATION STANDARD 635.
11. SAFE VEHICULAR AND PEDESTRIAN ACCESS SHALL BE PROVIDED AT ALL TIMES DURING CONSTRUCTION.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND OTHER SURVEY MARKERS DURING CONSTRUCTION. ALL SUCH MONUMENTS OR MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

1. ALL DRIVEWAYS AND APPROACH ROADS SHALL EITHER BE CONSTRUCTED, REBUILT, OR REMOVED UP TO THE RIGHT OF WAY LIMITS. DRIVEWAYS AND APPROACH ROADS SHALL BE CHIP SEALED TO THE RIGHT OF WAY LIMIT OR A MINIMUM OF 25 LINEAR FEET FROM THE EDGE OF TRAVELED WAY (WHICHEVER IS GREATER). THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE BID ITEM SHOWN IN THE BID SCHEDULE.

1. THE CONTRACTOR SHALL IMPLEMENT ONE OR BOTH OF THE FOLLOWING MEASURES FOR DUST CONTROL ON THIS SITE:
 - 1.1 SPRAYING OF WATER SO AS NOT TO GENERATE ADDITIONAL RUNOFF. NO DUST PALLIATIVE MATERIALS OTHER THAN WATER WILL BE USED ON THIS PROJECT. IF NON-POTABLE WATER IS TO BE USED, IT MUST BE CONVEYED IN TANKS OR PIPES CLEARLY LABELED AS "NON-POTABLE WATER - DO NOT DRINK".
 - 1.2 COVERS FOR EXPOSED AREAS.

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL MATERIALS AND EQUIPMENT STORED ONSITE SHALL HAVE ADEQUATE COVERINGS AND CONTAINMENT TO PREVENT LEAKAGES AND SPILLS.
2. ALL MATERIALS AND EQUIPMENT SHALL BE STORED IN DESIGNATED AND APPROVED AREAS, THE AREA SHALL BE BERMED WITH EARTH DIKES THAT THE CONTRACTOR SHALL INSPECT AND MAINTAIN WEEKLY.
3. ALL FLAMMABLE, REACTIVE, AND/OR IGNITABLE LIQUIDS MUST COMPLY WITH LOCAL FIRE CODES.
4. DURING THE RAINY SEASON (OCTOBER THROUGH APRIL) THE CONTRACTOR SHALL ENSURE THAT MATERIALS ARE COVERED.
5. NO CHEMICALS, DRUMS, OR BAGGED MATERIALS SHALL BE STORED DIRECTLY ON THE GROUND; ITEMS SHALL BE PLACED ON PALLETS AND/OR IN SECONDARY CONTAINMENT.
6. IF DRUMS MUST BE KEPT UNCOVERED, THE CONTRACTOR SHALL STORE THEM AT A SLIGHT ANGLE TO REDUCE PONDING OF RAINWATER AND REDUCE CORROSION.
7. WHEN DANGEROUS MATERIALS AND/OR LIQUID CHEMICALS ARE UNLOADED ONSITE, THE CONTRACTOR SHALL HAVE EMPLOYEES TRAINED IN EMERGENCY SITUATION CLEANUP PROCEDURES PRESENT.

1. EQUIPMENT AND VEHICLES TRAVELING ON-SITE SHALL BE INSPECTED REGULARLY FOR LEAKS AND BE REPAIRED IMMEDIATELY; DO NOT ALLOW LEAKING VEHICLES ON-SITE. KEEP VEHICLES AND EQUIPMENT CLEAN (DO NOT ALLOW EXCESSIVE BUILDUP OF OIL AND GREASE).
2. USE OFFSITE REPAIR SHOPS WHENEVER POSSIBLE; IF ON-SITE REPAIRS ARE NECESSARY, USE THE DESIGNATED AREA SURROUNDED BY EARTH BERMS. THE CONTRACTOR SHALL INSPECT THIS AREA WEEKLY AND AFTER EACH RAINFALL EVENT TO ENSURE THAT THE EARTH BERMS ARE IN PLACE AND FUNCTIONING PROPERLY; ANY NON-FUNCTIONING BERMS SHALL BE REPAIRED IMMEDIATELY.
3. USE DRY CLEAN-UP METHODS FOR SPILLS AS MUCH AS POSSIBLE; USE ABSORBENT MATERIALS FOR SMALL SPILLS. DISPOSE OF PROPERLY. USE A SECONDARY CONTAINMENT DURING FLUID DICHARGES AND REPAIRS TO CATCH SPILLS.
4. SEGREGATE AND RECYCLE WASTES (INCLUDING BUT NOT LIMITED TO: USED OIL AND OIL FILTERS, BATTERIES, ETC.). KEEP HAZARDOUS WASTES SEPARATE FROM NON-HAZARDOUS WASTES; AFTER REPAIRS, ETC., PROMPTLY TRANSFER USED FLUIDS AND WASTES TO THEIR PROPER CONTAINMENT AREAS AND CONTAINERS.

1. DITCH BLOCKS, EARTHEN DIKES, AND DITCHES MAY BE ADDED AT LOCATIONS DESIGNATED BY THE OWNER OR AS SHOWN ON THESE PLANS. ALL FURROW DITCHES AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN TO THE LIMITS OF THE RIGHT OF WAY. DITCH BLOCKS, EARTHEN DIKES, AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THE WORK AS SHOWN IN THE BID SCHEDULE.

1. SAW CUT EXISTING ASPHALT PAVEMENT WHERE OLD ASPHALT IS TO TIE INTO NEW CHIP SEAL. TAPER NEW CHIP SEAL SURFACING TO MATCH THE EXISTING PAVEMENT OR CHIP SEAL SURFACE SECTION AT THE POINT OF TIE IN TO PROVIDE FOR A SMOOTH TRANSITION. THIS WORK SHALL BE INCIDENTAL TO CHIP SEALING.
2. REMOVE AND DISPOSE OF REMOVED ASPHALT OR CHIP SEAL AT THE BEGINNING OF THE PROJECT AND IN STRICT ACCORDANCE WITH APPLICABLE RULES AND REGULATIONS FOR SUCH REMOVAL, TRANSPORT, AND DISPOSAL. WORK SHALL BE INCIDENTAL TO CHIP SEALING.

1. QUANTITIES AND LENGTHS OF ITEMS PROVIDED WITHIN THIS PLAN SET ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL QUANTITIES OF COMPONENTS REQUIRED FOR THE SUCCESSFUL AND SATISFACTORY COMPLETION OF THE PROJECT.

1. AREAS WITHIN THE PROJECT PERMITTER THAT ARE CULTURALLY SENSITIVE SHALL BE PROTECTED AGAINST DAMAGE FROM CONSTRUCTION ACTIVITIES. AT NO TIME SHALL SUCH CULTURALLY SENSITIVE AREAS BE ENTERED, PARKED UPON, STOCK PILED UPON, OR HAVE ANY OTHER ACTIVITY ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT IN ANY WAY INFRINGING UPON, DETERIORATE, DESTROY, OR RENDER TO A STATE OR CONDITION UNACCEPTABLE ANY CULTURALLY SENSITIVE AREA. THE CONTRACTOR AGREES TO PROTECT ALL SUCH AREAS DURING ANY AND ALL ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT.

1. AGGREGATE BASE SHALL BE CLASS 3 AND SHALL CONFORM TO THE CALTRANS STANDARD SPECIFICATIONS. THE AGGREGATE BASE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH CALTRANS SPECIFICATIONS.
2. ASPHALT CONCRETE SHALL CONFORM TO TYPE B, 1/2" MAXIMUM, MEDIUM GRADATION. THE MIX AND GRADATION USED SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER. THE ASPHALT CONCRETE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS.
3. STRIPING AND SIGNING SHALL CONFORM TO CALTRANS SPECIFICATIONS.

1. EXCAVATION AND BACKFILL OF STORM DRAINS, WILL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE STORM DRAIN. THEREFORE, NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
2. STORM DRAIN PIPE SHALL BE SMOOTH INTERIOR WALL, TYPE S CORRUGATED POLYETHYLENE PIPE. PIPE SHALL BE AS SPECIFIED IN AASHTO DESIGNATION : M 294 , MANUFACTURED FROM HIGH DENSITY POLYETHYLENE (HDPE) VIRGIN COMPOUNDS. THE CELL CLASSIFICATION SHALL BE 324420C PER ASTM D3350 OR HIGHER. THE PIPE SHALL BE ADS N-12 OR APPROVED EQUAL.
3. PIPE JOINTS SHALL BE WATER TIGHT. THE JOINT SHALL BE EITHER: INTEGRAL BELL COUPLERS WITH O-RING GASKET ON SPIGOT, ADS N-12 PRO LINK ULTRA WT PIPE, OR BELL/BELL COUPLERS WITH O-RING GASKET, ADS PRO LINK WT OR APPROVED EQUAL. JOINTS SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

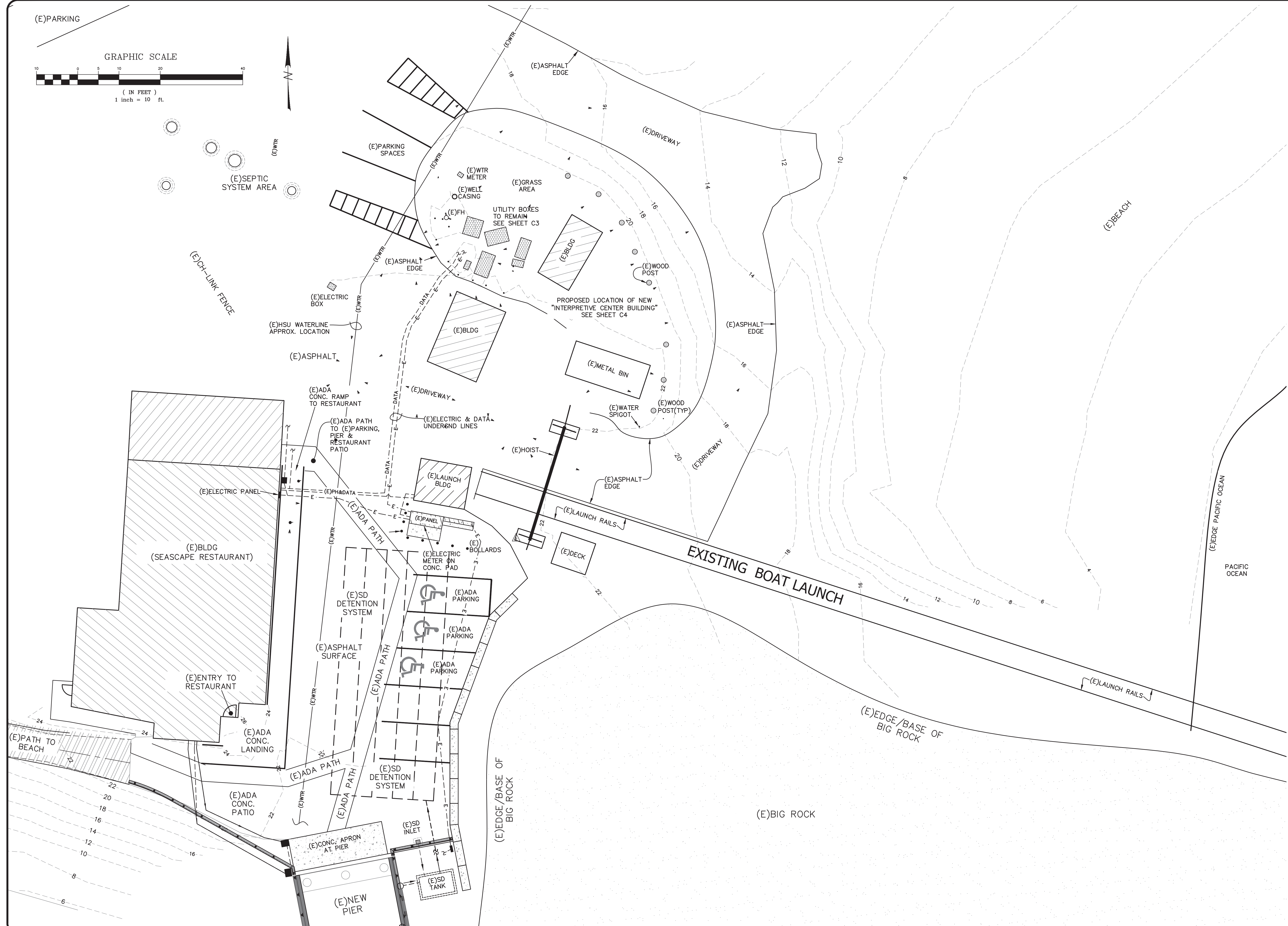
1. AGGREGATE BASE SHALL BE CLASS 2 AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATIONS. THE AGGREGATE BASE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH CALTRANS SPECIFICATIONS.
2. ASPHALT CONCRETE SHALL CONFORM TO TYPE B, 1/2" MAXIMUM, MEDIUM GRADATION. MIX AND GRADATION SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER. THE ASPHALT CONCRETE SHALL BE PLACED IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS.
3. STRIPING AND SIGNING SHALL CONFORM TO THE COUNTY AND STATE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

1. WATER PIPE - PVC, C900, 150 PSI. - J-M "BLUE BRUTE" OR APPROVED EQUAL OR AS DIRECTED BY HOOPA VALLEY HOUSING AUTHORITY.

WATER —
POWER —
GAS —
PHONE —

TOPOGRAPHY SURVEY BY TRINITY VALLEY CONSULTING ENGINEERS, INC.

[illegible]

[illegible]

EXISTING SITE PLAN

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

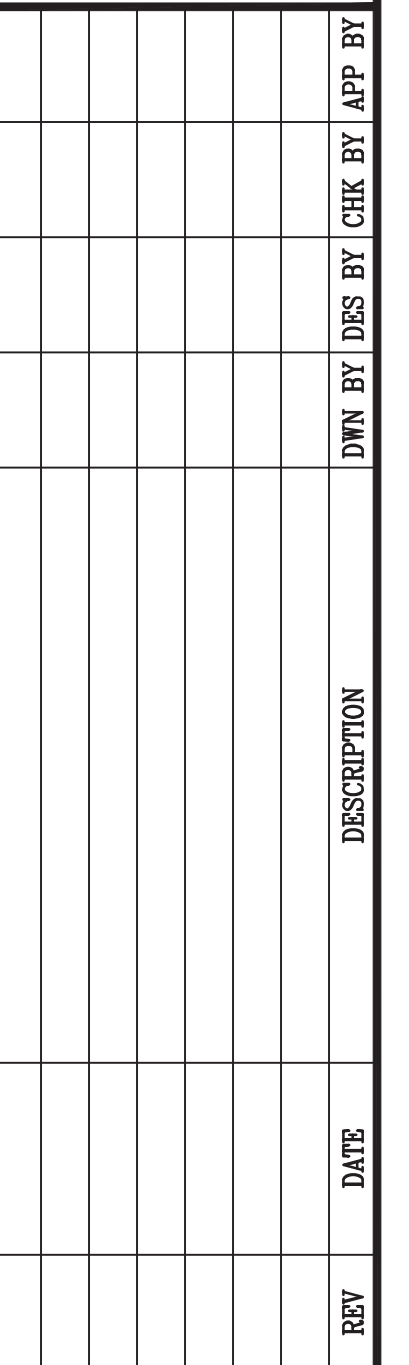
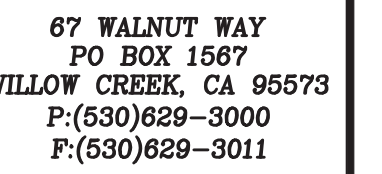
HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:
MARCH 4, 2020

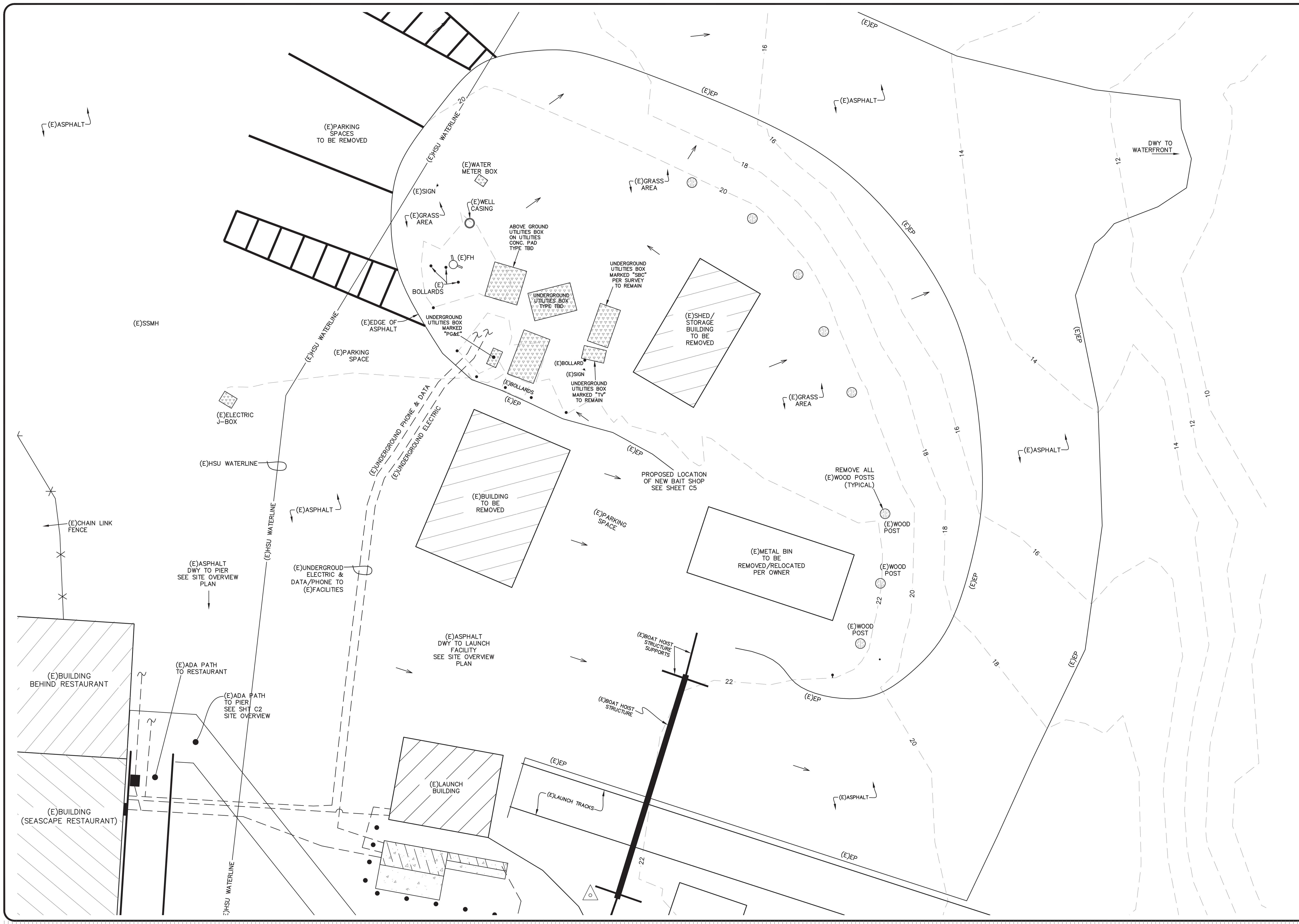
SCALE:
1" = 10'

PROJECT NO:
427.11

DRAWING NO:
C2



DATE OF ISSUE: MARCH 4, 2020
SCALE: $1" = 5'$
PROJECT NO: 427.11
DRAWING NO: C3



TVCE

67 Walnut Way
PO Box 1567
Willow Creek, CA 95573
530.629.3000
WWW.TVCE.BIZ

REGISTERED PROFESSIONAL ENGINEER
JOSHUA T. MONTGOMERY
C60687
EXP. 12-31-2023
CIVIL
STATE OF CALIFORNIA

DATE	REV	DESCRIPTION	DWN BY	CHK BY	APP BY
5/4/2022	1	PRELIMINARY DESIGN			
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SITE GRADING PLAN

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA 95570

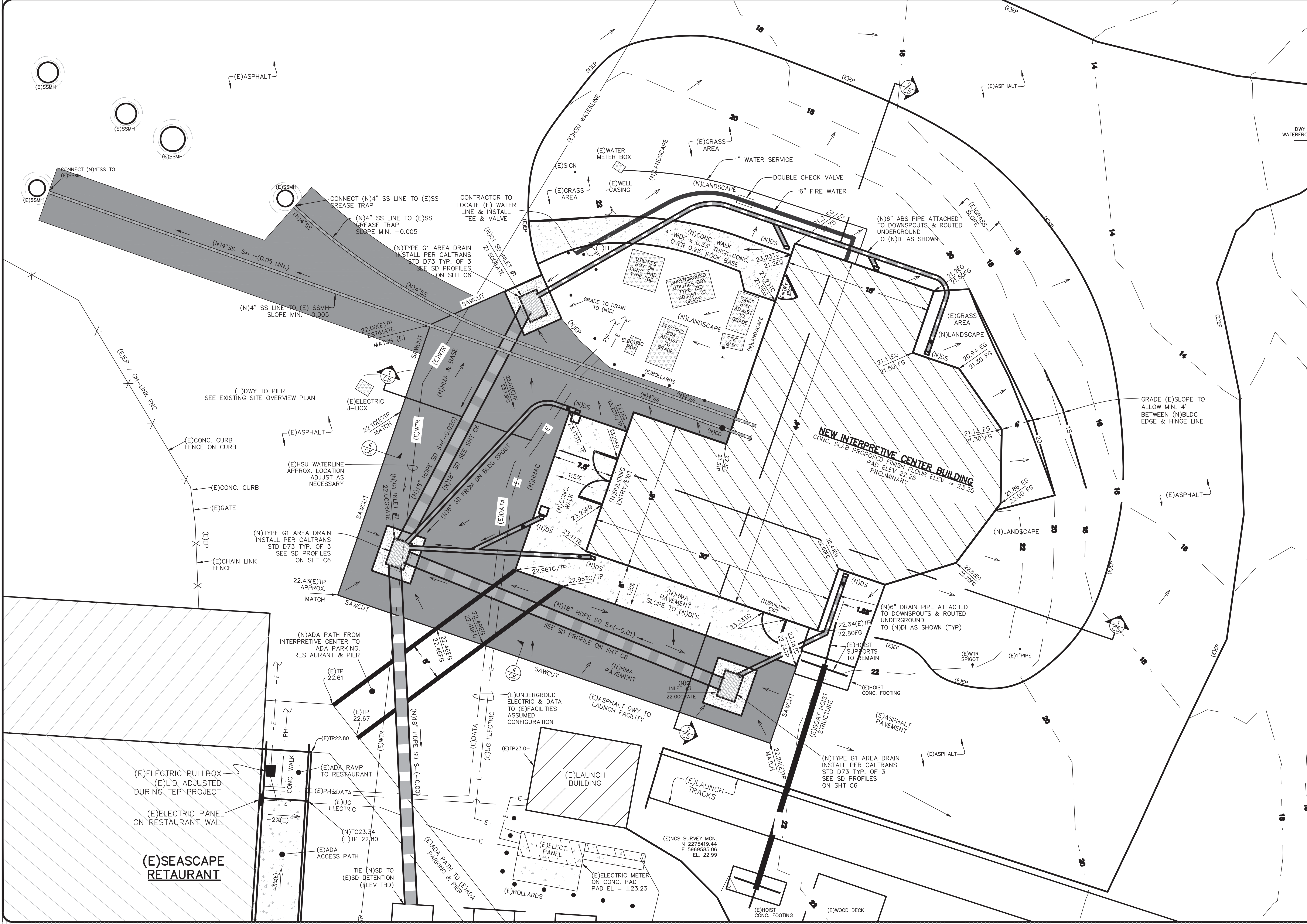
HUMBOLDT COUNTY, CA

DATE OF ISSUE:
June 2023

SCALE:
1" = 5'

PROJECT NO:
427.11

DRAWING NO:
C4



TVCE



67 WALNUT WAY
PO BOX 1587
WILLOW CREEK, CA 95579
P:(530)629-3000
F:(530)629-3011



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

GRADING DETAILS

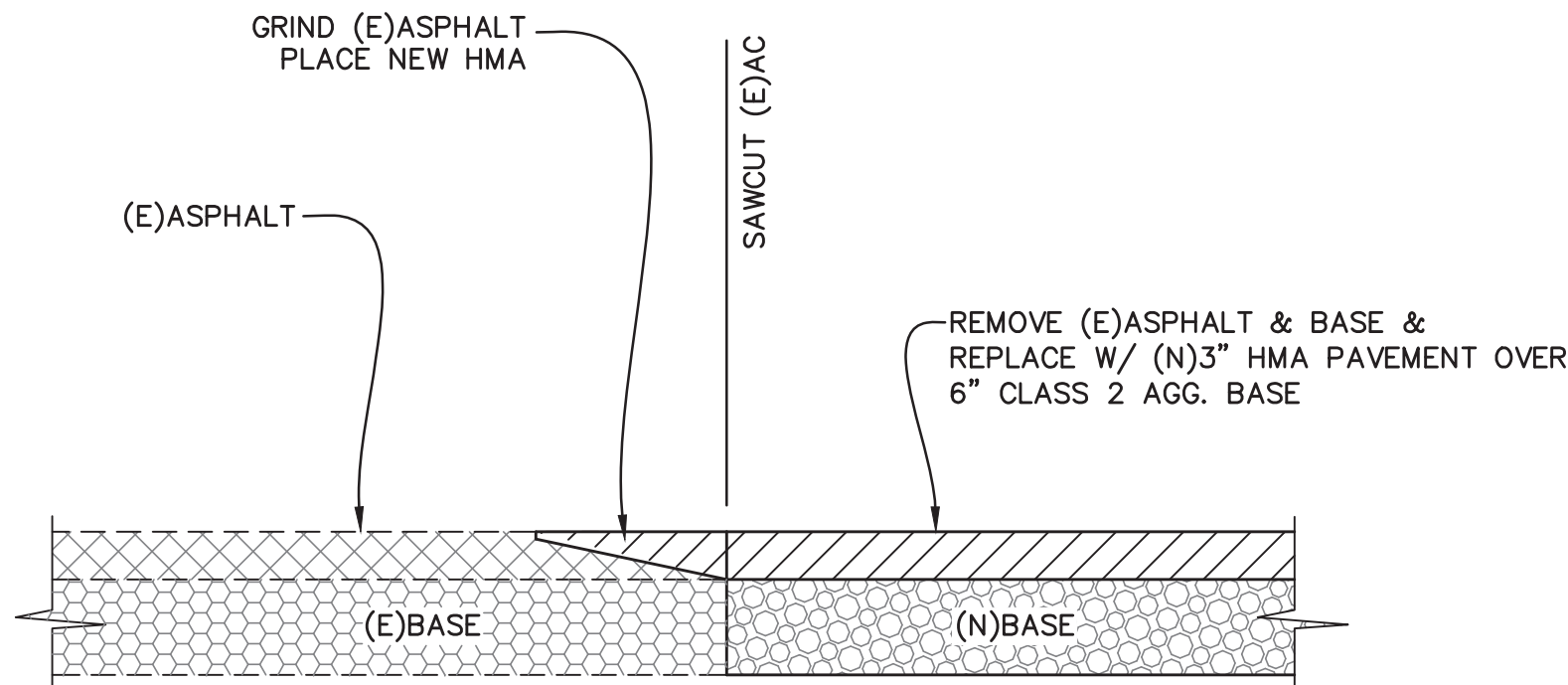
HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:
MARCH 4, 2020

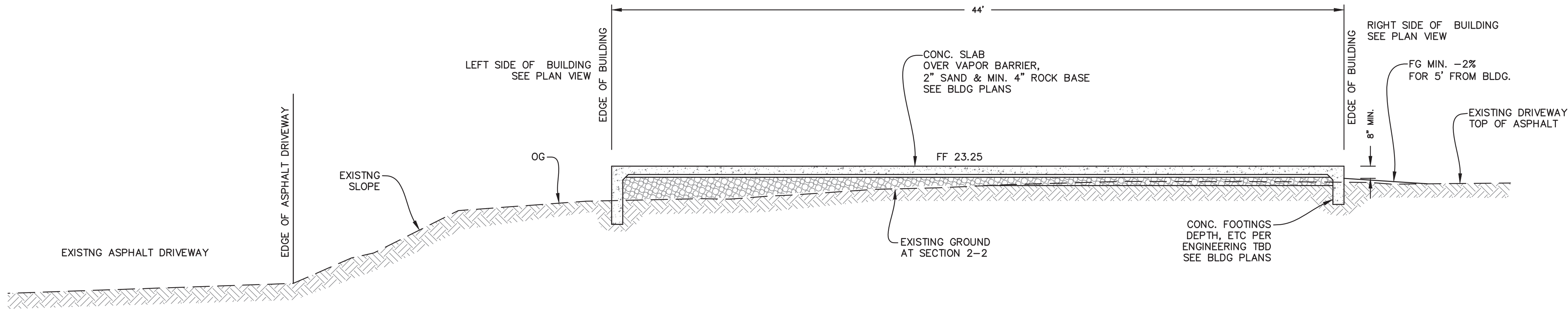
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PROJECT NO:
427.11

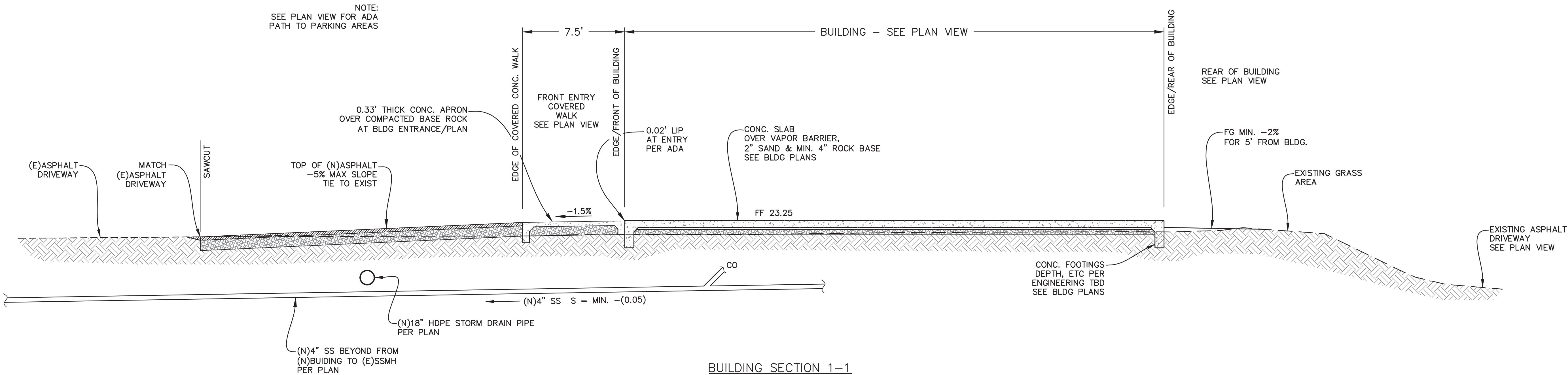
DRAWING NO:
C5



NEW TO EXISTING
ASPHALT DETAIL
H: 1" = 1'
V: 1" = 1'



BUILDING SECTION 2-2
H: 1" = 4'
V: 1" = 4'



BUILDING SECTION 1-1
H: 1" = 4'
V: 1" = 4'

TVCE



67 WALNUT WAY
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REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

STORM DRAIN PROFILES

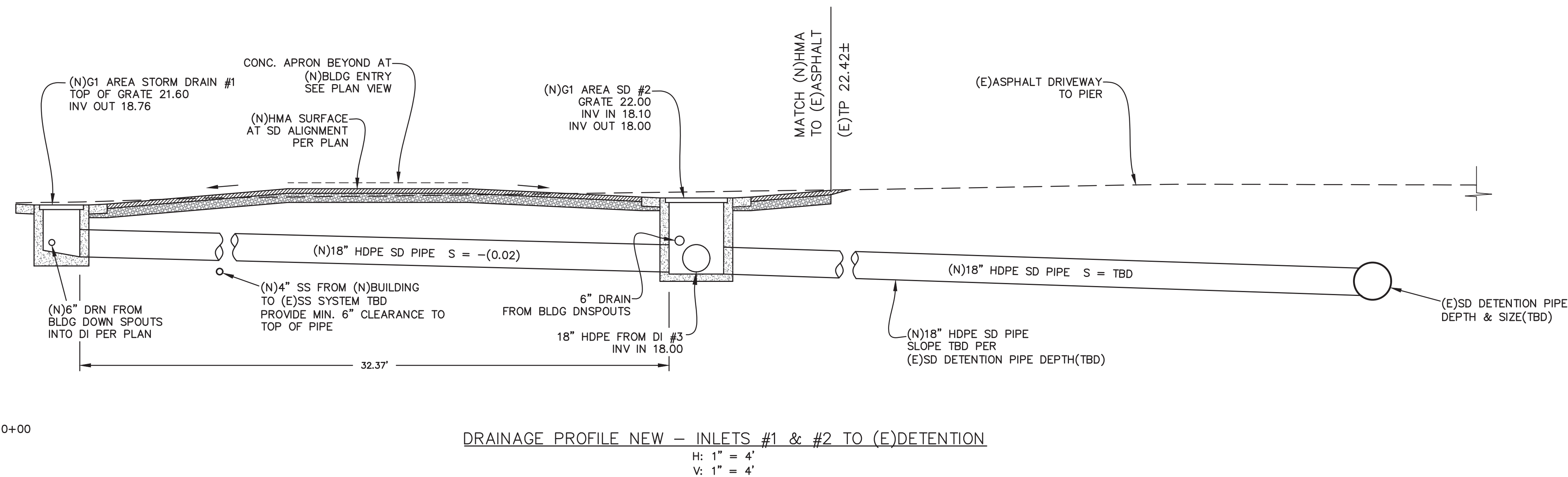
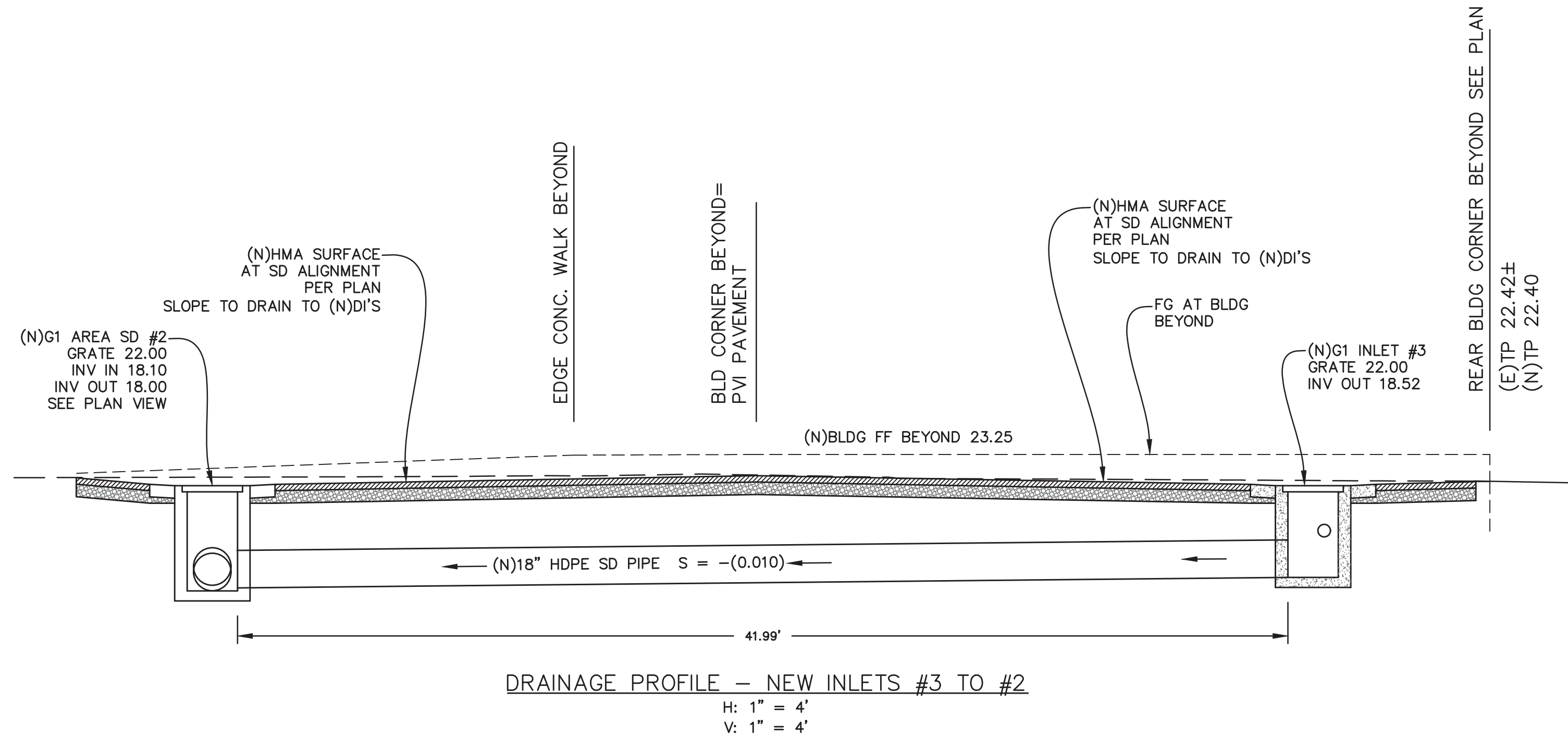
HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:
MARCH 4, 2020

SCALE:
AS SHOWN

PROJECT NO:
427.11

DRAWING NO:
C6





EROSION AND SEDIMENT CONTROL NOTES:

1. EROSION CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE INSTALLED AND MAINTAINED DURING THE WET SEASON (OCTOBER 1 THROUGH APRIL 30). SEDIMENT CONTROL BMP'S SHALL BE INSTALLED AND MAINTAINED ALL YEAR.
2. ALL DRAINAGE INLETS IMMEDIATELY DOWNSTREAM OF THE WORK AREA AND WITHIN THE WORK AREA SHALL BE PROTECTED WITH SEDIMENT CONTROL AND INLET FILTER BAGS, WHERE APPLICABLE.
3. STABILIZED CONSTRUCTION ACCESS LOCATIONS SHALL BE CONSTRUCTED WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES PAVED AREAS. THE STABILIZED ACCESS SHALL BE MAINTAINED ON A YEAR-ROUND BASIS UNTIL THE COMPLETION OF CONSTRUCTION.
4. ALL AREAS DISTURBED DURING CONSTRUCTION, BY GRADING, TRENCHING, OR OTHER ACTIVITIES, SHALL BE PROTECTED FROM EROSION DURING THE WET SEASON (OCTOBER 1 THROUGH APRIL 30). HYDROSEED, IF UTILIZED, MUST BE PLACED BY SEPTEMBER 15. HYDROSEED PLACED DURING THE WET SEASON SHALL USE A SECONDARY EROSION PROTECTION METHOD.
5. SENSITIVE AREAS AND AREAS WHERE EXISTING VEGETATION IS BEING PRESERVED SHALL BE PROTECTED WITH CONSTRUCTION FENCING. SEDIMENT CONTROL BMP'S SHALL BE INSTALLED WHERE ACTIVE CONSTRUCTION AREAS DRAIN INTO SENSITIVE OR PRESERVED VEGETATION AREAS.
6. SEDIMENT CONTROL BMP'S SHALL BE PLACED ALONG THE PROJECT PERIMETER WHERE DRAINAGE LEAVES THE PROJECT. SEDIMENT CONTROL BMP'S SHALL BE MAINTAINED YEAR-ROUND UNTIL THE CONSTRUCTION IS COMPLETE OR THE DRAINAGE PATTERN HAS BEEN CHANGED AND NO LONGER LEAVES THE SITE.
7. ALL SLOPES GREATER THAN 10:1 SHALL RECEIVE HYDROSEEDING OR OTHER EROSION CONTROL.
8. ALL FENCING AND EROSION CONTROL METHODS SHALL BE MAINTAINED THROUGHOUT ALL ON-SITE CONSTRUCTION ACTIVITIES.

ALL BMPS SHALL BE INSTALLED AND FUNCTIONING PRIOR TO ANY ANTICIPATED STORM EVENT.

VEHICLE/EQUIPMENT WASH AREA NOTES:

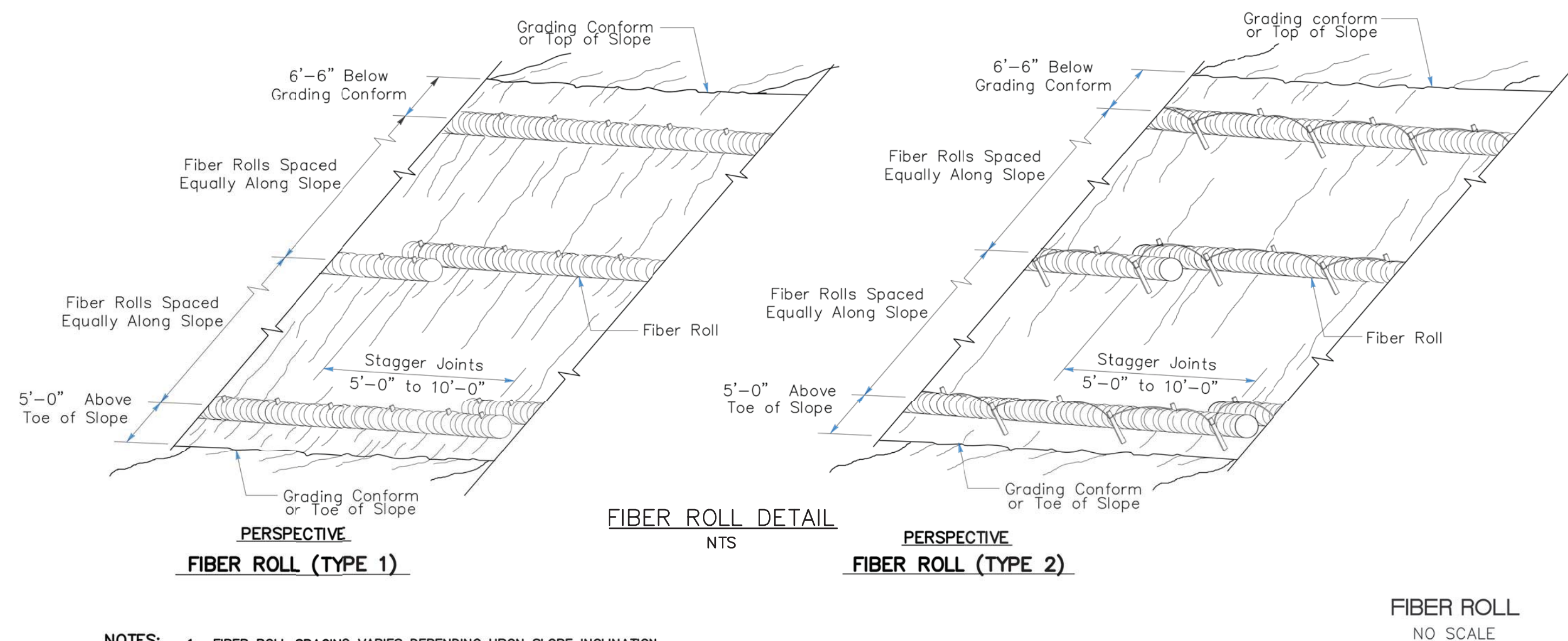
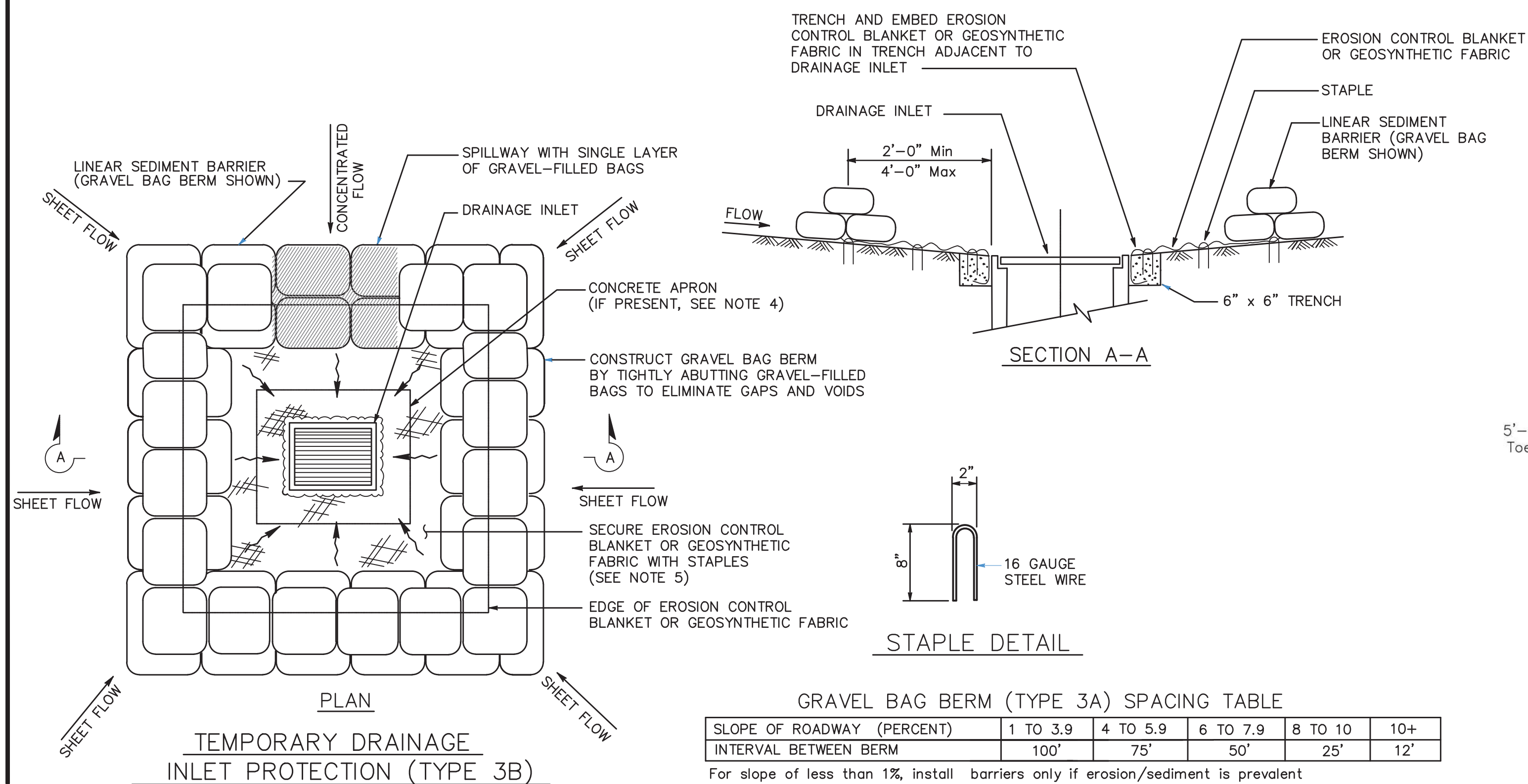
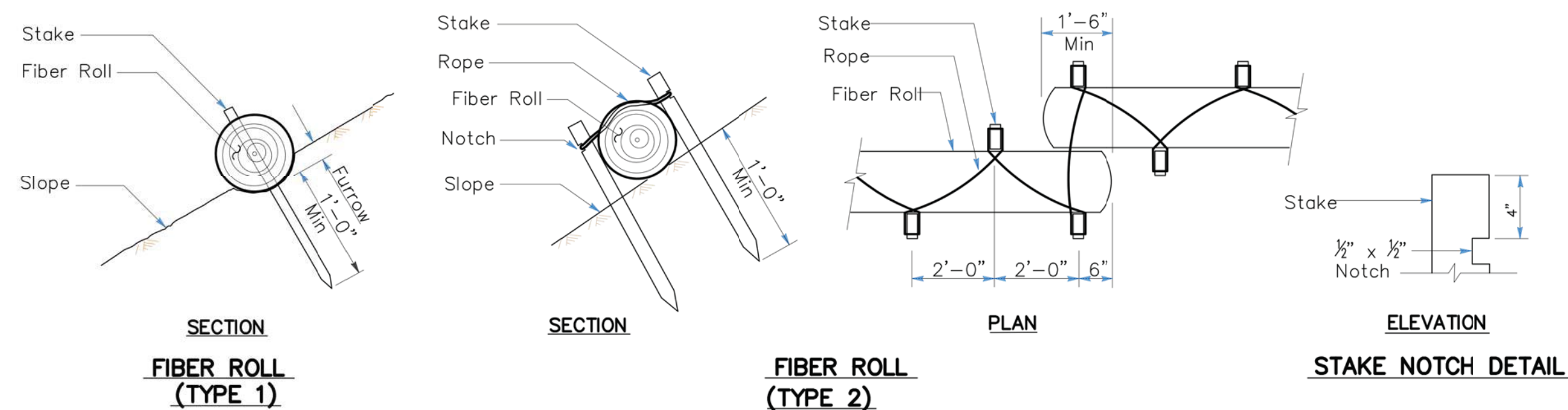
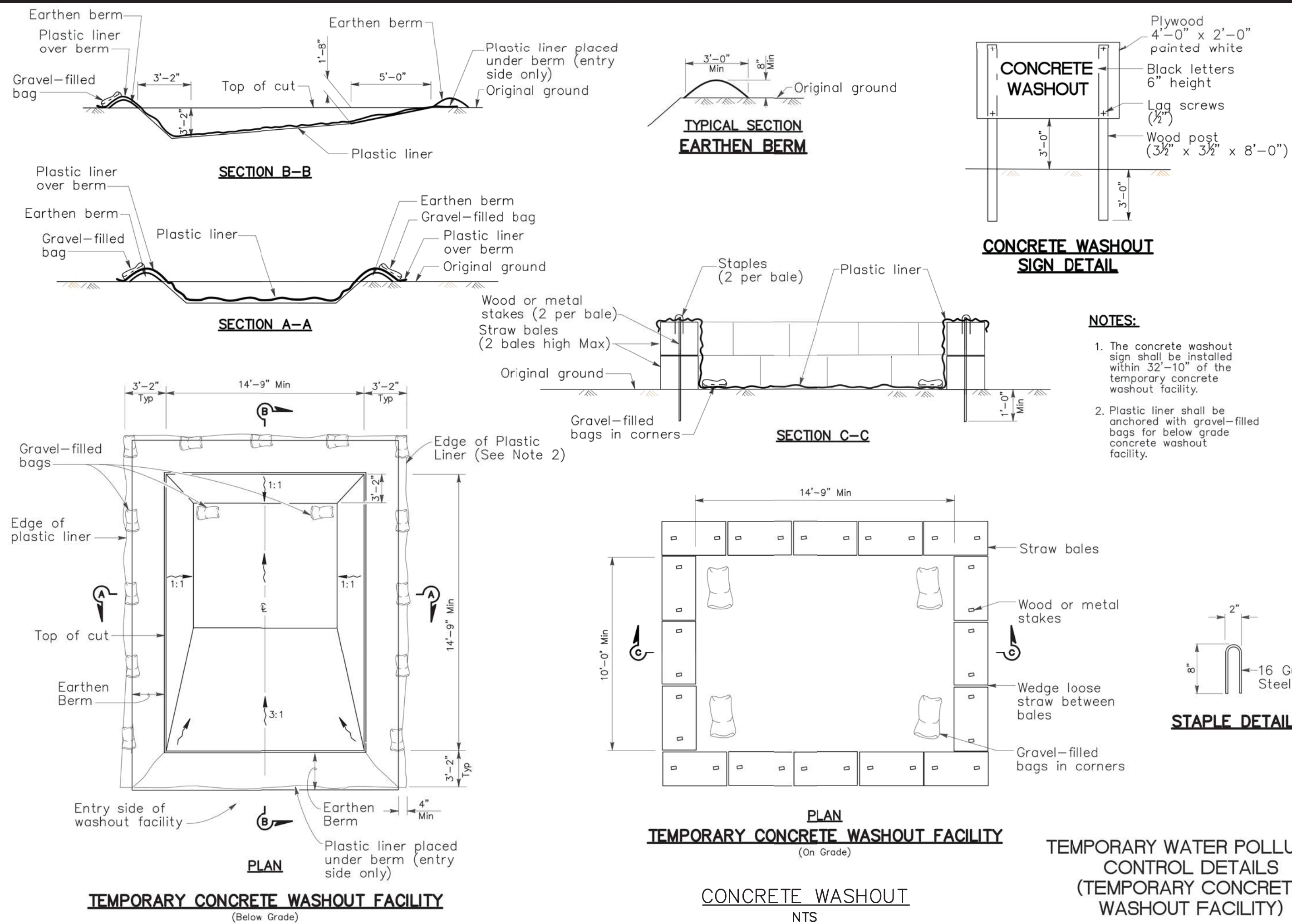
1. ALL ONSITE CONCRETE WASHOUT, VEHICLE AND EQUIPMENT WASHING SHALL TAKE PLACE IN A DESIGNATED AND APPROVED AREA. THE AREA SHALL BE BERMED WITH EARTH DIKES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT AND MAINTAIN THIS AREA WEEKLY TO PREVENT WASH WATER CONTACT WITH STORM WATER, CREEKS, RIVERS, AND OTHER WATER BODIES.
2. IF THE CONCRETE WASHOUT AND VEHICLE/EQUIPMENT WASHING IS TO TAKE PLACE OFFSITE, THE LOCATION MUST BE CHOSEN BY THE CONTRACTOR AND APPROVED BY THE OWNER PRIOR TO CONSTRUCTION BEGINNING.
3. USE PHOSPHATE-FREE, BIODEGRADABLE SOAPS AND AS LITTLE WATER AS POSSIBLE.
4. EDUCATE EMPLOYEES AND SUBCONTRACTORS ON POLLUTION PREVENTION MEASURES.
5. NO STEAM-CLEANING IS PERMITTED ONSITE.

BMP MAINTENANCE NOTES:

1. ALL OF THE IMPLEMENTED BMPS SHALL BE INSPECTED AND CORRECTED AS NEEDED PRIOR TO, DURING, AND DIRECTLY FOLLOWING ANY STORM EVENT, OR WHENEVER PRACTICAL.

EROSION CONTROL CONSTRUCTION NOTES:

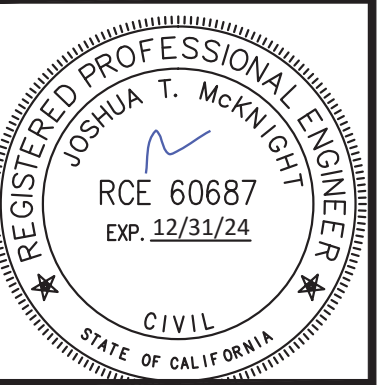
- ① ALL ONSITE INLET STRUCTURES AND EXISTING INLET STRUCTURES ALONG ADJACENT DEVELOPMENTS SHALL BE PROTECTED. ALL NEW INLET STRUCTURES TO BE STAMPED "NO DUMPING - FLOWS TO STREAM".
- ② INSTALL STRAW FIBER ROLLS.



- NOTES:**
1. FIBER ROLL SPACING VARIES DEPENDING UPON SLOPE INCLINATION.
 2. LOCATE FIBER ROLLS ON LEVEL CONTOURS SPACED AS FOLLOWS:
 - SLOPE INCLINATION OF 4:1 (H:V) OR FLATTER: FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 20 FT.
 - SLOPE INCLINATION BETWEEN 4:1 AND 2:1 (H:V): FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 15 FT. (A CLOSER SPACING IS MORE EFFECTIVE).
 - SLOPE INCLINATION GREATER THAN 2:1 (H:V): FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 10 FT. (A CLOSER SPACING IS MORE EFFECTIVE).
 3. TURN THE ENDS OF THE FIBER ROLL UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
 4. STAKE FIBER ROLLS INTO A 2 TO 4 IN. DEEP TRENCH WITH A WIDTH EQUAL TO THE DIAMETER OF THE FIBER ROLL.
 - DRIVE STAKES AT THE END OF EACH FIBER ROLL AND SPACED AT MAXIMUM ON CENTER.
 - USE WOOD STAKES WITH A NOMINAL CLASSIFICATION OF 0.75 BY 0.75 IN. AND MINIMUM LENGTH OF 24 IN.
 5. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHOULD BE OVERLAPPED, NOT ABUTTED.



67 WALNUT WAY
PO BOX 1567
WILLOW CREEK, CA 95573
P:(530)629-3000
F:(530)629-3011



NOTES:

1. The concrete washout sign shall be installed within 32'-10" of the temporary concrete washout facility.
2. Plastic liner shall be anchored with gravel-filled bags for below grade concrete washout facility.

CONCRETE WASHOUT
SIGN DETAIL

STAPLE DETAIL

2"

2"

16 Gauge Steel wire

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CONCRETE WASHOUT FACILITY)

NO SCALE

[illegible]

TRINIDAD, RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

DATE OF ISSUE:
MARCH 4, 2020

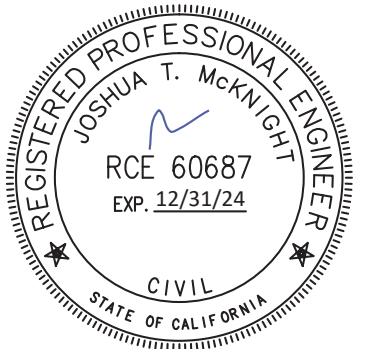
SCALE:
AS SHOWN

PROJECT NO:
427.11

DRAWING NO:
C8



67 WALNUT WAY
PO BOX 1567
WILLOW CREEK, CA 95573
P:(530)629-3000
F:(530)629-3011



DATE	REV	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
5/4/2022	1	PRELIMINARY DESIGN	JTM	JTM	JTM	JTM
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TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA 95570

WATER DETAILS

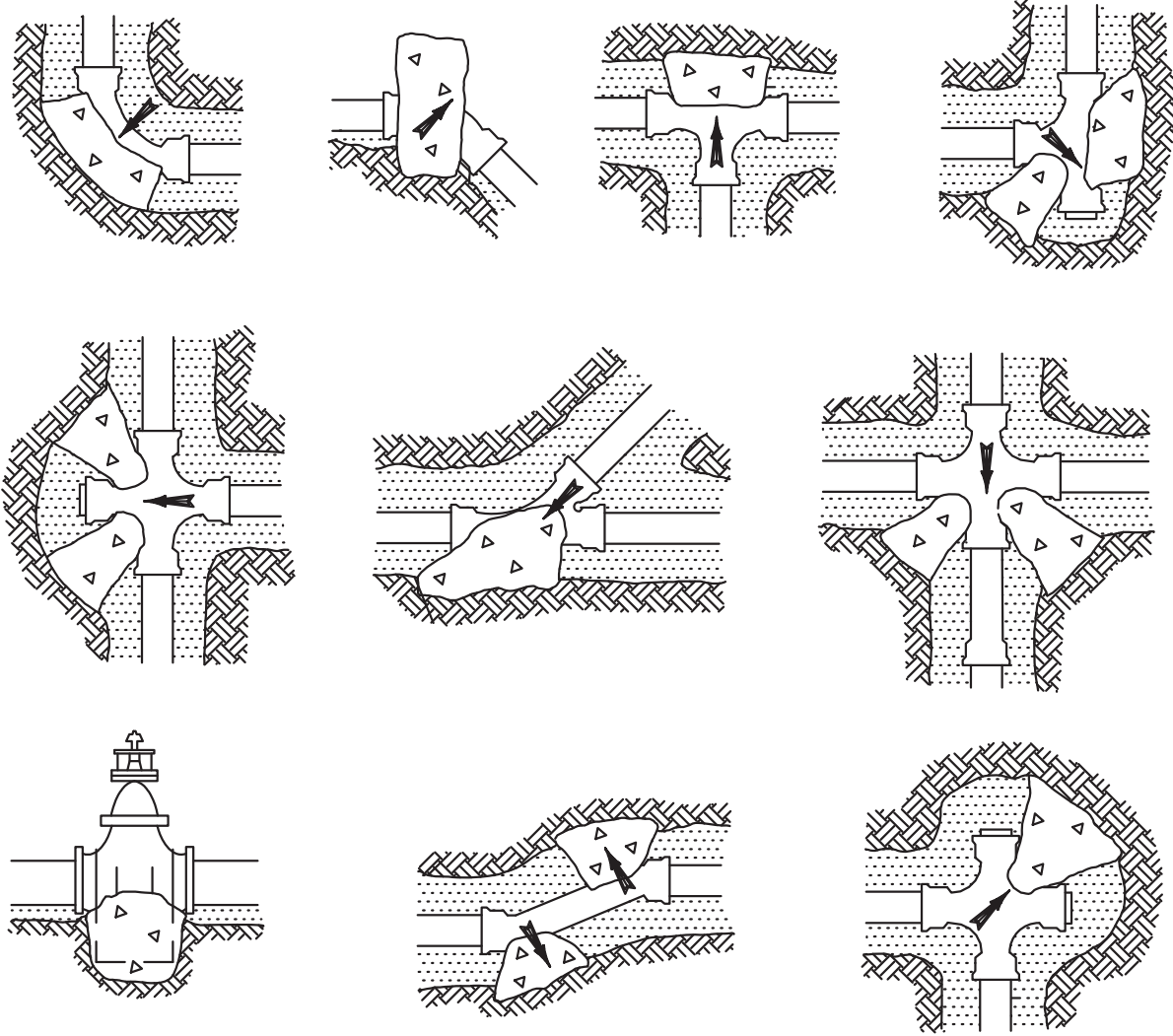
HUMBOLDT COUNTY, CA

DATE OF ISSUE:
July 2023

SCALE:
AS SHOWN

PROJECT NO:
427.11

DRAWING NO:
C9



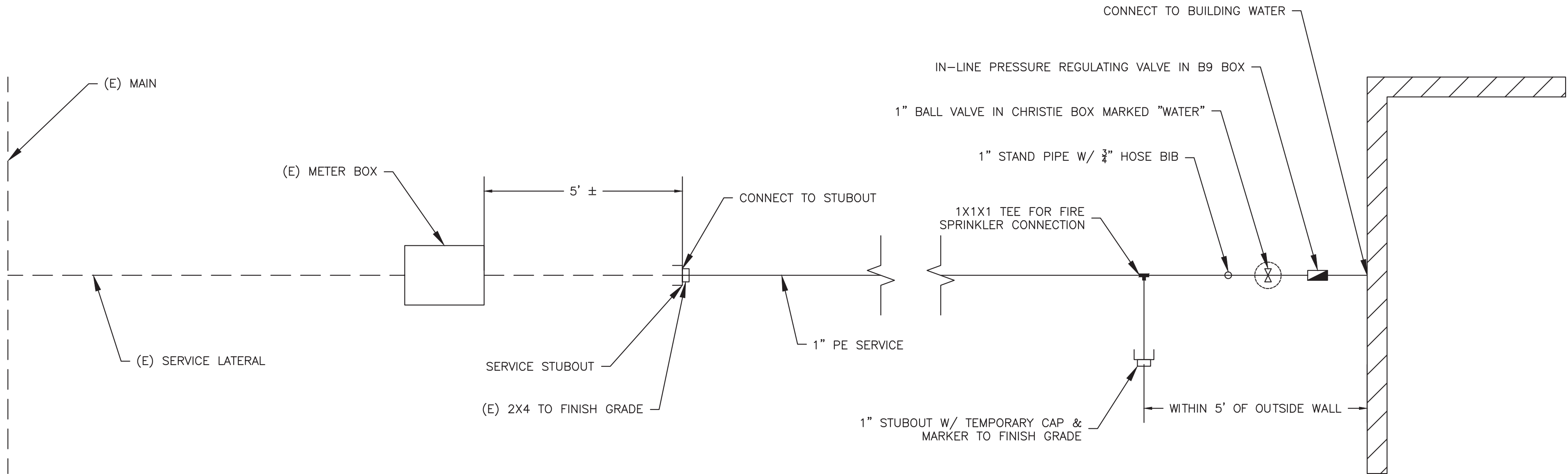
LOCATION OF THRUST BLOCKS
NTS

TABLE I THRUST(T) AT FITTINGS, IN POUNDS AT 100 PSI WATER PRESSURE					
PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
1 1/2"	284	401	217	111	56
2"	443	627	339	173	87
2 1/2"	649	918	497	253	127
3"	962	1361	736	375	189
4"	1810	2559	1385	706	355
6"	3739	5288	2862	1459	733
8"	6433	9097	4923	2510	1261
10"	9677	13685	7406	3776	1897
12"	13685	19353	10474	5340	2683
14"	18385	26001	14072	7174	3604
16"	23779	33628	18199	9278	4661

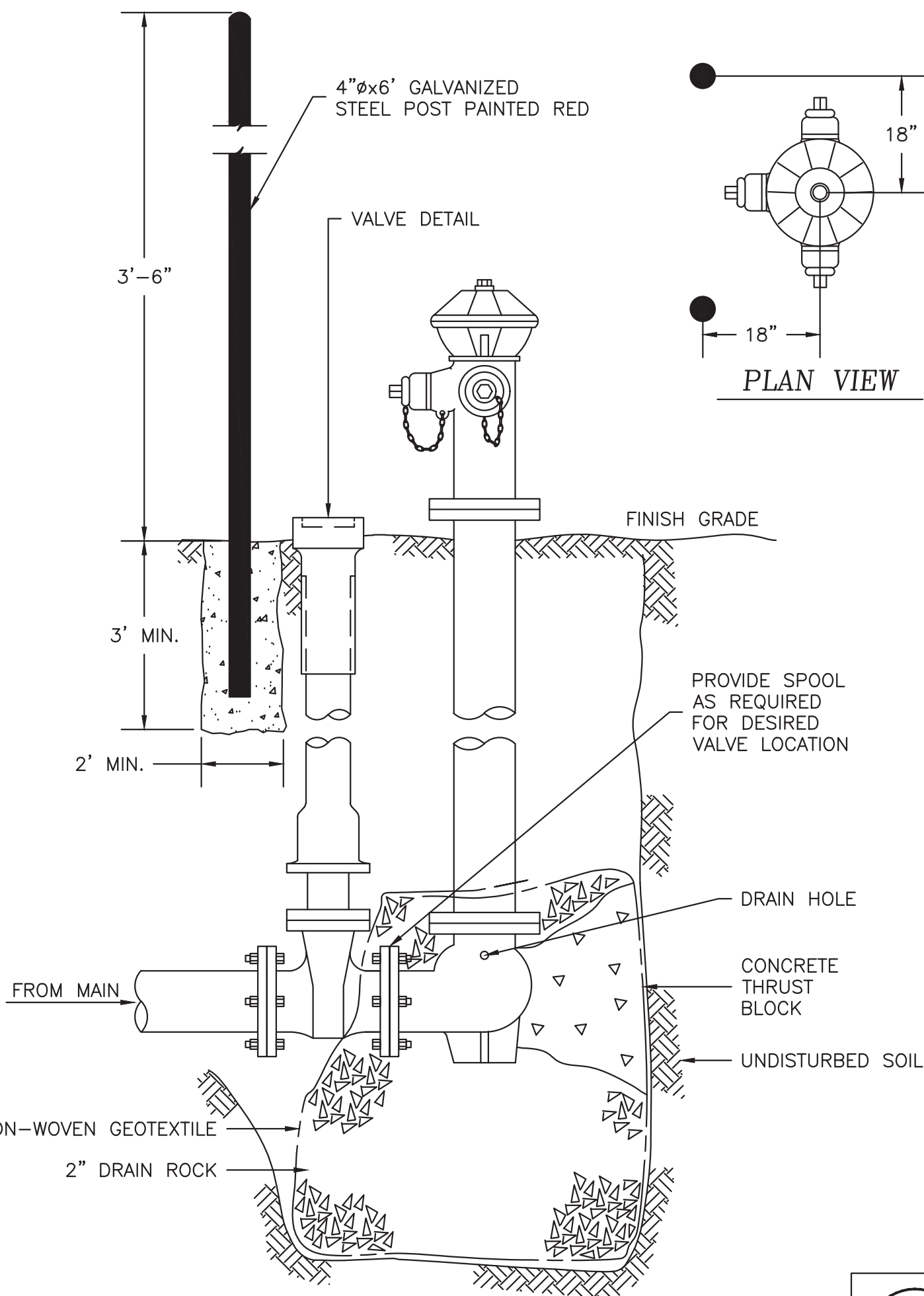
TABLE II SAFE BEARING LOADS (B)		WHERE: $A_{SB} = \frac{T}{B} \times \frac{PT}{100}$
SOIL	SAFE BEARING LOAD, POUNDS PER SQ. FT.	
SOUND SHALE	10000	A_{SB} = AREA OF BLOCK BEARING AGAINST UNDISTURBED TRENCH MATERIAL IN SQ. FT.
CEMENTED SAND AND GRAVEL	4000	
COARSE AND FINE COMPACTED SAND	3000	T = THRUST FACTOR FROM TABLE I IN POUNDS AT 100 PSI
MEDIUM CLAY (CAN BE SPADED)	2000	
SOFT CLAY	1000	B = SAFE BEARING LOAD FROM TABLE II IN POUNDS/SQ. FT.
MUCK	0	
		PT = PRESSURE USED FOR PIPELINE TEST IN PSI

THRUST BLOCK SIZING
NOT TO SCALE

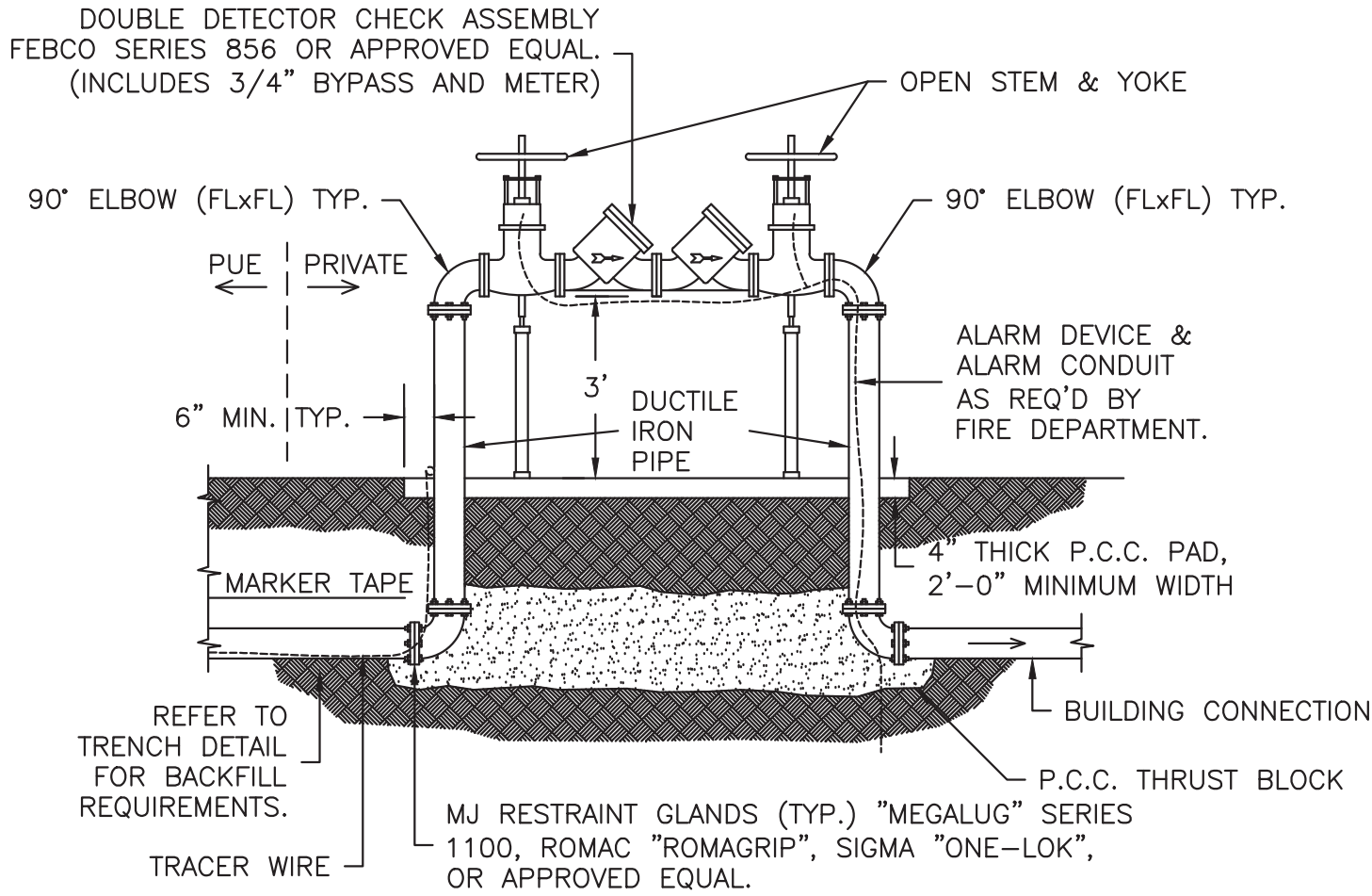
- THRUST BLOCK NOTES:**
- THRUST BLOCKS SHALL BE CONSTRUCTED SO THAT MAJOR BEARING SURFACE IS IN DIRECT LINE WITH THE MAJOR FORCE CREATED BY THE PIPE OR FITTINGS.
 - ALL CONCRETE SHALL BE CLASS 470-C-2500 PER "GREENBOOK".
 - CONCRETE SHALL BE FLUID ENOUGH SO THAT IT MAY BE WORKED AROUND THE FITTINGS. A DOUBLE LAYER OF 6 MIL POLYETHYLENE FILM SHALL BE PLACED BETWEEN CONCRETE AND METAL FITTINGS.
 - CONCRETE SHALL BE KEPT BEHIND THE BELL OF THE FITTINGS.
 - ALL THRUST BLOCKS FOR PIPES LARGER THAN 12" SHALL BE ENGINEERED.
 - A CONCRETE PAD SHALL BE PLACED UNDER ALL VALVES 12" AND LARGER FOR SUPPORT.
 - ALL ANCHOR BLOCKS SHALL BE CONSTRUCTED WITH A MINIMUM OF (2) #4 REBAR STRAPS.



SERVICE DETAIL
NTS

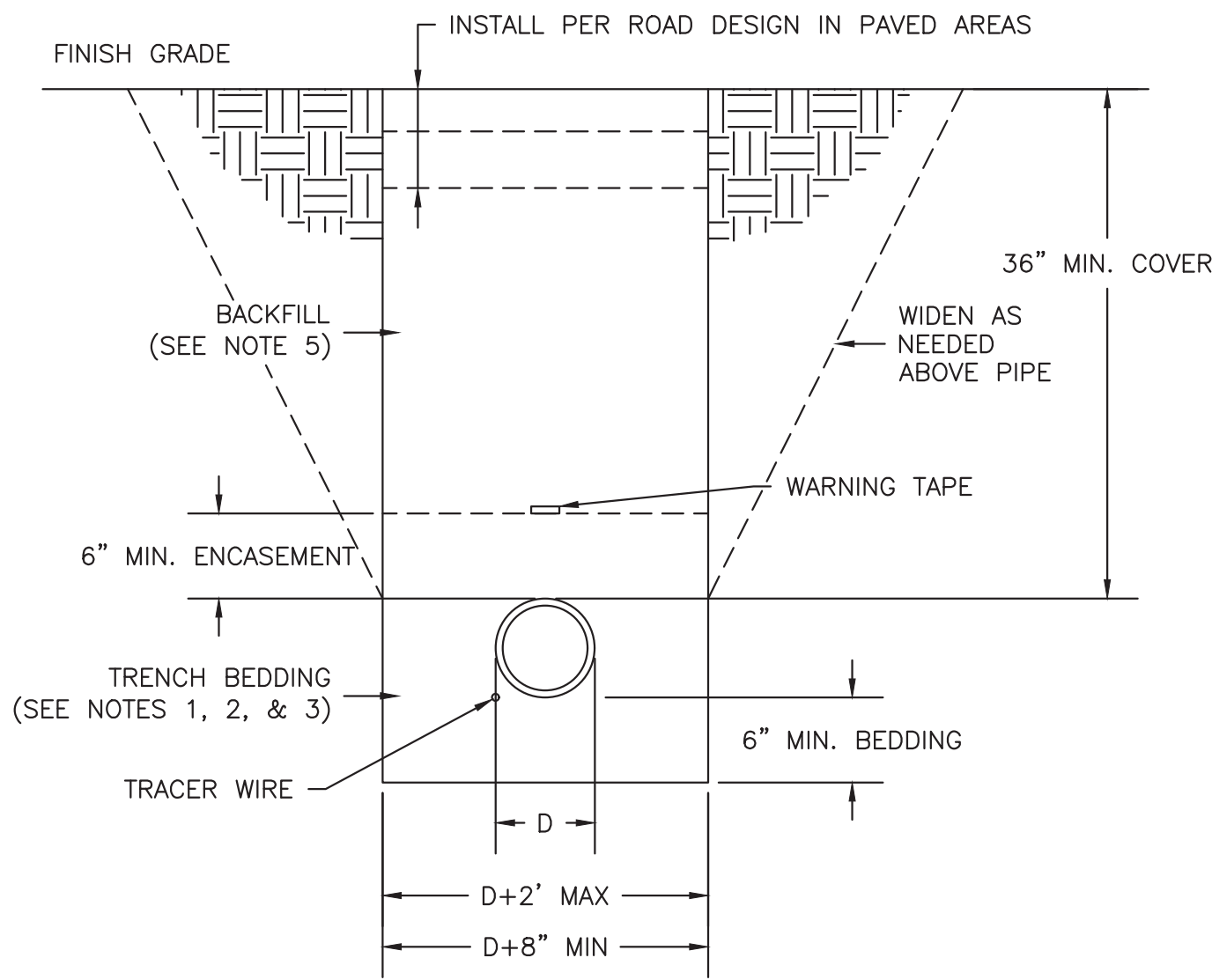


GATE VALVE DETAIL
NTS



- DDCA NOTES:**
- THE DOUBLE DETECTOR CHECK ASSEMBLY SHALL BE REQUIRED FOR USE IN CLASS I AND CLASS II FIRE SPRINKLER SYSTEMS ONLY. CLASS I AND II AUTOMATIC FIRE SPRINKLER SYSTEMS ARE THOSE WITH DIRECT CONNECTION TO THE PUBLIC WATER MAIN ONLY; NO RESERVOIRS OR AUXILIARY SOURCES, NO ANTIFREEZE OR ADDITIVES OF ANY KIND, AND ALL SPRINKLER DRAINS DISCHARGE TO THE ATMOSPHERE OR OTHER SAFE OUTLETS (AWWA MANUAL NO. M-14).
 - ASSEMBLY SHALL BE PROTECTED FROM DAMAGE BY VEHICLES AND MAY REQUIRE BOLLARDS.
 - FIRE SPRINKLER SYSTEM ALARM MONITORING SHALL BE PER CURRENT STATE AND LOCAL FIRE CODES.

DOUBLE CHECK VALVE DETAIL
NTS

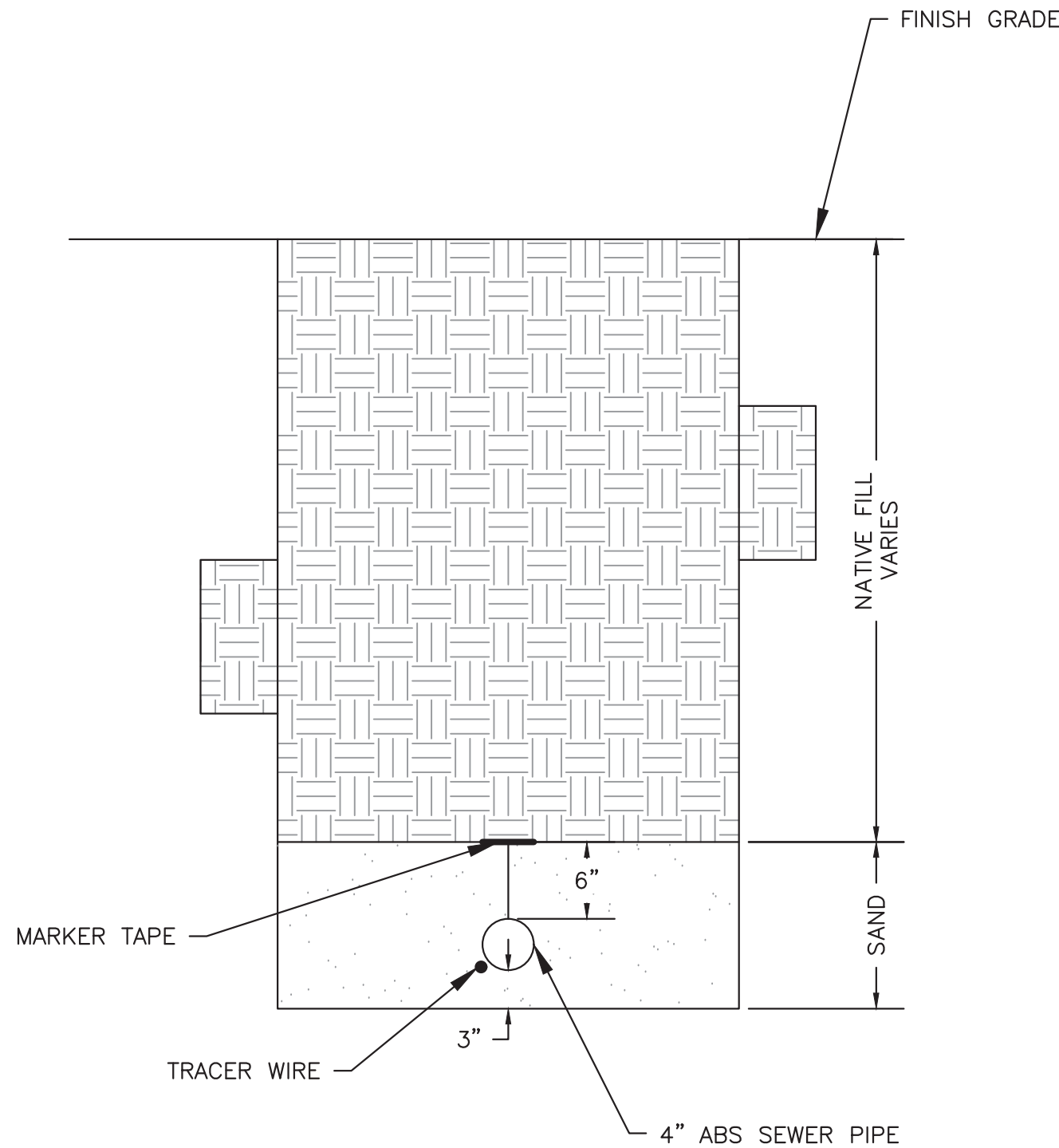


- PIPE TRENCH NOTES:**
- ALL TRENCHING WORK TO BE IN STRICT COMPLIANCE WITH 29 CFR 1926 PART P.
 - BACKFILL BY HAND, COMPACT OR CONSOLIDATE TO PROVIDE SOLID BEDDING UNDER AND AROUND PIPE.
 - BEDDING MATERIAL SHALL BE SAND.
 - IMPORT GRAVEL BACKFILL ABOVE PIPE ENCASEMENT SHALL BE STREAM GRAVEL OR CRUSHED ROCK AND BE REASONABLY WELL GRADED FROM COARSE TO FINE WITH A MAXIMUM SIZE OF 1-1/2" AND A MINIMUM SAND EQUIVALENT GREATER THAN 28.
 - JETTING WILL NOT BE ALLOWED.
 - IN ROAD CROSSINGS BACKFILL ABOVE PIPE SHALL BE 3" MINUS CLASS 2 AGGREGATE BASE. BASE CONSOLIDATION SHALL BE 95% RELATIVE COMPACTION PER ASTM 2922. A 2-SACK CONCRETE SLURRY MAY BE USED IN PLACE OF AB.

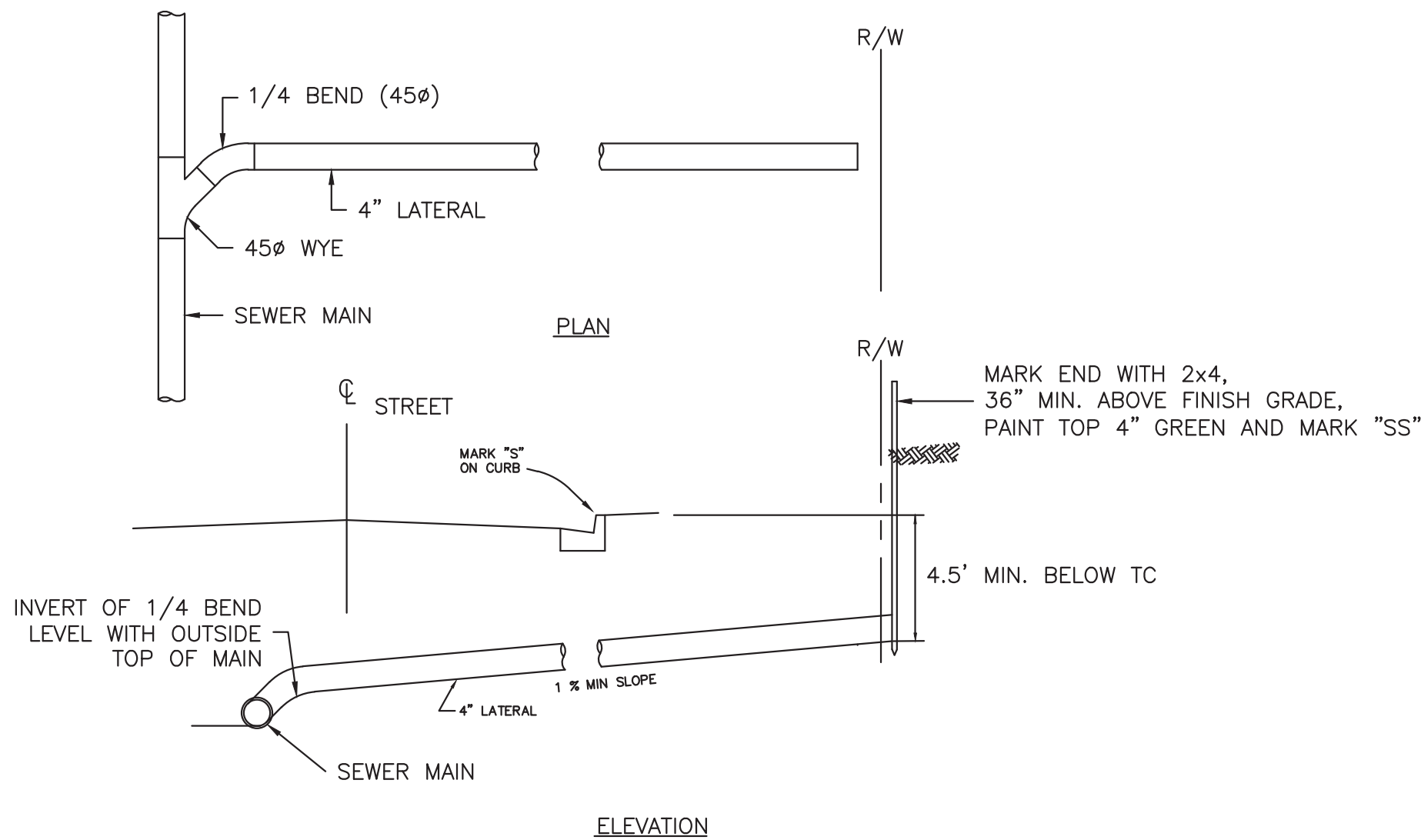
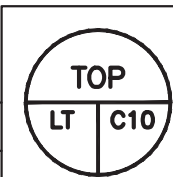
PIPE TRENCH DETAIL
NTS

THRUST BLOCK DETAIL
NTS

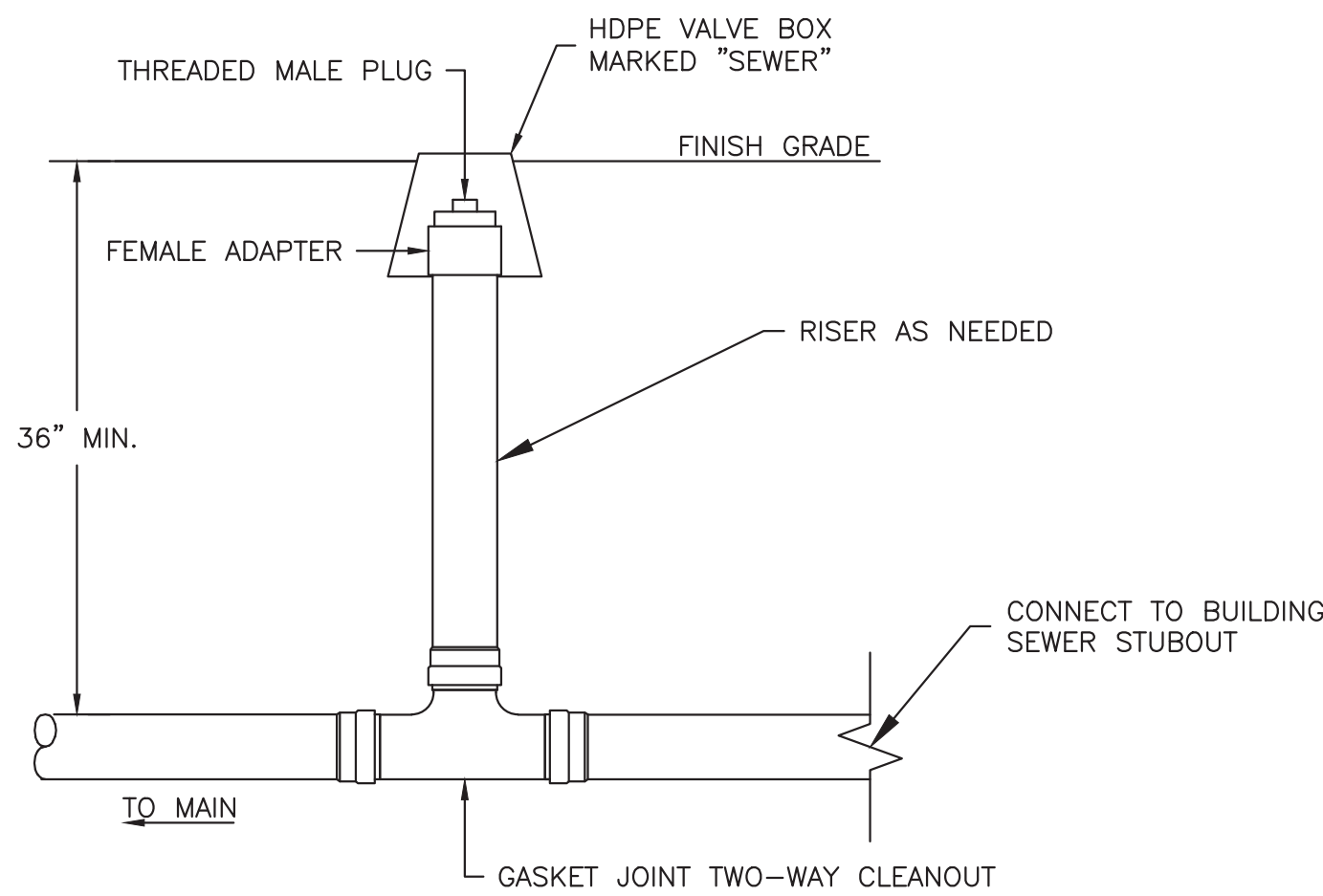
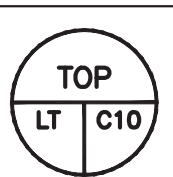
FILENAME: Y:\400-499\427 - TRINIDAD RANCHERIA\427.11_INTERPRETIVE_CENTER\PROJECT SUPPORT DOCUMENTS\PLANS\SCOTT\DETAILS.DWG LAST SAVED ON: 7/13/2023 2:58:54 PM LAST SAVED BY: JOSHUA LAST PLOTTED ON: 7/13/2023 3:08:35 PM PLOT SCALE: ARCH D (24.00 X 36.00 INCHES)



TRENCH DETAIL
NTS

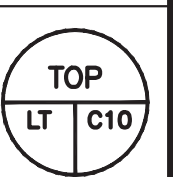


SS SERVICE LATERAL DETAIL
NTS



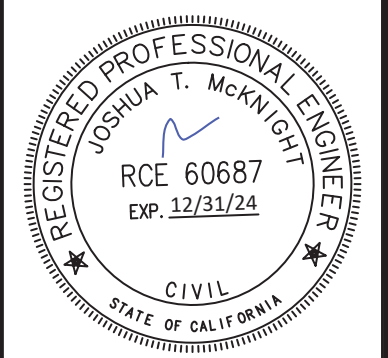
- NOTES:
1. ALL PIPING AND FITTINGS TO BE PVC SDR 26.

SS TWO-WAY CLEANOUT DETAIL
NTS



TVCE

67 WALNUT WAY
PO BOX 1567
WILLOW CREEK, CA 95573
P:(530)629-3000
F:(530)629-3011



DATE	REV	DESCRIPTION	CHK BY	APP BY
5/4/2022	1	PRELIMINARY DESIGN	JTM	JTM
	2		JTM	JTM
	3		JTM	JTM
	4		JTM	JTM
	5		JTM	JTM
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	7		JTM	JTM
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TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA 95570

SEWER DETAILS

HUMBOLDT COUNTY, CA

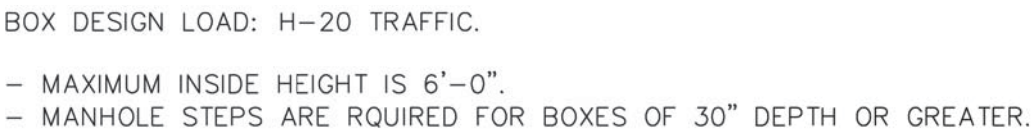
DATE OF ISSUE: July 2023
SCALE: AS SHOWN
PROJECT NO: 427.11
DRAWING NO: C10



	JTM	JR	JTM	JRM	TJCE
A	PRELIMINARY DESIGN				
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DATE OF ISSUE: July 2023
SCALE: AS SHOWN
PROJECT NO: 427.11
DRAWING NO: C11

CALTRANS G1 DRAINAGE INLET



FOR COMPLETE DESIGN AND PRODUCT INFORMATION
CONTACT JENSEN PRECAST.

3/13/07
DI2436_G1_C.dwg
2007 Jensen Precast



[illegible]

**INTERPRETIVE CENTER
AT TRINIDAD PIER**

ELEVATIONS

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

DATE OF ISSUE:
APR. 20, '20

SCALE: AS NOTED

PROJECT NO:

DRAWING NO:

A1

FIRE EXTINGUISHERS WITH A MINIMUM RATING OF 2-A:10-B:C SHALL BE PROVIDED SUCH THAT NO POINT IN THE BUILDING IS FURTHER THAN 75-FOOT TRAVEL DISTANCE TO AN EXTINGUISHER. EXTINGUISHERS SHALL BE MOUNTED ON THE WALL OR IN CABINETS, SUCH THAT THE TOP OF THE EXTINGUISHER IS NO MORE THAN 5 FEET ABOVE THE FINISHED FLOOR LEVEL.

TACTILE EXIT SIGNS SHALL BE PROVIDED PER CBC CHPT. 10 AND IIB.

EACH GRADE-LEVEL EXTERIOR EXIT DOOR SHALL BE IDENTIFIED BY A TACTILE SIGN WITH THE WORD 'EXIT'

THE SIGNAGE REQUIRED BY THIS SECTION SHALL BE LOCATED ADJACENT TO THE LATCH SIDE OF A SINGLE DOOR AND TO THE RIGHT SIDE OF DOUBLE DOORS, MOUNTED 48-60" ABOVE FINISHED FLOOR PER CBC SEC. IIB.

SIGNS IDENTIFYING PERMANENT ROOMS AND SPACES OF A BUILDING OR SITE, DOORS AND ACCESSIBILITY STANDARDS SHALL COMPLY WITH:

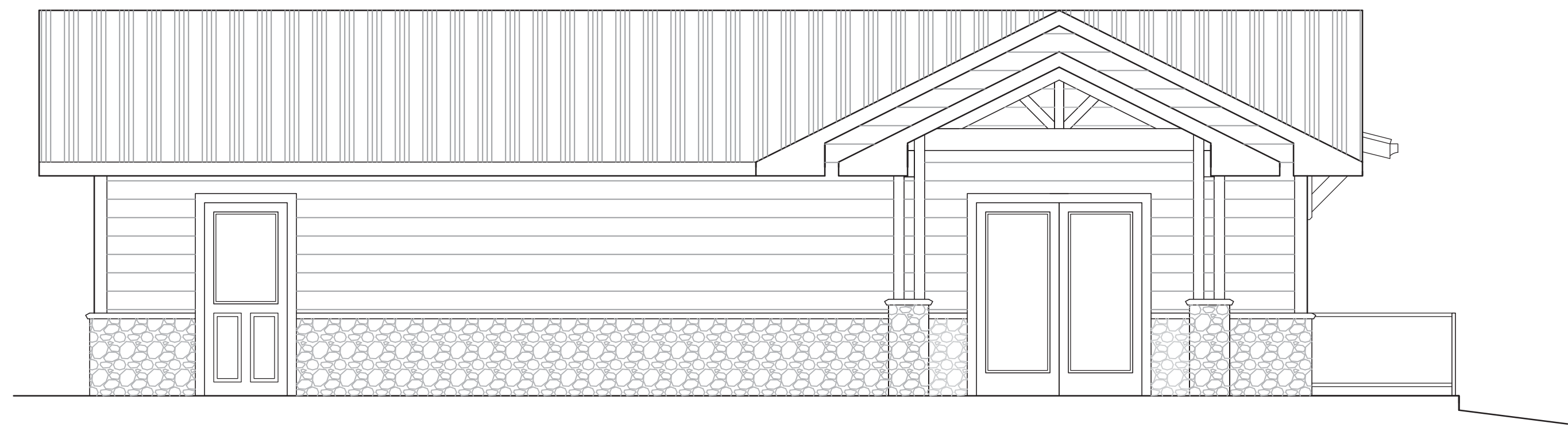
2022 CBC CHPT. IIB, ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC
ACCOMMODATION, COMMERCIAL BUILDINGS AND PUBLICLY FUNDED HOUSING.

TYPE OF CONSTRUCTION -	VB
OCCUPANCIES (NON-SEPARATED) -	'B', 'M'
ACTUAL AREA -	1367 - SQ. FT.
OCCUPANT LOAD (SEE FLOOR PLAN) -	31-TOTAL
STORIES -	ONE
SPRINKLED -	YES
TOTAL HT. -	16'- AFFX. HT.
SRA -	YES

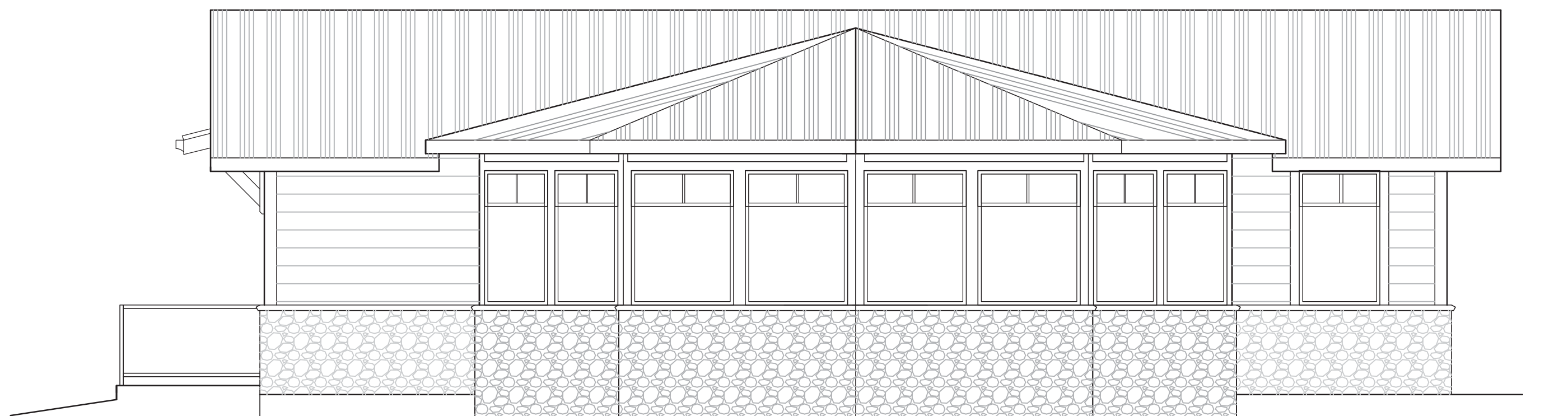
BUILDING SHALL COMPLY WITH 2022 CALIFORNIA BUILDING CODE (CBC), 2022 CALIFORNIA PLUMBING CODE (CPC), 2022 CALIFORNIA MECHANICAL CODE (CMC), 2022 CALIFORNIA ELECTRICAL CODE (CEC), 2022 CALIFORNIA ENERGY EFFICIENCY STANDARDS CODE, 2022 CALIFORNIA FIRE CODE (CFC), 2022 GREEN BUILDING STANDARDS CODES, AND ALL APPLICABLE CODES.



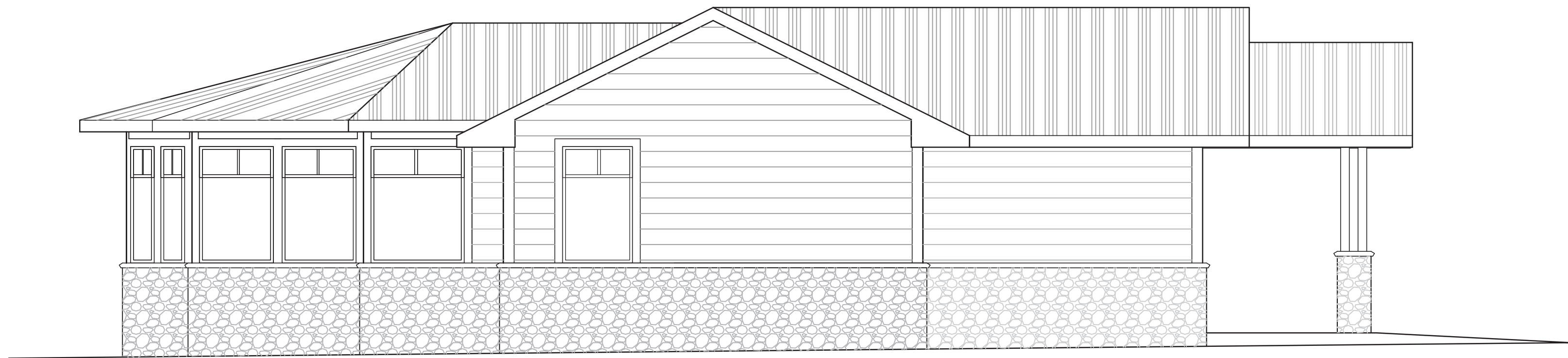
SOUTH ELEVATION

$$1/4'' = 1' - 0''$$


WEST ELEVATION

$$1/4'' = 1' - 0''$$


EAST ELEVATION

$$1/4'' = 1' - 0''$$


NORTH ELEVATION

$$1/4'' = 1' - 0''$$



67 WALNUT WAY
PO BOX 1837
WILLOW GROVE, CA 95570
P:(530)682-9000
F:(530)682-3011

DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION
07/07/23	UPDATE				
1	REV				

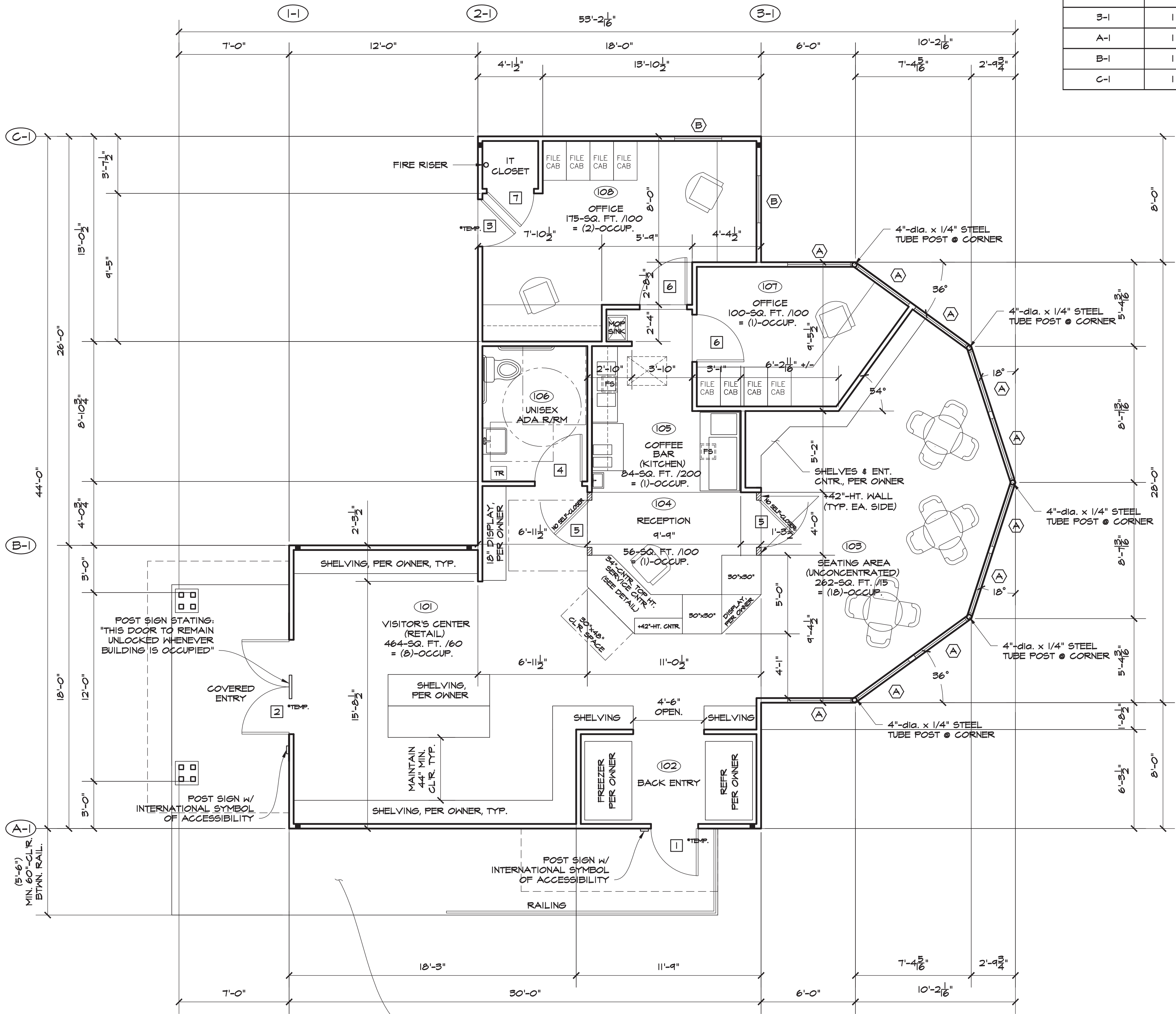
INTERPRETIVE CENTER
AT TRINIDAD PIER

FLOOR PLAN

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

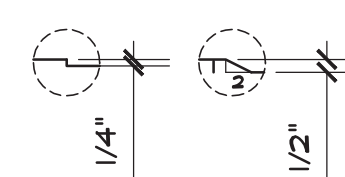
DATE OF ISSUE:	APR. 20, '20
SCALE:	AS NOTED
PROJECT NO:	
DRAWING NO:	A2

WALL LINE	STORY	SHEATHING	FRAMING	10d NAILING	ANCHOR BOLTS	CONNECTIONS	OTHER
1-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C		
2-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C	HDUB HOLDDOWN	
3-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C	HDUB HOLDDOWN	
A-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C		
B-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C	HDUB HOLDDOWN	
C-1	I	15/32" CD PLY.	2x4 @ 16" O/C	6" EDGE /12" FIELD	5/8"x10" @ 48" O/C	HDUB HOLDDOWN	



PATH OF TRAVEL (WALK)
2% OR 1:48 MAX. CROSS SLOPE
5% OR 1:20 MAX. RUNNING SLOPE

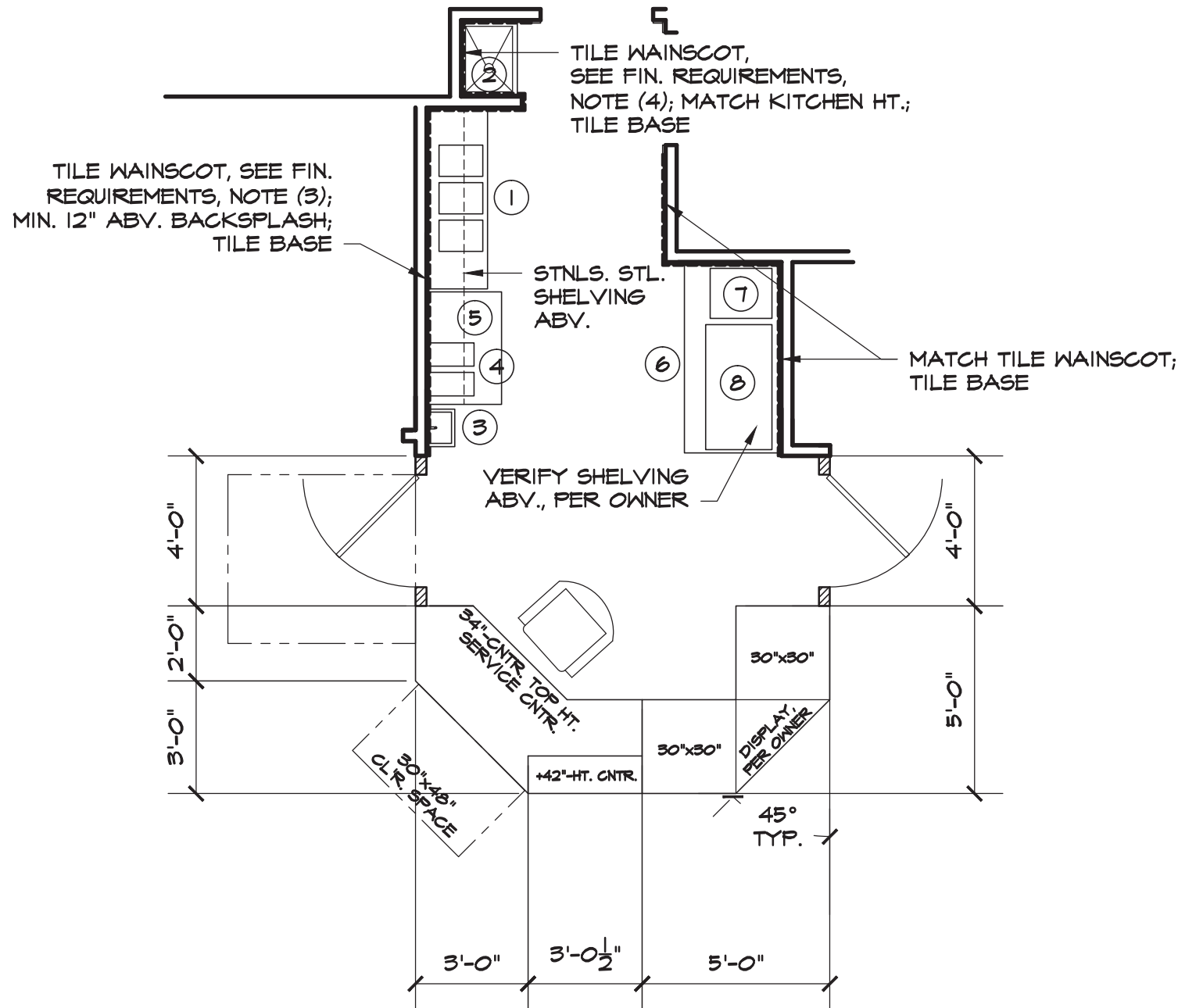
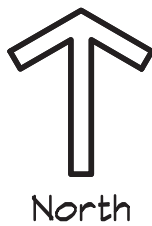
1/4" MAX. VERT. STEP OR 1/2" MAX.
BEVELED @ 1:2 GRADIENT TYP. ALL
PATHS OF TRAVEL



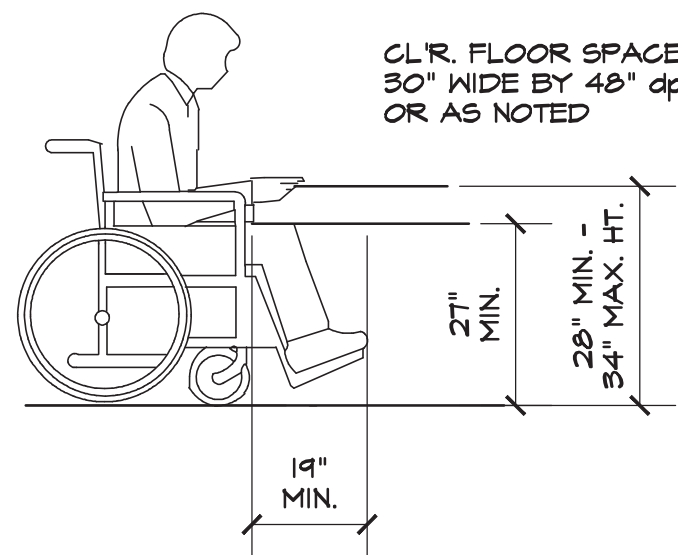
(*SLOPE MAY BE CHECKED W/ A 2'
SMART LEVEL, RECOMMENDED TO
FOUR ALL SLOPES UNDER
RECOMMENDED MAX. TO ALLOW
FOR VARIANCES*)

FLOOR PLAN

1/4"=1'-0"



DETAIL
DO NOT SCALE



FIXED OR BUILT-IN SEATING, TABLES AND COUNTERS

FIXED OR BUILT-IN SEATING, TABLES, AND COUNTERS SHALL COMPLY WITH:
2022 CBC CHPT. 11B, ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC
ACCOMMODATION, COMMERCIAL BUILDINGS AND PUBLICLY FUNDED
HOUSING.

WHERE FIXED OR BUILT-IN SEATING, TABLES OR COUNTERS ARE PROVIDED
FOR THE PUBLIC, AND IN GENERAL EMPLOYEE AREAS, 5 PERCENT, BUT
NEVER LESS THAN ONE, MUST BE ACCESSIBLE.

IF SEATING SPACES FOR PERSONS IN WHEELCHAIRS ARE PROVIDED AT
FIXED TABLES OR COUNTERS, CLEAR FLOOR SPACE SHALL BE PROVIDED.
SUCH CLEAR FLOOR SPACE SHALL NOT OVERLAP KNEE SPACE BY MORE
THAN 19 INCHES.

IF SEATING FOR PERSONS IN WHEELCHAIRS IS PROVIDED AT FIXED
TABLES OR COUNTERS, KNEE SPACES AT LEAST 27 INCHES HIGH, 30
INCHES WIDE AND 19 INCHES DEEP SHALL BE PROVIDED (EXCEPTION: KNEE
CLEARANCE IS NOT REQUIRED AT CHECKOUT COUNTERS OR SERVICE
COUNTERS).

THE TOPS OF TABLES AND COUNTERS SHALL BE 28 INCHES TO 34 INCHES
FROM THE FLOOR OR GROUND.

FINISH SCHEDULE NOTES:
- CONCRETE STAMP PATTERN AND STAIN COLOR TO BE APPROVED BY OWNER
- TILE PATTERN AND COLOR TO BE APPROVED BY OWNER.

1. FLOORS IN THE FOOD ESTABLISHMENT (EXCEPT IN SALES AND DINING AREAS) SHALL BE DURABLE, SMOOTH, IMPERVIOUS, AND OF EASILY CLEANABLE CONSTRUCTION, CONTINUING UP THE WALLS OR TOE-KICKS AT LEAST FOUR (4) INCHES, FORMING A $\frac{3}{8}$ " MIN. RADIUS COVE AN AN INTEGRAL UNIT. VINYL RUBBER TOPSET BASE IS NOT ACCEPTABLE.
2. WALLS AND CEILINGS OF ALL ROOMS (EXCEPT IN DINING AREAS) SHALL BE DURABLE, SMOOTH NONABSORBENT AND WASHABLE. WALLS AND CEILINGS IN WASH & PREP SHALL BE LIGHT COLORED.
3. THE WALL BEHIND SINKS AND DISHTABLES SHALL BE COVERED WITH A DURABLE WATERPROOF MATERIAL (FRP, CERAMIC TILE, STAINLESS STEEL, ETC.) EXTENDING FROM THE TOP OF THE COVED BASE TO AT LEAST 12" ABV. THE BACKSPASH.
4. WALLS ADJACENT TO FLOOR MOUNTED PUM SINKS SHALL BE COVERED WITH A DURABLE WATERPROOF MATERIAL EXTENDING FROM THE TOP OF THE SINK TO AT LEAST FORTY-EIGHT (48) INCHES ABV. THE FLOOR.
5. COVER WALLS OF RESTROOMS WITH A DURABLE WATERPROOF MATERIAL EXTENDING FROM THE TOP OF THE COVED BASE TO AT LEAST FORTY-EIGHT (48) INCHES ABV. THE FLOOR. PROVIDE WATER-RESISTANT GNB AT ALL RESTROOM WALLS.
6. PROVIDE A DURABLE, CLEANABLE, SMOOTH, NON-CORRODIBLE AND NON-FLAMMABLE MATERIAL BEHIND THE COOK LINE AND TO ANY SIDE WALLS THAT ARE ADJACENT OR IN CLOSE PROXIMITY.
7. PROVIDE WATER-RESISTANT GNB AT (ALL) RESTROOM WALLS.
8. TOILET ROOM WALLS AND FOR MIN. 24" PAST SIDES OF URINALS SHALL HAVE CERAMIC TILE OR EQUIVALENT UP 48" ABV. FL.R.
9. TOILET ROOM SHALL BE PROVIDED WITH THE FOLLOWING SINGLE-SERVICE DISPENSERS AT, OR ADJACENT TO, EACH HANDWASHING FACILITY: (a) Handwashing cleanser, (b) Sanitary single-use towels or a heated-air hand drying device, (c) Hand sanitizer.
10. WITH OPERABLE PARTS LOCATED A MAXIMUM OF 40" ABOVE FLOOR

ITEM	EQUIPMENT	MODEL #	ELECT.	NAT. GAS BTU /HR	PLUMBING			NOTES
					C/W	H/W	WASTE	
①	'REGENCY' 3x BAR SINK	600B31014213			1/2"	1/2"	FS INDIRECT	
②	'ADVANCE TABCO' MOP SINK	9-OP-40			1/2"	1/2"	DIRECT	
③	'ADVANCE TABCO' WALL-MNT. HAND SINK	600HS12			1/2"	1/2"	DIRECT	
④	'NUOVA' SIMONELLI GRINDER	MDX5	110V 245W/3A					
⑤	'AVANTCO' WORKTOP FREEZER	178SSWT36FHC	115V 2.8A					
⑥	'AVANTCO' WORKTOP REFR	178SSWT6ORHC	115V 2.9A					
⑦	'BUNN' AIRPORT BREAHER (DOUBLE)	CWTF TWIN APS	120/240V 26A					
⑧	'BRAVO' 2 FULL ESPRESSO MACHINE	NUOVA SL EVD-2	230V 4500W				(F.S.) IND.	MUST DRAIN THRU GREASE TRAP

SINGLE-SERVICE DISPENSERS AT, OR ADJACENT TO, EACH HANDWASHING FACILITY:

- (a) Handwashing cleanser.
- (b) Sanitary single-use towels or a heated-air hand drying device.

WITH OPERABLE PARTS LOCATED A MAXIMUM OF 40" ABOVE FLOOR

ALL EQUIPMENT THAT DISCHARGES LIQUID WASTE MUST BE DRAINED BY MEANS OF INDIRECT WASTE PIPES, AND ALL WASTE DRAINED BY THEM MUST DISCHARGE THROUGH AN AIR GAP INTO A FLOOR SINK OR OTHER APPROVED TYPE OF RECEPTOR.

ALL EQUIPMENT WILL BE INDIRECTLY DRAINED /WASTED INTO APPROVED RECEPTORS w/ AIR GAP.

SYM	SIZE	DESCRIPTION
(A)	4'-0"x5'-0"	FIXED w/ 16" HORIZ. SLIDER ● TOP +8' HDR. HT.
(B)	3'-0"x5'-0"	FIXED w/ 16" HORIZ. SLIDER ● TOP +8' HDR. HT.

SEE ENERGY COMPLIANCE DOCS FOR MIN. U-FACTOR, SHGC

SYM	SIZE	DESCRIPTION	HARDWARE	COMMENTS	LOCATION
[1]	3'-0"x1'-0"	ALUMINUM GLAD W/ FULL LITE	PUSH-PULL HARDWARE SELF-CLOSER NO LATCH KEYED LOCKSET	[2]	ENTRY (NOT A REQD. SECOND EXIT)
[2]	3'-0"x1'-0" PAIR	ALUMINUM GLAD W/ FULL LITES	PUSH-PULL HARDWARE SELF-CLOSER NO LATCH KEYED LOCKSET	[2] [3]	ENTRY
[3]	3'-0"x1'-0"	INSULATED FIBERGLASS W/ HALF LITE	LEVER HANDLE SELF-CLOSER KEYED LOCKSET		OFFICE ENTRY EXTERIOR
[4]	3'-0"x1'-0"	SOLID CORE WOOD	LEVER HANDLE SELF-CLOSER PRIVACY LOCKSET	[2]	RESTROOM
[5]	3'-0"-WIDTH	SOLID CORE WOOD 1/2-HT. DR. (42"-HT.)	LEVER HANDLE SECURITY LOCKSET		RECEPTION
[6]	3'-0"x1'-0"	SOLID CORE WOOD	LEVER HANDLE PRIVACY LOCKSET		OFFICE INTERIOR
[7]	3'-0"x1'-0"	SOLID CORE WOOD W/ AIR REGISTER TOP & BTM	LEVER HANDLE DEADBLT		IT CLOSET W/ VENT.

**** ALL LOCKSETS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT AND UNLATCHING SHALL NOT REQUIRE MORE THAN ONE OPERATION**

(3) SEE FLOOR PLAN FOR ADDITIONAL SIGNAGE

DEFENSIBLE SPACE MUST BE SIGNED OFF PRIOR TO SHEET ROCK INSPECTION.

EXTERIOR SIDING PRODUCTS, INCLUDING SHEATHING, TO BE OF APPROVED PRODUCTS (CAL-FIRE URBAN INTERFACE APPROVED).

EXTERIOR DOORS TO BE NON COMBUSTIBLE CONSTRUCTION, OR 1-3/8" SOLID CORE WOOD, OR 20-MIN. FIRE RATED.

WINDOWS SHALL HAVE MINIMUM ONE TEMPERED PANE (PER SRA STNDRDS.)

DECKING SURFACES TO BE APPROVED PRODUCT. [NON-IGNITIBLE, CAL-FIRE URBAN INTERFACE APPROVED]

NO. 12 VALLEY FLASH UNDERLAYMENT CAP SHEET RUNNING FULL LENGTH OF VALLEY UNLESS ROOF COVER IS INTERWOVEN.

EAVE AND SOFFIT VENTS MUST BE FIRE RATED TO PRECLUDE EMBER AND FLAME ENTRANCE (CAL-FIRE URBAN INTERFACE APPROVED).

UNDERSIDES OF EAVES SHALL BE IGNITION RESISTANT OR NON-COMBUSTIBLE.

ROOF GUTTERS SHALL BE PROVIDED WITH A MEANS TO PREVENT THE ACCUMULATION OF LEAVES.

SURFACE	COLOR	ICI COLOR CODE	FINISH
Exterior HardiPlank Siding	Sea Gull Grey	30YY 42/083	Satin
Exterior Trim	Cityscape	30YY 26/117	Satin
Gutters	Cityscape	30YY 26/117	Satin
Exterior Doors	Sea Gull Grey	30YY 42/083	Satin
Interior Walls/Ceiling	Soapstone	40YY 58/072	Semi-Gloss
Interior Doors	Soapstone	40YY 58/072	Semi-Gloss
Interior Trim	Soapstone	40YY 58/072	Gloss

VERIFY INTERIOR 'COLOR', PER OWNER, PRIOR TO CONSTRUCTION.

**INTERPRETIVE CENTER
AT TRINIDAD PIER**

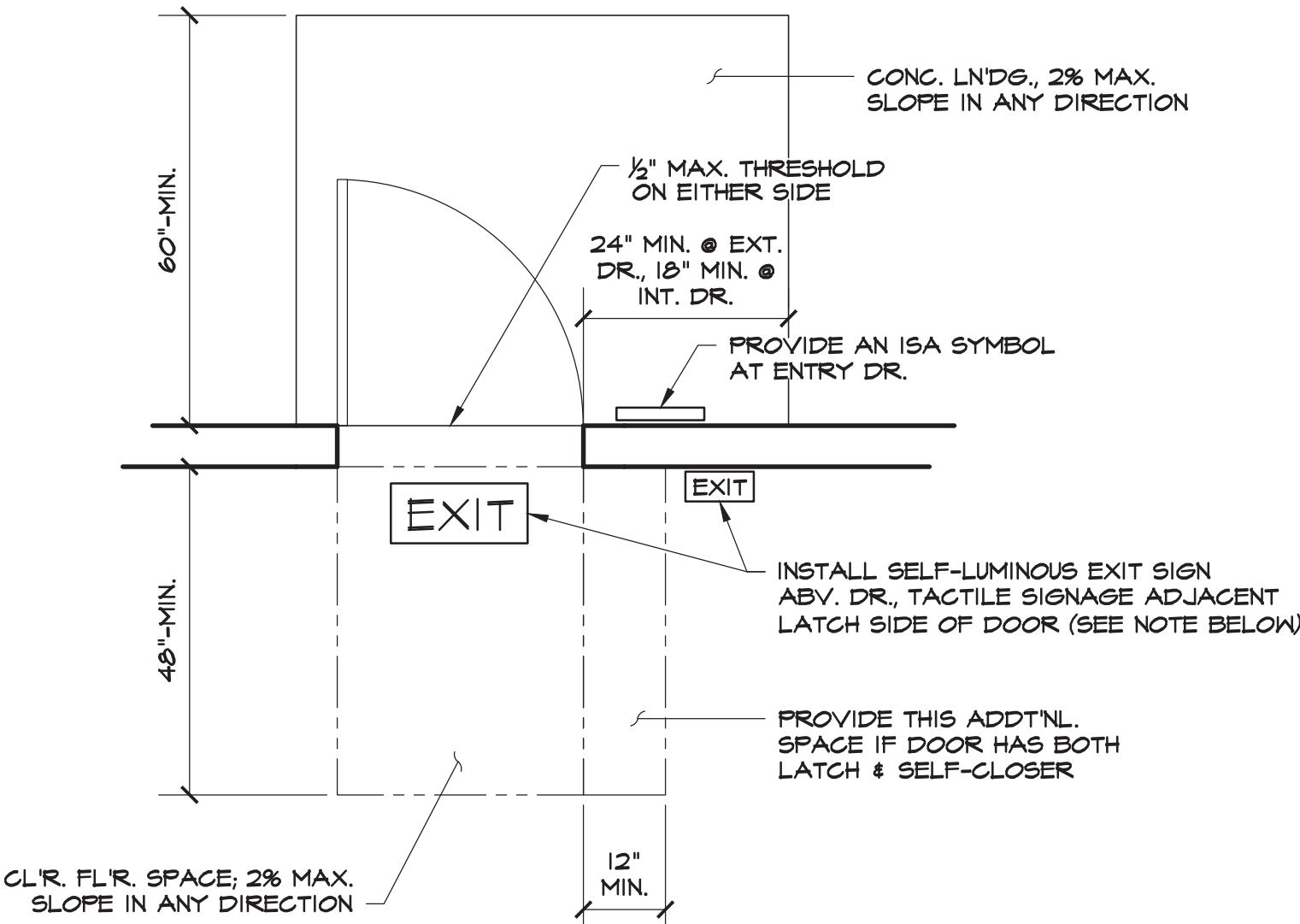
SCHEDULES & DETAILS

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

DRAWING NO.

A3

** DOORS AND ACCESSIBILITY STANDARDS SHALL COMPLY WITH 2022 CBC CHPT. 11B, ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC ACCOMMODATION, COMMERCIAL BUILDINGS AND PUBLICLY FUNDED HOUSING.

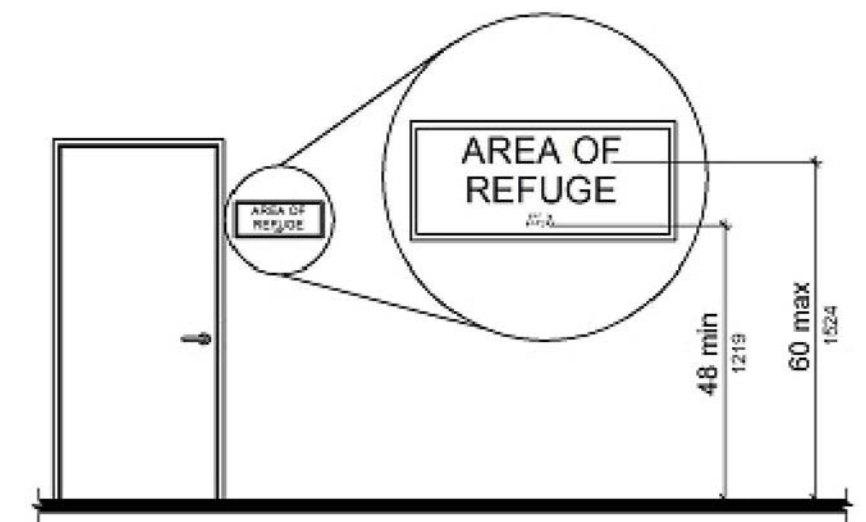


DOOR NOTES

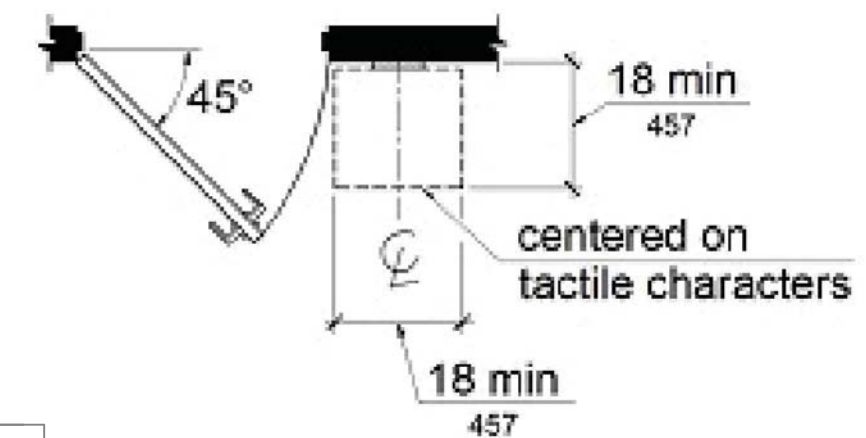
1. PROVIDE ONE STANDARD SIGN WITH THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND ONE BRAILLE SIGN AT EACH ACCESSIBLE ENTRANCE.
2. PROVIDE LEVEL LANDINGS (2% MAX. SLOPE) EACH SIDE OF ALL DOORS AS DIMENSIONED ON FLOOR PLAN, WITH 1/2" MAX. FROM TOP OF THRESHOLD TO LANDING ON EACH SIDE OF DOOR.
3. HARDWARE AT ALL DOORS, EXCEPT STOREFRONT, SHALL BE LEVER TYPE WITH HANDLES PROVIDING A RETURN TO WITHIN 1/2-INCH FROM THE DOOR FACE, CENTERED BETWEEN 34" AND 44". OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST.
4. THE BOTTOM 10" OF ALL DOORS SHALL HAVE A SMOOTH, UNINTERRUPTED SURFACE
5. LOCK OR LATCH ON EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF KEY OR SPECIAL KNOWLEDGE. THE MAIN EXIT MAY HAVE A KEY LOCK IF A SIGN IS POSTED STATING "THIS DOOR TO REMAIN UNLOCKED WHENEVER THE BUILDING IS OCCUPIED". MANUALLY OPERATED EDGE OR SURFACE MOUNTED FLUSH BOLTS AND SURFACE BOLTS ARE PROHIBITED. AUTOMATIC FLUSH BOLTS ARE ALLOWED ON PAIRS OF DOORS, PROVIDED THE DOOR WITH THE FLUSH BOLT HAS NO KNOBS OR SURFACE-MOUNTED HARDWARE.
6. THE MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 POUNDS, WITH SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGES DOORS AND AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. WHEN FIRE DOORS ARE UTILIZED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED TO NOT EXCEED 15 POUNDS. DOOR CLOSERS, IF APPLICABLE, SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90-DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12-DEGREES FROM THE LATCH IS 5-SECONDS. DOOR SPRING HINGES SHALL BE ADJUSTED SO THAT FROM THE OPEN POSITION OF 10-DEGREES THE DOOR SHALL MOVE TO THE CLOSED POSITION IN 15 SECONDS MIN.
7. TACTILE EXIT SIGNS SHALL BE PROVIDED PER CBC CHPT. 10 AND 11-B. EACH GRADE-LEVEL EXTERIOR EXIT DOOR SHALL BE IDENTIFIED BY A TACTILE SIGN WITH THE WORD "EXIT". THE SIGNAGE REQUIRED BY THIS SECTION SHALL BE LOCATED ADJACENT TO THE LATCH SIDE OF A SINGLE DOOR AND TO THE RIGHT SIDE OF DOUBLE DOORS, MOUNTED 48-60" ABOVE FINISHED FLOOR.

SIGNAGE NOTES

HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND



LOCATION OF TACTILE SIGNS AT DOORS



Height above finish floor or ground

Tactile characters on signs shall be located 48 inches (1219 mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest Braille cells and 60 inches (1524 mm) maximum above the finish floor or ground surface, measured from the baseline of the highest line of raised characters.

Exception: Tactile characters for elevator car controls shall not be required to comply with Section 11B-103.4.1.

Location

Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leaves, the sign shall be located to the right of the right hand door. Where there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor space of 18 inches (457 mm) minimum by 18 inches (457 mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position. Where provided, signs identifying permanent rooms and spaces shall be located at the entrance to, and outside of the room or space. Where provided, signs identifying exits shall be located at the exit door when approached in the direction of egress travel.

Exception: In alterations where sign installation locations identified in Section 11B-103.4.2 are obstructed or otherwise unavailable for sign installation, signs with tactile characters shall be permitted on the push side of doors with closers and without hold-open devices.

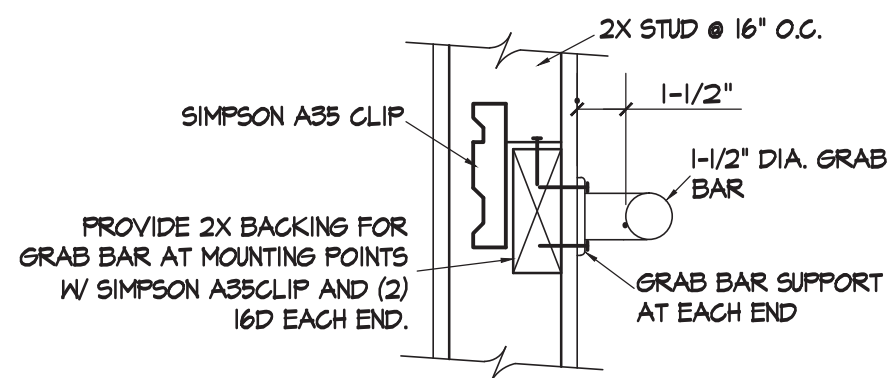
SANITARY FACILITY NOTES

- CONTROLS SHALL ALL OPERATE WITH ONE HAND WITHOUT REQUIRING TIGHT GRASPING, PINCHING OR TWISTING OF HE WRIST. THE FORCE TO OPERATE ALL CONTROLS SHALL BE NO GREATER THAN 5LBS.
- THE MAXIMUM HEIGHT OF CONTROLS OR OPERABLE PARTS SHALL BE 40" ABOVE THE FLOOR.
- THE FLUSH VALVE FOR THE TOILET SHALL BE ON THE WIDE SIDE OF THE TOILET AREA.
- THE TOILET PAPER DISPENSER SHALL ALLOW CONTINUOUS PAPER FLOW AND SHALL NOT CONTROL DELIVERY.
- THE DOORS TO THE SANITARY FACILITIES SHALL BE SIGNED. THE MEN'S ROOM SHALL HAVE AN EQUILATERAL TRIANGLE WITH EDGES 12" LONG VERTEX POINTING UPWARD. THE WOMEN'S ROOM SHALL HAVE A CIRCLE 12" IN DIAMETER. UNISEX SANITARY FACILITIES SHALL HAVE THE TRIANGLE SUPERIMPOSED UPON THE CIRCLE. THE THICKNESS OF THESE SIGNS SHALL BE 1/4". THESE SIGNS SHALL BE CENTERED ON THE DOOR 60" ABOVE THE FLOOR. THE CHARACTERS AND BACKGROUND OF THE SIGNS SHALL BE EGGSHELL MATTE OR OTHER NONGLARE FINISH AND THEIR CONTRAST AND COLOR SHALL BE DISTINCTLY DIFFERENT FROM CONTRAST AND COLOR OF THE DOOR. AN ACCOMPANYING SIGN SHALL BE MOUNTED ON THE LATCH SIDE OF THE DOOR AT A HEIGHT OF 60" WITH LETTERS RAISED 1/32" MINIMUM. THE SIZE OF THE CHARACTERS SHALL BE BETWEEN 5/8" AND 2". THEY SHALL BE SANSERIF UPPERCASE ACCOMPANIED BY GRADE 2 BRAILLE
- PROVIDE BLOCKING FOR GRAB BARS. BLOCKING SHALL BE ABLE TO SUPPORT A 250LB POINT LOAD.
- TOILET ROOM FLOOR SURFACES ARE TO BE SMOOTH HARD AND NONABSORBENT EXTENDING UPWARD A MINIMUM OF 5" ONTO THE WALLS.
- WALL SURFACES WITHIN WATER CLOSET COMPARTMENTS AND WALLS WITHIN 24" OF THE FRONT OR SIDES OR TOILETS OR URINALS SHALL BE SMOOTH HARD AND NONABSORBANT TO A HEIGHT OF 48" ABOVE THE FLOOR.
- HOT WATER SHALL BE LIMITED TO A MAXIMUM TEMPERATURE OF 120 DEG. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A CONTROL FOR MEETING THIS PROVISION.
- ACCESSIBLE WATER CLOSET COMPARTMENT DOORS SHALL HAVE A LOOP OR U SHAPED HANDLE IMMEDIATELY BELOW THE LATCH.

GENERAL ACCESSIBILITY NOTES

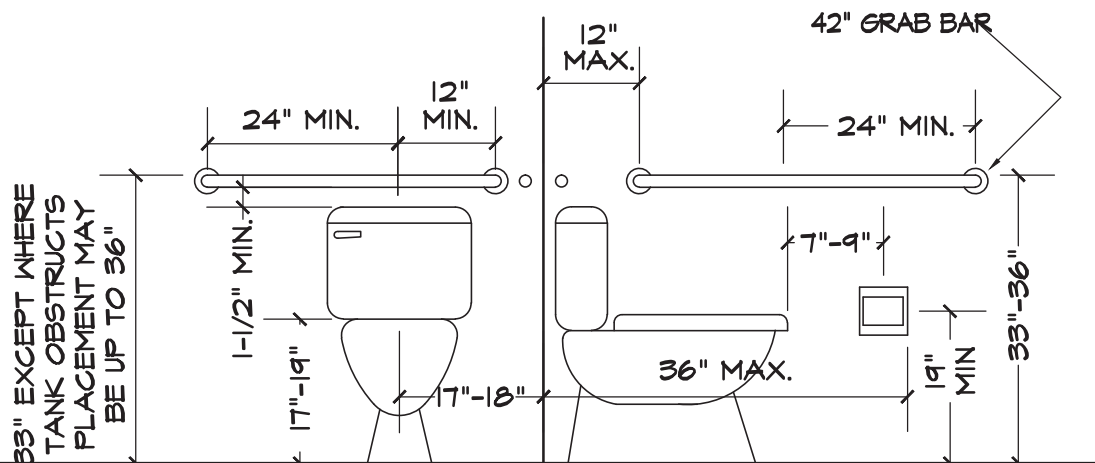
- FLOOR AND GROUND SURFACES SHALL BE STABLE FIRM AND SLIP RESISTANT.
- OVERHANGING OBSTRUCTIONS LESS THAN 80" ABOVE PEDESTRIAN WAYS, PLATFORMS OR RAMPS ARE NOT ALLOWED.
- PROVIDE MIN. 80" HEAD ROOM IN ALL CIRCULATION SPACES AND WALKWAYS.
- OBJECTS MAY NOT REDUCE THE CLEAR WIDTH OF AN ACCESSIBLE ROUTE OR MANEUVERING SPACE.
- THE MAXIMUM HT. FOR CONTROLS, SWITCHES, RECEPTACLES, OUTLETS AND THERMOSTATS IS 48" MEASURED TO THE TOP OF THE BOX TO THE LEVEL OF FINISH FLOOR OR WORKING PLATFORM. THE MINIMUM HT. FOR RECEPTACLES IS 15" MEASURED TO THE BOTTOM OF THE BOX TO THE LEVEL OF FINISH FLOOR OR WORKING PLATFORM.

ACCESSIBLE RESTROOM DETAILS

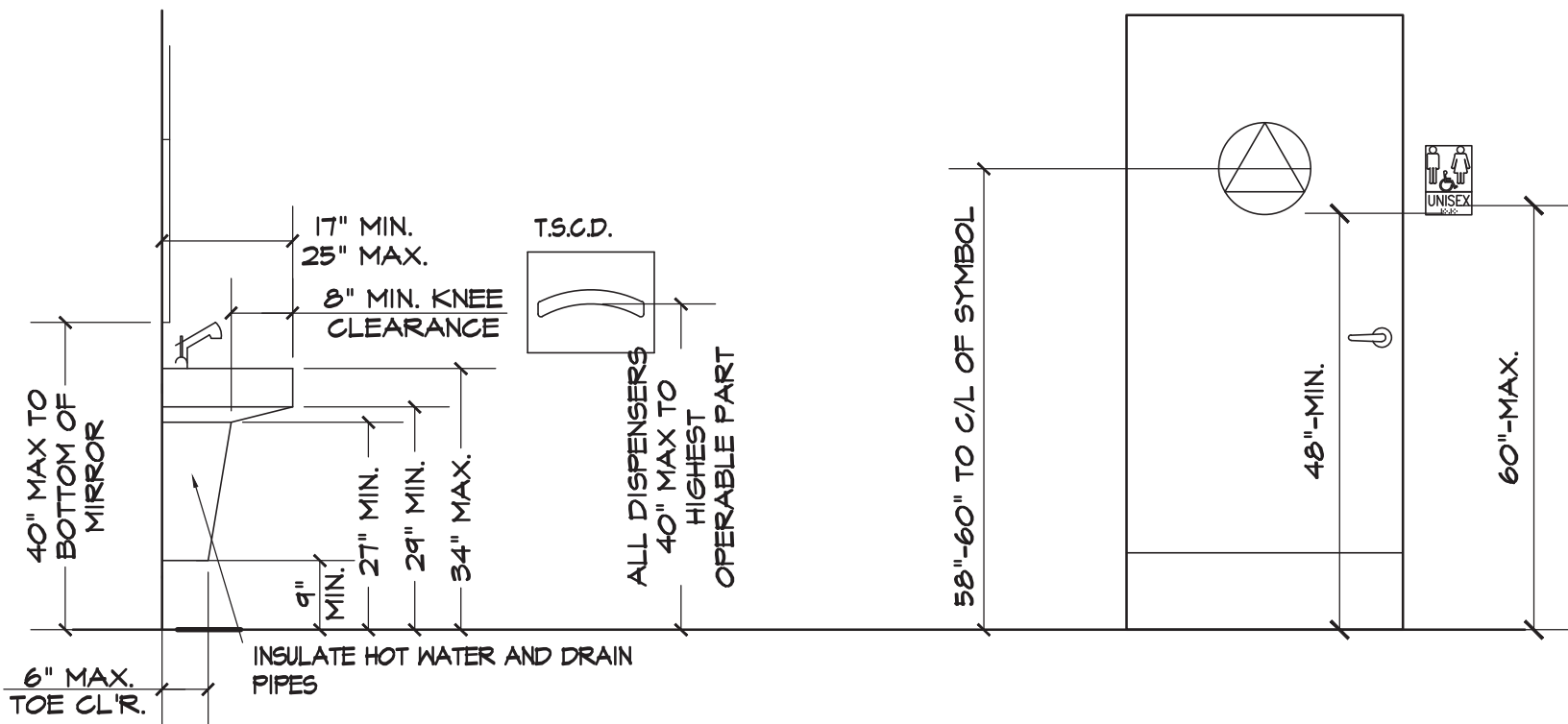


BLOCKING DETAIL

DISPENSERS THAT CONTROL DELIVERY OR THAT DO NOT PERMIT CONTINUOUS PAPER FLOW SHALL NOT BE USED



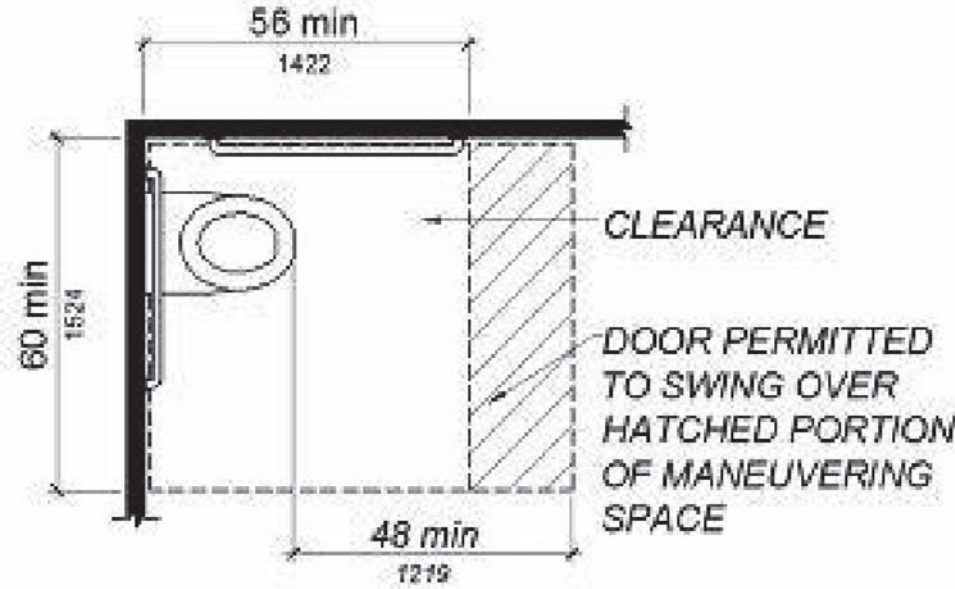
TOILET DETAIL



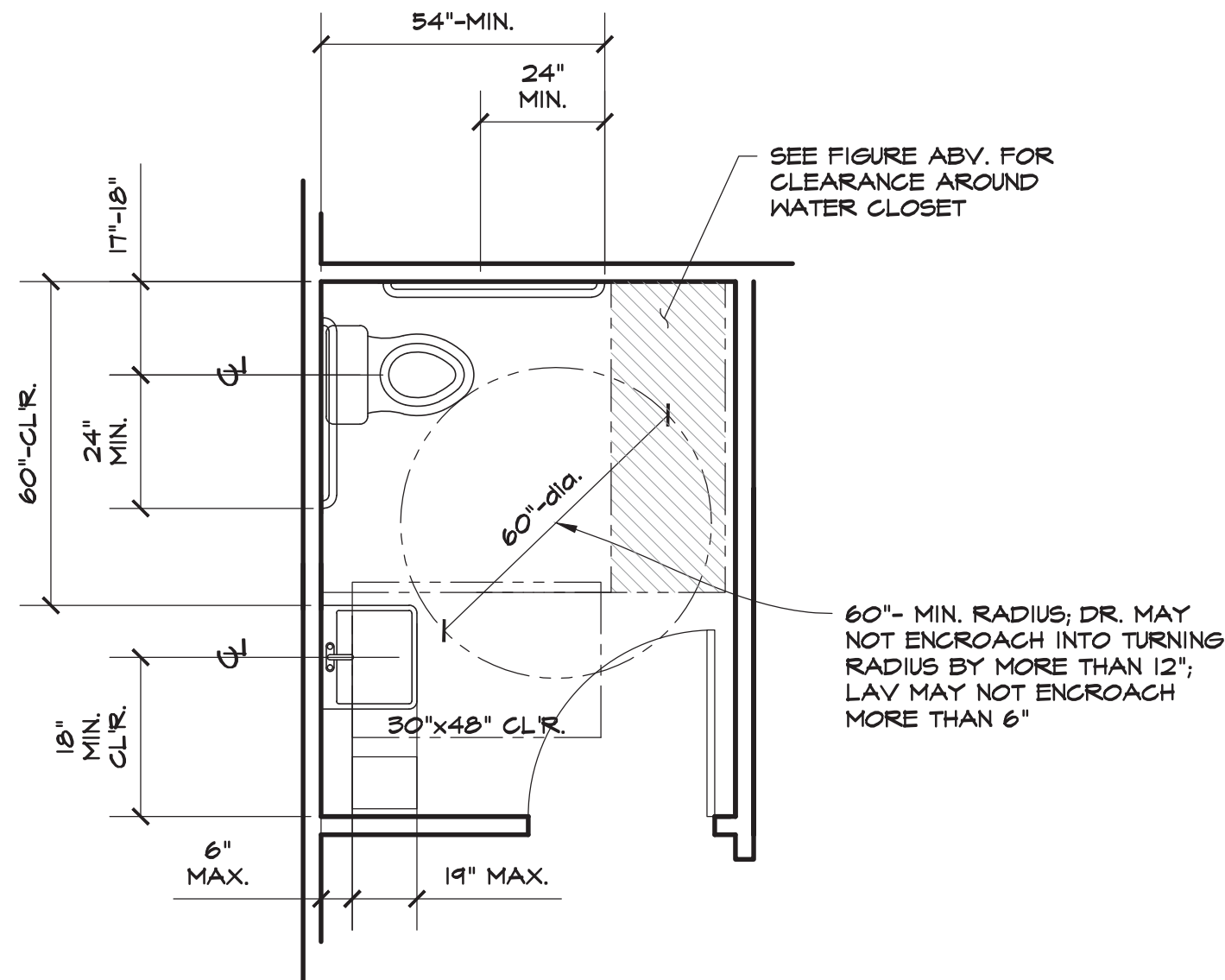
LAVATORY DETAIL

SIGNAGE ON DOOR

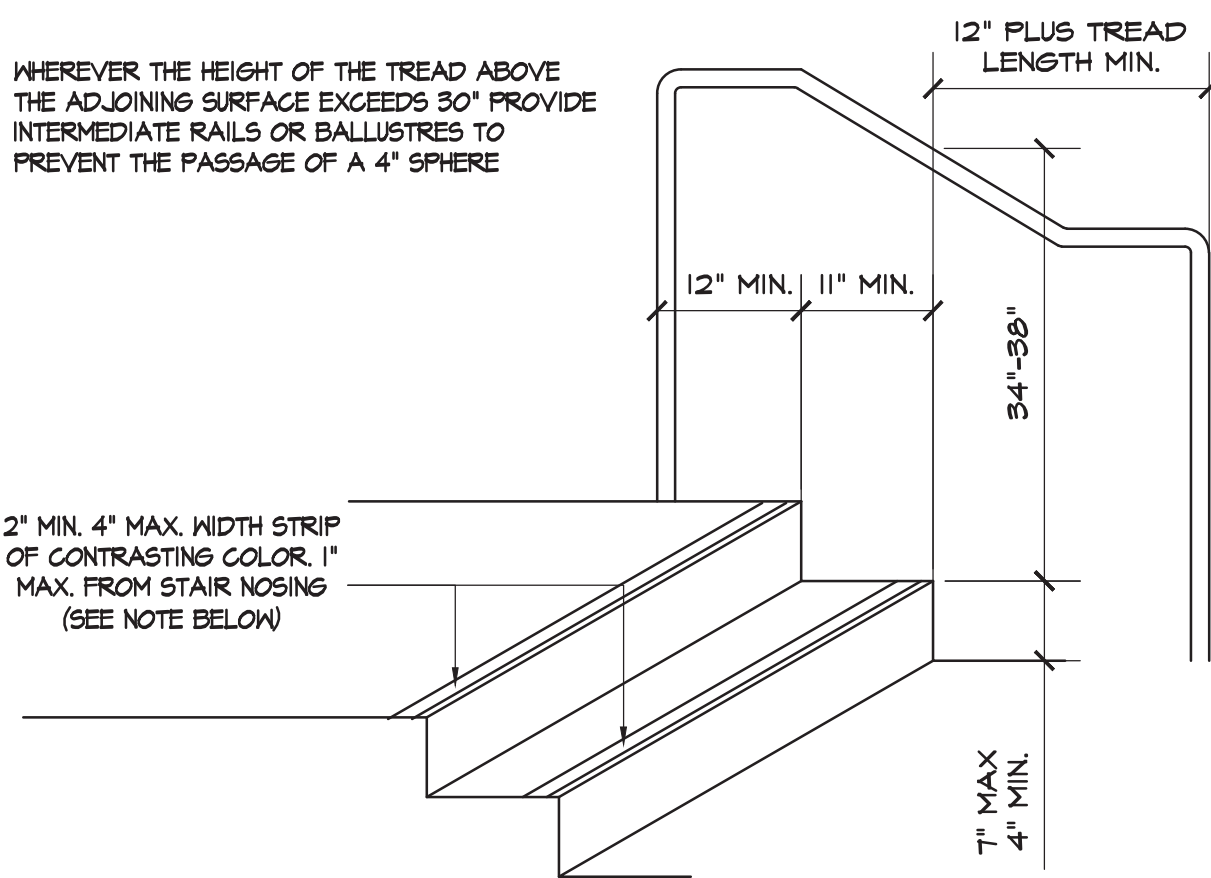
ACCESSIBLE RESTROOM



SINGLE-SERVICE DISPENSERS AT, OR ADJACENT TO, EACH HANDWASHING FACILITY:
(a) Handwashing cleanser.
(b) Sanitary single-use towels or a heated-air hand drying device.
WITH OPERABLE PARTS LOCATED A MAXIMUM OF 40" ABOVE FLOOR



COMMERCIAL STAIR DETAIL



- HANDRAILS REQUIRED BOTH SIDES OF STAIR. THE ORIENTATION OF THE EXTENSIONS OF AT LEAST ONE HANDRAIL SHALL BE INLINE WITH RUN OF STAIR.
- HANDRAIL 1 1/4"-1 1/2" DIA. 34"-38" ABOVE STAIR NOSING OR RAMP SURFACE. 12" BEYOND TOP RISER. 12" PLUS TREAD LENGTH BEYOND BOTTOM RISER.
- HANDRAILS MUST BE ABLE TO RESIST THE FOLLOWING LOADS: A 200 LB POINT LOAD OR A 50 LBS PER FOOT LOAD WHERE THESE LOADS ARE APPLIED IN ANY DIRECTION.
- HAND RAILS SHALL BE RETURNED TO THE FLOOR OR A WALL.
- HANDRAILS PROJECTING FROM A WALL SHALL A SPACE OF 1-1/2" FROM THE WALL. ADJACENT TO THE HANDRAIL THE WALL SHALL HAVE NOT HAVE A ROUGH OR ABRASIVE SURFACE.
- HANDRAIL ASSEMBLIES AND GUARDS SHALL BE MOUNTED SO THAT THE COMPLETED RAIL AND SUPPORTING STRUCTURE ARE CAPABLE OF WITHSTANDING A CONCENTRATED LOAD OF 200-lbs. APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP.
- 1" MAXIMUM, 4" MINIMUM RISER HEIGHT, 11" MINIMUM RUN AS MEASURED FROM THE FRONTS OF THE STEP NOSING EXCEPT FOR THE BOTTOM RISER.
- THE NOSING SHALL NOT PROJECT MORE THAN 1-1/2" PAST THE FACE OF THE RISER BELOW.
- RISERS SHALL BE SLOPED OR THE UNDERSIDE OF THE NOSING SHALL HAVE AN ANGLE NOT LESS THAN 60-DEGREES FROM THE HORIZONTAL.
- RISERS SHALL NOT VARY BY MORE THAN 3/8" IN DIMENSION FROM LEAST TO GREATEST WITHIN THE FLIGHT OF STAIRS. BOTTOM RISER MAY VARY TO MATCH SLOPE OF WALK 4" MINIMUM, 1" MAX.
- TREADS SHALL NOT VARY IN DIMENSION MORE THAN 3/8" FROM LEAST TO GREATEST WITH THE FLIGHT OF STAIRS.
- THE UPPER APPROACH AND LOWER TREAD TO EACH EACH STAIR (AND ALL STAIRWAY TREADS OUTSIDE A BUILDING) ARE TO BE MARKED BY A STRIP OF CLEARLY CONTRASTING COLOR AT LEAST 2" WIDE, 4" MAX, SPACED 1" MAX. FROM STAIR NOSING (A PAINTED STRIP IS ACCEPTABLE). STRIPING SHALL BE SLIP RESISTANT.
- OPEN RISERS ARE NOT PERMITTED.

TVCE



67 WALNUT WAY
PO BOX 1837
WILLOW GROVE, CA 95578
P: (530) 688-9000
F: (530) 688-3011

DATE	REV	DESCRIPTION	BY	CHK	APP
07/07/23	1	UPDATE	SIA	JTM	JTM

INTERPRETIVE CENTER
AT TRINIDAD PIER

ACCESSIBILITY DETAILS & NOTES

DATE OF ISSUE:
APR. 20, '20

SCALE:
AS NOTED

PROJECT NO:

DRAWING NO:

A4



**INTERPRETIVE CENTER
AT TRINIDAD PIER**

FOUNDATION NOTES & DETAILS

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570 APN

DRAWING NO:
FO

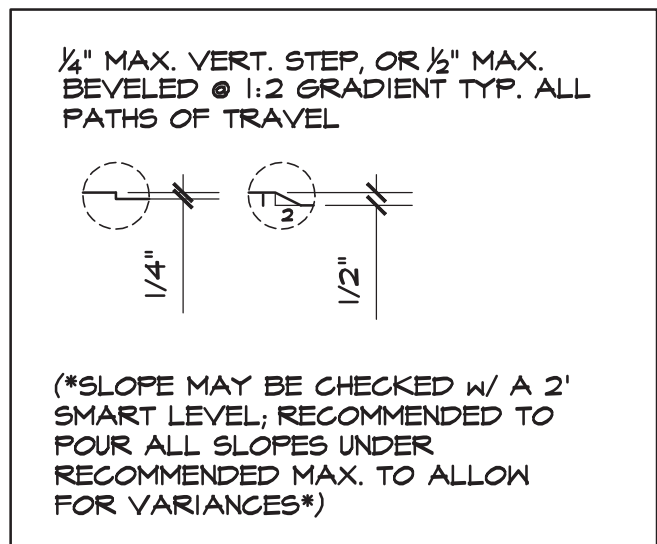
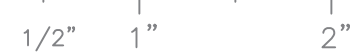
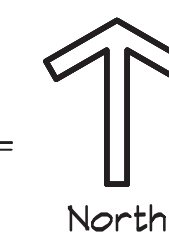


1. THE MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 3,000 PSI. CONCRETE TO BE A FIVE SACK MIX MINIMUM WITH NO MORE THAN 7 GALLONS OF WATER PER CUBIC YARD..
2. ALL CONCRETE TO BE REGULAR WEIGHT HARD ROCK TYPE (150# /CF). MAXIMUM AGGREGATE SIZE FOR SLABS ON GRADE TO BE ¾" AND 1½" FOR STEM WALL. AGGREGATE TO CONFORM TO ASTM C-33. CEMENT TO CONFORM TO C-150 (TYPE II), UNLESS ALKALINE SOILS ARE PRESENT ON SITE. WATER-REDUCING ADMIXTURES, RETARDING ADMIXTURES, ACCELERATING ADMIXTURES, WATER-REDUCING AND RETARDING ADMIXTURES, AND WATER-REDUCING AND ACCELERATING ADMIXTURES TO CONFORM TO 'SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE' (ASTM C 494).
3. SLABS, BEAMS, WALLS AND OTHER CONCRETE TO BE KEPT CONTINUOUSLY WET FOR 48 HOURS AFTER PLACEMENT AND TO BE KEPT DAMP FOR 7 DAYS AFTER PLACEMENT. SLABS TO HAVE CURE /SEALER APPLIED IMMEDIATELY AFTER FINISHING IF OTHER FINISHES ARE NOT AFFECTED. SUPERIMPOSED LOADS ARE NOT TO BE APPLIED TO ELEVATED STRUCTURAL MEMBERS OR WALLS PRIOR TO 7 DAYS MINIMUM AFTER CONCRETE HAS REACHED DESIGN STRENGTH. RESHORING TO REMAIN IN PLACE 28 DAYS MINIMUM, AT NO TIME DURING A RESHORING PROCESS IS THE CONCRETE MEMBER TO BE UNSUPPORTED.
4. CONCRETE MUST NOT FREE FALL MORE THAN SIX FEET DURING POUR.
5. KEYS/ CONSTRUCTION JOINTS TO BE USED IN ALL CASES. ALL CONSTRUCTION JOINTS TO BE THOROUGHLY CLEANED AND ALL LAITANCE TO BE REMOVED. ALL VERTICAL JOINTS TO BE THOROUGHLY WETTED AND SLUSHED WITH A COAT OF NEAT CEMENT IMMEDIATELY BEFORE PLACING NEW CONCRETE.
6. PROVIDE CONTROL JOINTS PER PLAN AND /OR EVERY 12 FEET ON CENTER. FILL WITH APPROVED CAULKING.
7. PROVIDE ¾" CHAMFER AT EXPOSED EDGES OF CONCRETE BEAMS AND COLUMNS U.N.O.
8. ANCHOR BOLT SIZES AND LOCATIONS TO BE PER THE BUILDING PLANS. EMBEDMENT DEPTHS TO BE A MINIMUM OF 7".

[illegible]

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

F 1


$$1/4'' = 1' - 0''$$




67 WALNUT WAY
PO BOX 1837
WILLOW GROVE, CA 95578
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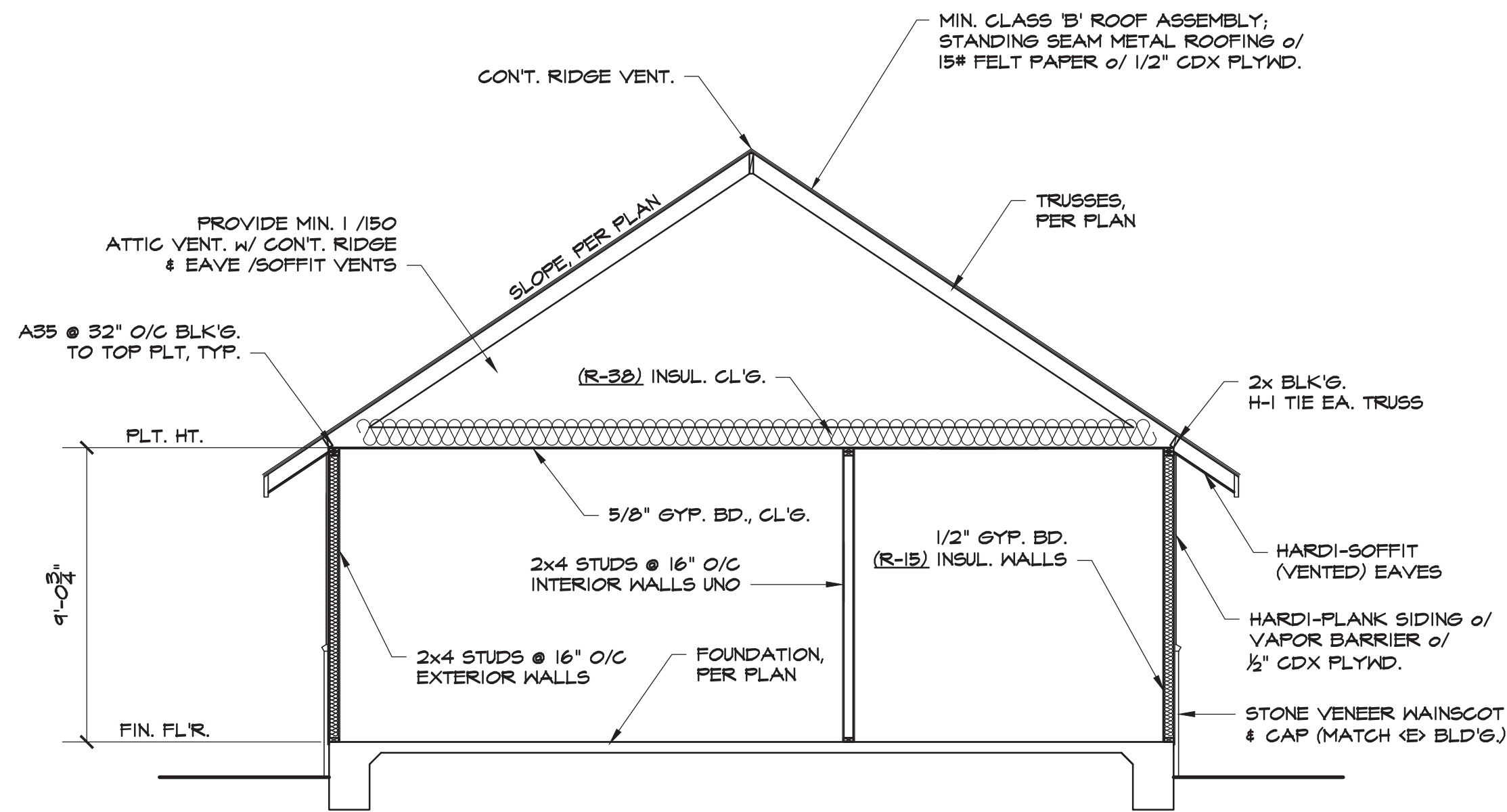
DATE	DESCRIPTION	BY	CHK	APP
07/07/23	UPDATE	JTM	JTM	JTM
1	REV	APN		

INTERPRETIVE CENTER
AT TRINIDAD PIER

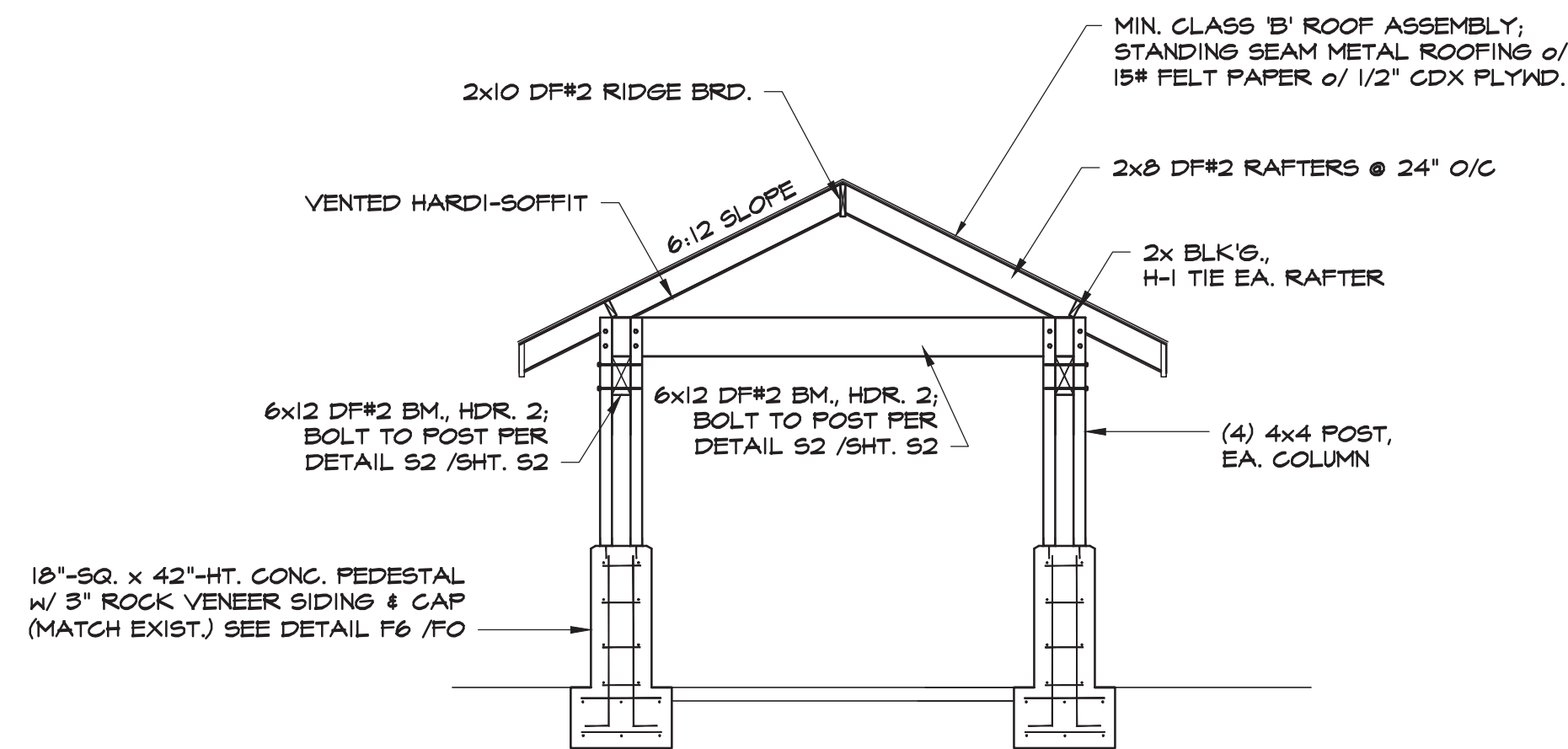
SECTIONS

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

DATE OF ISSUE: APR. 20, '20
SCALE: AS NOTED
PROJECT NO:
DRAWING NO: S1



A TYPICAL SECTION
DO NOT SCALE



B SECTION @ COV. ENTRY
DO NOT SCALE

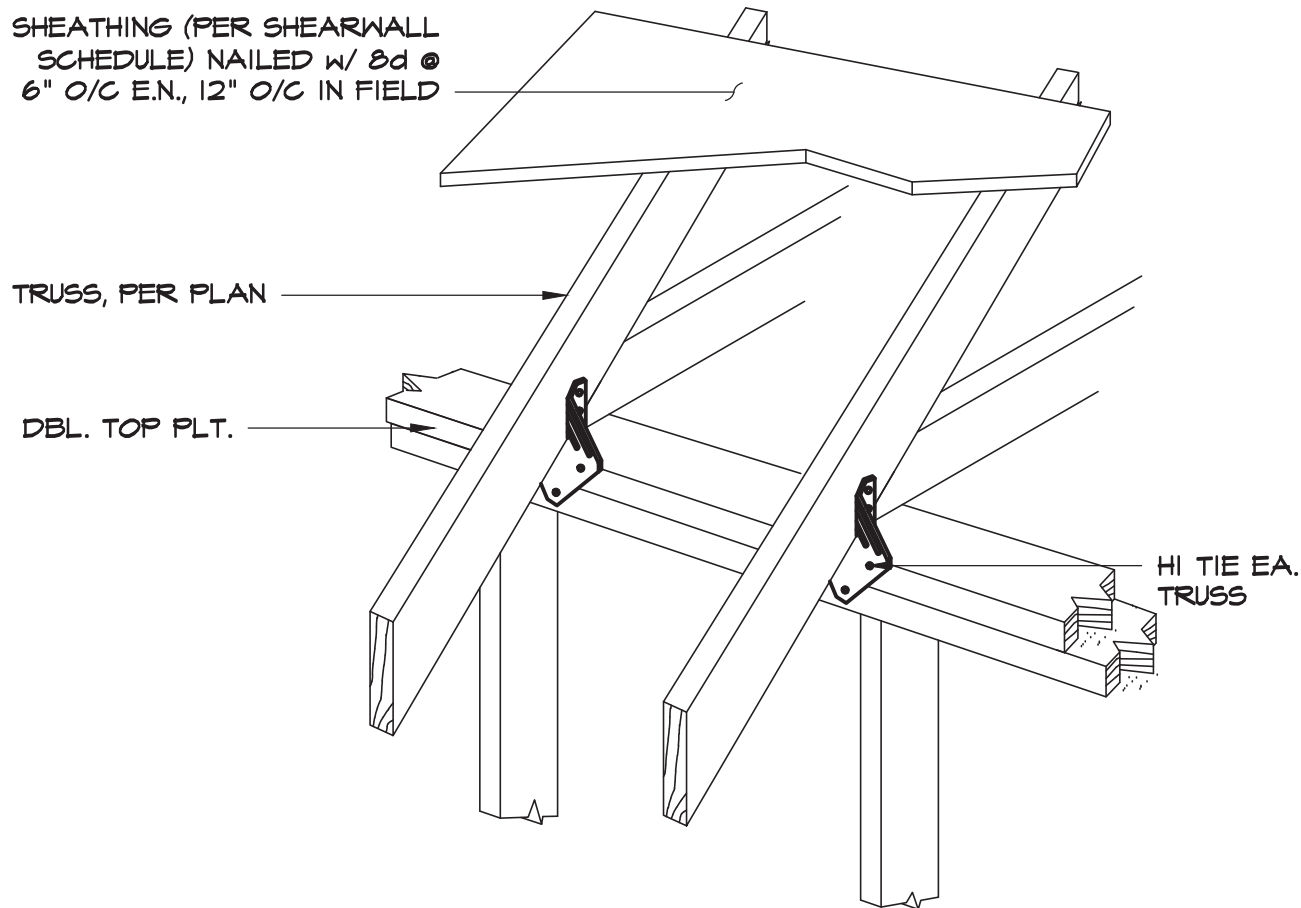
NOTES:

ROOF GUTTERS SHALL BE PROVIDED WITH A MEANS TO PREVENT THE ACCUMULATION OF LEAVES.

EAVE AND SOFFIT VENTS MUST BE FIRE RATED TO PRECLUDE EMBER & FLAME ENTRANCE; UNDERSIDES OF EAVES SHALL BE IGNITION RESISTANT OR NON-COMBUSTIBLE.

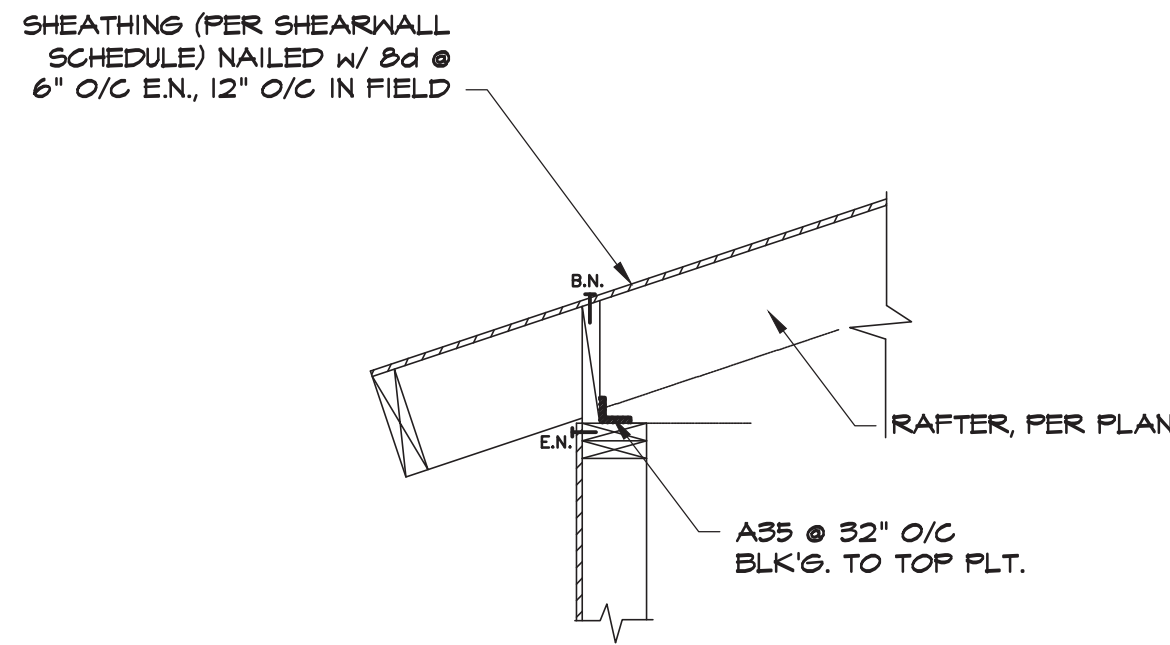
EXTERIOR WALL ASSEMBLY TO BE OF CAL-FIRE URBAN INTERFACE APPROVED PRODUCTS.

MIN. CLASS 'B' ROOF ASSEMBLY REQUIRED.

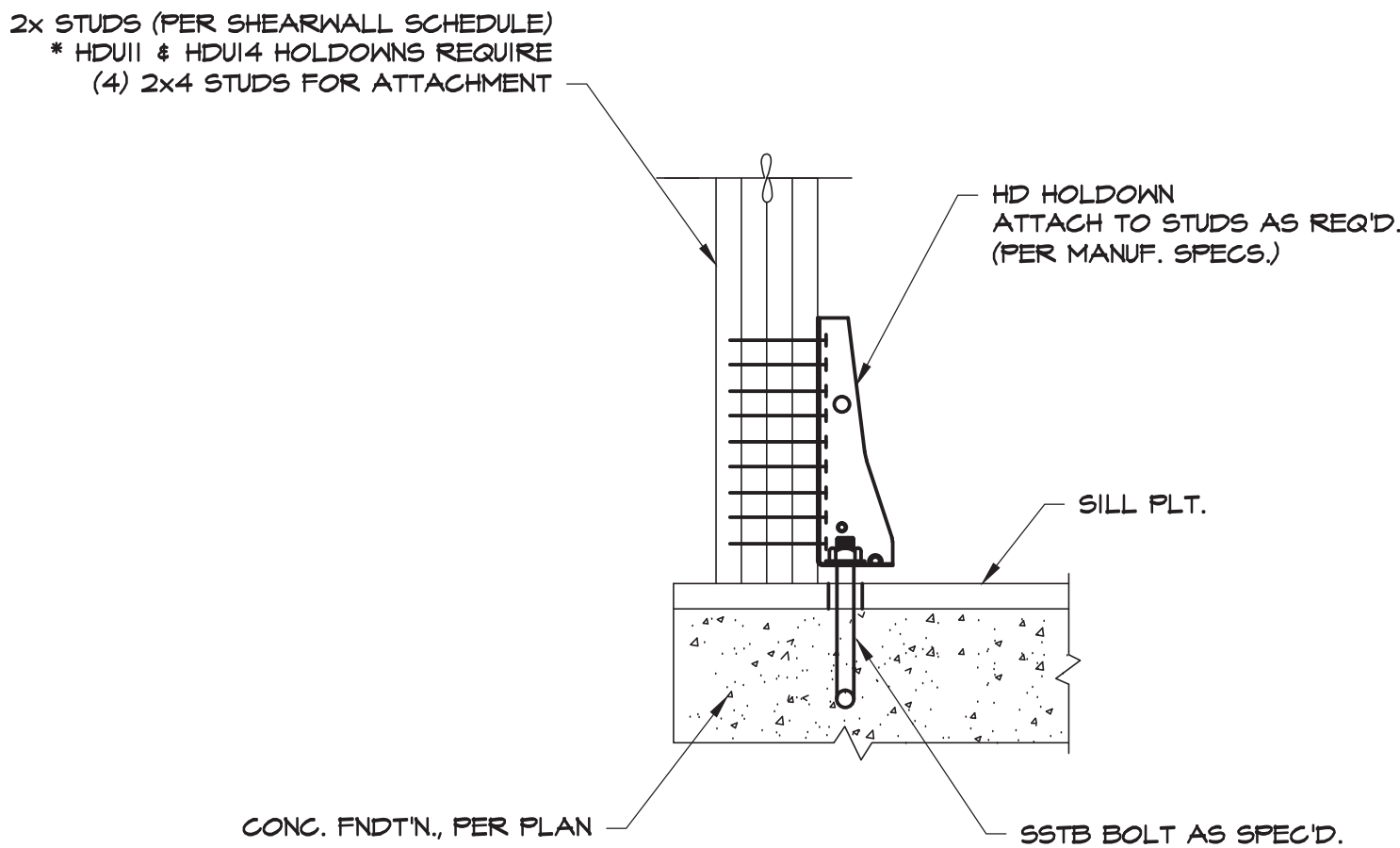


* BLOCKING BTWN. TRUSSES OMITTED FOR CLARITY

TRUSS CONNECTION TO WOOD TOP PLATE
DO NOT SCALE



A35 BLK'G. TO TOP PLT. @ ROOF
DO NOT SCALE



HOLDOWN CONNECTION TO FOUNDATION
DO NOT SCALE

[illegible]

	APN

**INTERPRETIVE CENTER
AT TRINIDAD PIER**

ROOF FRAMING

FOR: TRINIDAD RANCHERIA PO BOX 630 TRINIDAD, CA 95570

DATE OF ISSUE:
APR. 20, '2

SCALE: AS NOTED

PROJECT NO:

DRAWING NO:

S2

36" O/H

2x6 DF#2 RAFTERS
 @ 24" O/C (3:12 SLOPE);
 FIN. U/SIDE W/
 VENTED HARDI-SOFFIT

FLASH AS REQ'D.

2x LEDGER, BOLT TO WALL
 @ 24" O/C MAX. W/ 3/8" LAS BOLT
 (ALT. TOP & BTM. OF LEDGER)
 TO STUD OR BLK'G; LUS HGR.
 EA. RAFTER TO LEDGER

FASCIA

CONT. 2x BLK'G.
 H-I TIE EA. RAFTER

(2) 1/2"-dia. LAS BOLT THRU
 4x10 BM. TO 6x10 BM.
 MIN. xx EMBED.

BOLT LEDGER TO STUD
 OR CONT. 2x BLK'G.

BM. POCKET (POST BELOW)

4x KNEE BRACKET

(2) 1/2"-dia. LAS BOLT
 KNEE BRACKET TO POST
 IN WALL, AND TO 4x10 BM.
 ABV., MIN. xx EMBED.

SOLID POST @ BRACKET LOC.;
 BRACKETS SPACED APPX. 12'

24"
 BRACKET

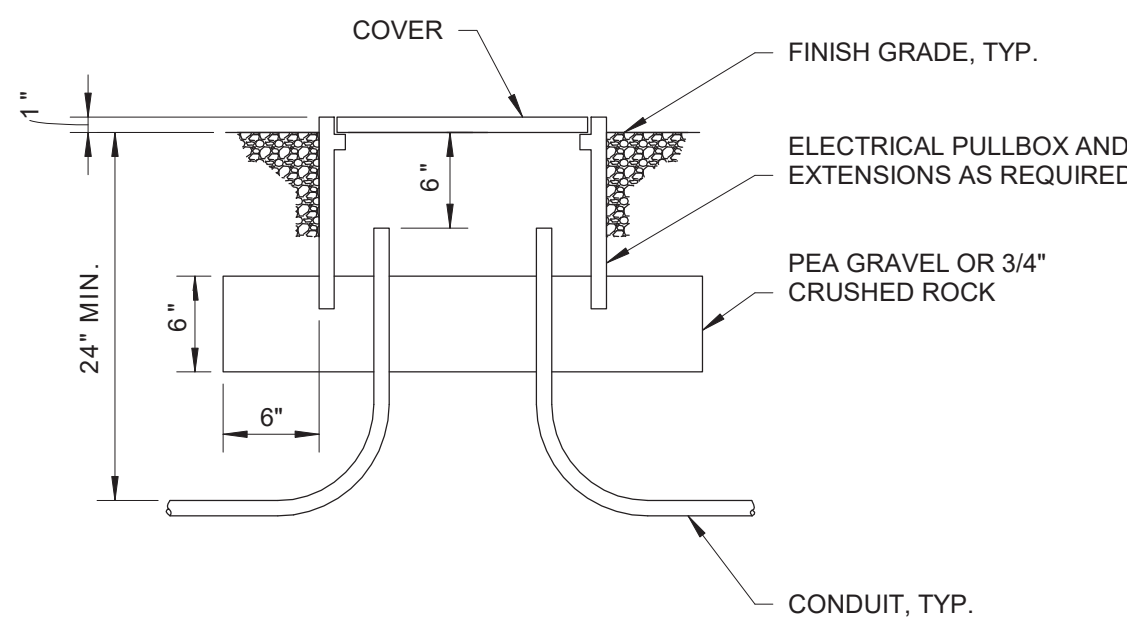
S1 OVERHANG DETAIL
— NTS

North

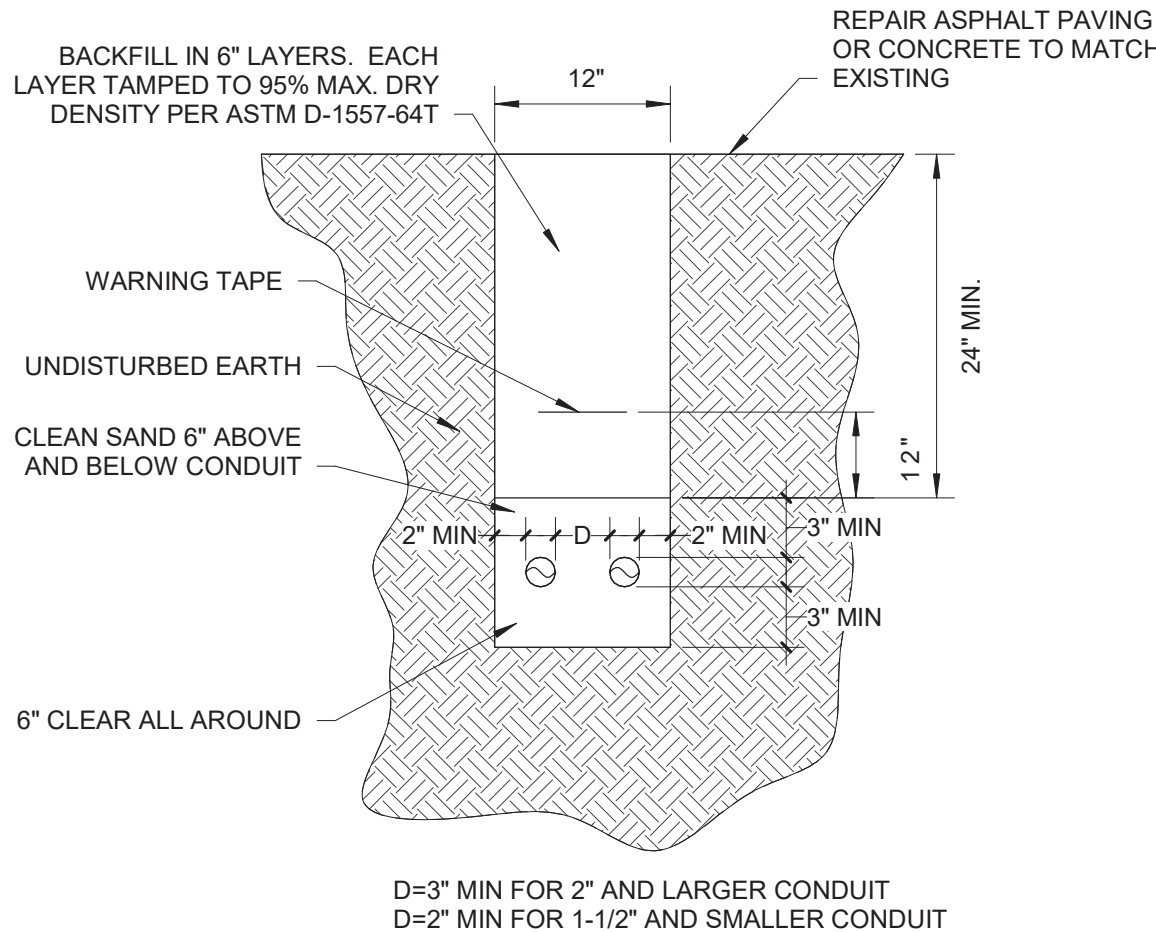


SYMBOLS	CONDUIT EXPOSED	
-----	CONDUIT CONCEALED OR BURIED	
	CROSS HATCHES W/ BARS INDICATES NUMBER OF #10 CONDUCTORS	
1/2" C - 2# 12.1 #12G	CAT 5e LIGHTING CABLE	
LA-2	HOME RUN-DESTINATION SHOWN	
	CONDUIT DOWN	
	CONDUIT UP	
	CONNECTION POINT	
	TELEPHONE CONNECTION POINT: 18" TO COD AFF UNLESS OTHERWISE NOTED. 3/4" C - STUB UP TO CEILING PLENUM	
	DATA CONNECTION POINT: 18" TO COD AFF UNLESS OTHERWISE NOTED. 3/4" C - STUB UP TO CEILING PLENUM	
	TELE/DATA CONNECTION POINT: 18" TO COD AFF UNLESS OTHERWISE NOTED. 3/4" C - STUB UP TO CEILING PLENUM	
	WALL SWITCH, 46" TO COD AFF UNLESS OTHERWISE NOTED	
	INDICATES THREE-POLE WALL SWITCH	
	INDICATES WALL SWITCH WITH INTEGRAL DIMMER	
	INDICATES WALL SWITCH WITH INTEGRAL OCCUPANCY SENSOR	
	INDICATES WALL SWITCHES FOR MULTIPLE LIGHTING GROUPS	
	INDICATES LOW VOLTAGE WALL SWITCH	
	INDICATES KEY-OPERATED WALL SWITCH	
	INDICATES MOTOR RATED SWITCH	
	INDICATES WALL SWITCH WITH INTEGRAL TIMER	
	MOTOR RATED SWITCH	
	OCCUPANCY SENSOR	
	JUNCTION BOX	
	CONTACT RELAY	
	20A SPECIFICATION GRADE RECEPTACLE, COORDINATE CONFIGURATION W/ SUPPLIED EQUIPMENT	20A SPECIFICATION GRADE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE
	20A SPECIFICATION GRADE QUADRUPLUX RECEPTACLE	20A SPECIFICATION GRADE GROUND FAULT CIRCUIT INTERRUPTER QUADRUPLUX RECEPTACLE
	208/240V RECEPTACLE 18" COD UNLESS OTHERWISE NOTED ON PLANS	
	SPLITWIRED RECEPTACLES	
	FUSED DISCONNECT	
	NON-FUSED DISCONNECT	
	FUSED SWITCH	
	LAY-IN 2 FT x 2 FT.	
	SURFACE MOUNTED 2 FT x 4 FT FLUORESCENT LIGHT FIXTURE.	
	SURFACE MOUNTED 1 FT x 4 FT FLUORESCENT LIGHT FIXTURE.	
	HATCHING INDICATES EMERGENCY LIGHTING.	
	RECESSED LIGHT FIXTURE.	
	PENDANT MOUNTED LIGHT FIXTURE	
	SINGLE FACE ILLUMINATED EXIT SIGN	
	DOUBLE FACED ILLUMINATED DIRECTIONAL EXIT SIGN.	
	SINGLE FACED ILLUMINATED DIRECTIONAL EXIT SIGN.	
	LED STANDARD EMERGENCY LIGHT	

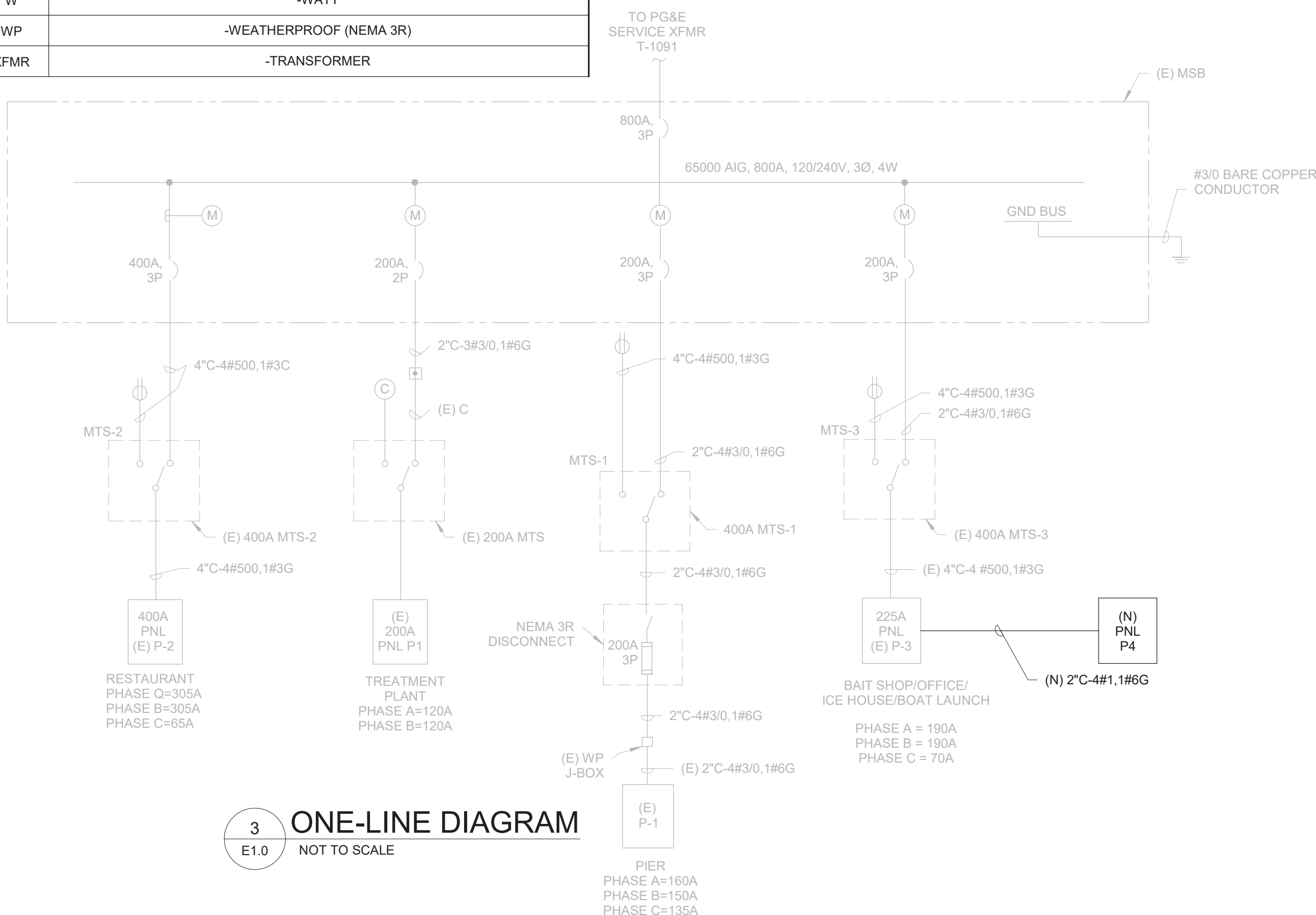
A	-AMMETER, AMPERE
AC	-ALTERNATING CURRENT
ACH	-ABOVE COUNTER HEIGHT
AFCI	-ARC FAULT CIRCUIT INTERRUPT
AFF	-ABOVE FINISHED FLOOR
AIC	-AMPS INTERRUPTING CAPACITY
ATS	-AUTOMATIC TRANSFER SWITCH
BRKR	-BREAKER
BOE	-BOTTOM OF EQUIPMENT
CEC	-CALIFORNIA ELECTRICAL CODE
C/COND	-CONDUIT
CKT	-CIRCUIT
COD	-CENTER OF DEVICE
CT	-CURRENT TRANSFORMER
(D)	-DEMOLISHED
DC	-DIRECT CURRENT
(E)	-EXISTING
G	-GROUND
GFCI	-GROUND FAULT CIRCUIT INTERRUPT
J	-JUNCTION BOX
LCP	-LIGHTING CONTROL PANEL
LTR	-LIGHTING
MFR	-MANUFACTURER
MSB	-MAIN SWITCH BOARD
MTS	-MANUAL TRANSFER SWITCH
NEC	-NATIONAL ELECTRIC CODE
NEMA	-NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION
N	-NEUTRAL
PB	-PULLBOX
PC	-PHOTOCELL
PNL	-PANELBOARD
RECEPT	-RECEPTACLE
(R)	-RELOCATED
SWBD	-SWITCHBOARD
T	-THERMOSTAT OR TELE CONDUIT
TOD	-TOP OF DEVICE
TYP	-TYPICAL
V	-VOLTMETER, VOLT
W	-WATT
WP	-WEATHERPROOF (NEMA 3R)
XFMR	-TRANSFORMER



1 PULLBOX - SWEEP UP
E1.0 NOT TO SCALE



2 TYPICAL UNDERGROUND CONDUIT
E1.0 NOT TO SCALE



3 ONE-LINE DIAGRAM
E1.0 NOT TO SCALE

P3

CKT	Circuit Description	Rating	Poles	A	B	C	A	B	C	Poles	Rating	Circuit Description	CKT				
1	(E) ICE HOUSE	70 A	3	6000			9989			3	125 A	(N) BRANCH PANEL "P4"	2				
3					6000			14420					4				
5						6000			12867				6				
7					7200			2400					8				
9	(E) BOAT LAUNCH	100 A	3		7200			2400		2	30 A	(E) OFFICE	10				
11						2400		--	1				--	(E) SPACE	12		
13				(E) SPACE	--	1	--		--					1	--	(E) SPACE	14
15				(E) SPACE	--	1	--	--	--				--	1	--	(E) SPACE	16
17	(E) SPACE	--	1			--			--	1	--	(E) SPACE	18				
TOTAL LOAD (VOLT-AMPS):				PHASE A 25588 VA		PHASE B 30020 VA		PHASE C 21267 VA									
TOTAL LOAD (AMPS)				219 A		256 A		177 A									

P4

[illegible]

ID	Manufacturer	Model	Lamp	Luminous Flux	Color Temperature	Apparent Load	Description
1	LITHONIA	EPANL 1X4	LED	4000 lm	3500 K	37 VA	INTERIOR SURFACE MOUNTED EDGE-LIT FLAT PANEL, 80 CRI, 0-10V DIMMING DOWN TO 1%, 120V AC. PROVIDE EMERGENCY BATTERY PACK WHERE INDICATED.
2	LITHONIA	EPANL 2X2	LED	3400 lm	3500 K	30 VA	INTERIOR SURFACE MOUNTED EDGE-LIT FLAT PANEL, 80 CRI, 0-10V DIMMING DOWN TO 1%, 120V AC. PROVIDE EMERGENCY BATTERY PACK WHERE INDICATED.
3	LITHONIA	VG03C	LED	600 lm	3500 K	25 VA	EXTERIOR VANDAL-RESISTANT WALLPACK, POLYCARBONATE LENS, DARK BRONZE FINISH, 120V AC. PROVIDE WITH PHOTOCELL AT ALL LOCATIONS.
4	LITHONIA	LDN6	LED	1000 lm	3500 K	10 VA	INTERIOR RECESSED 6" DOWNLIGHT, CLEAR TRIM, SEMI-SPECULAR FINISH, WHITE PAINTED FLANGE, 0-10V DIMMING DOWN TO 1%, 120V AC. PROVIDE WITH EMERGENCY BATTERY PACK WHERE INDICATED.
5	LITHONIA	ARC1	LED	2000 lm	3500 K	17 VA	EXTERIOR SURFACE MOUNTED ARCHITECTURAL WALL LUMINAIRE, PERFORMANCE PACKAGE P2, DAR BRONZE FINISH, 120-277V AC. PROVIDE WITH EMERGENCY BATTERY PACK AND BUTTON TYPE PHOTOCELL.
	LITHONIA	LQM	LED	0 lm	0 K	5 VA	INTERIOR EXIST SIGN, STENCIL FACE, WHITE HOUSING, GREEN LETTERS, 120V AC. PROVIDE WITH EMERGENCY BATTERY PACK AT ALL LOCATIONS.

SERVICE						
VOLTAGE	=	240 V	PHASE	=	3 Ø	
PANEL P4						
RECEPTACLE LOADS						
FIRST 10,000 VA	=	5640 VA	X	100%	=	5640 VA
REMAINING LOAD	=	VA	X	50%	=	0 VA
LIGHTING LOADS		962 VA	X	125%	=	1202.5 VA
WATER HEATING		9100 VA	X	100%	=	9100 VA
KITCHEN EQUIPMENT		12900 VA	X	100%	=	12900 VA
MOTOR LOADS		9600 VA	X	100%	=	9600 VA
LARGEST MOTOR LOAD		3840 VA	X	25%	=	960 VA
TOTAL DEMAND (VA)						39403 VA
TOTAL AMPS (A)						95 A
TOTALS						
TOTAL DEMAND						39403 VA
TOTAL CURRENT (THREE-PHASE)						95 A



TVCE



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REV	DATE	DESCRIPTION	APP'D BY	CHK'D BY	DES'D BY

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA 95570
ELECTRICAL SITE PLAN

HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:	7/12/2023
SCALE:	1/8" = 1'-0"
PROJECT NO:	427.11
DRAWING NO:	E1.2



- GENERAL NOTES:**
1. MAINTAIN A MINIMUM 30" WIDE AND 36" DEEP CLEAR SPACE IN FRONT OF ALL ELECTRICAL DISCONNECTS AND PANELS.
- KEYNOTES:**
- ① CONNECT TO EXISTING 2" DATA CONDUIT.



ELECTRICAL SITE PLAN
1/8" = 1'-0"

[illegible]

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

ELECTRICAL FLOOR PLANS

HUMBOLDT COUNTY, CALIFORNIA

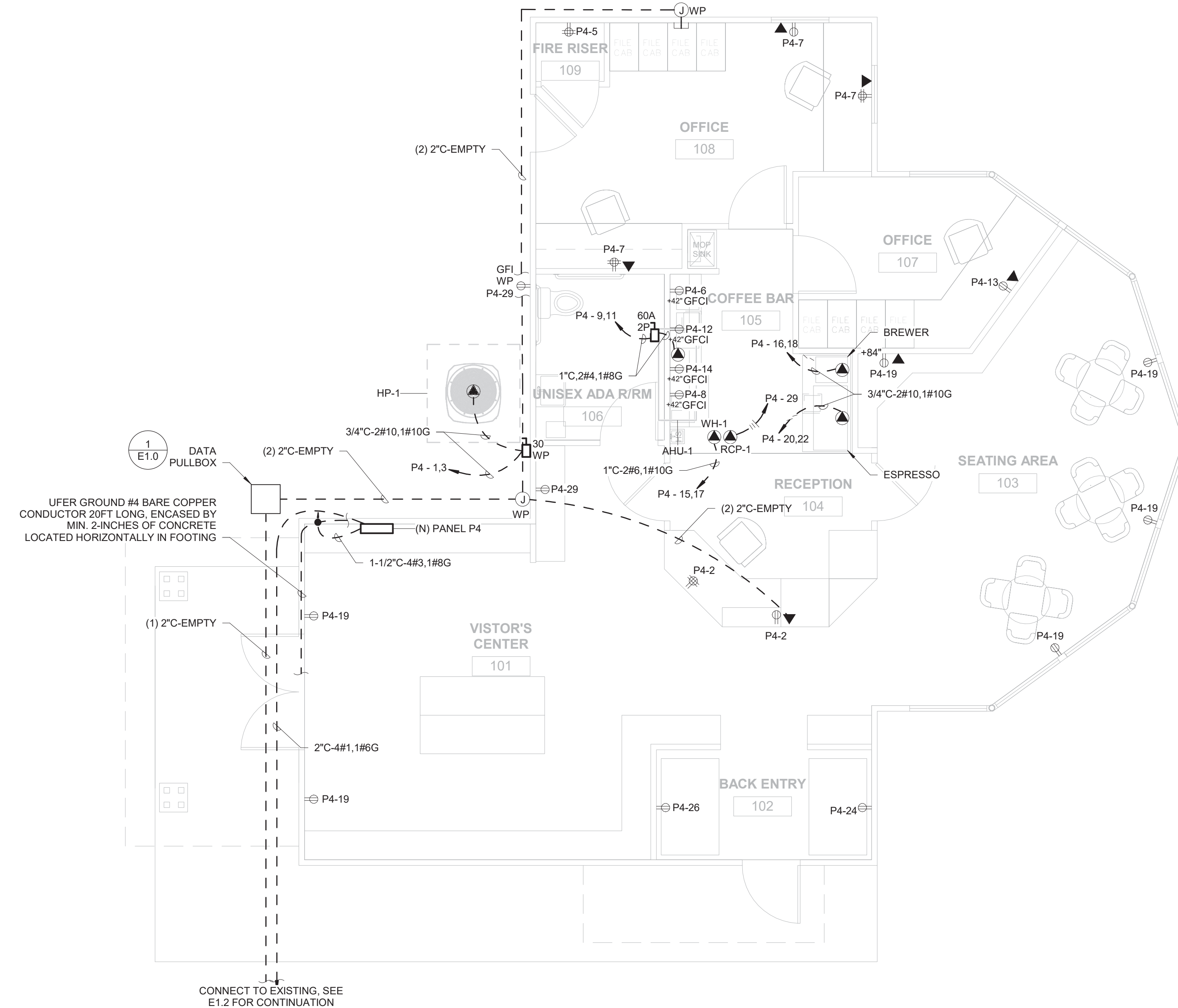
DATE OF ISSUE:
7/12/2023

SCALE:
As indicated

PROJECT NO:
427.11

DRAWING NO:
E2.0

PRIMARY DAYLIGHTING ZONE





1



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- 1



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FRONTIER
CONSULTING ENGINEERS
2727 Bechelli Lane - Redding, CA 96002
Ph: (530) 232-6160 - www.frontierce.com

SCALE:

M1.0

[illegible]

Cooling	Heating

NOTES:

	Cooling Coil	Heating Coil
1. Air flow rate, m^3/s		
2. Air flow rate, kg/s		
3. Inlet air temperature, $^{\circ}\text{C}$		
4. Inlet air humidity ratio, kg/kg		
5. Inlet air enthalpy, kJ/kg		
6. Inlet air wet-bulb temperature, $^{\circ}\text{C}$		
7. Inlet air dry-bulb temperature, $^{\circ}\text{C}$		
8. Inlet air density, kg/m^3		
9. Inlet air specific volume, m^3/kg		
10. Inlet air mass fraction of water vapor, kg/kg		
11. Inlet air mass fraction of dry air, kg/kg		
12. Inlet air mass fraction of oxygen, kg/kg		
13. Inlet air mass fraction of nitrogen, kg/kg		
14. Inlet air mass fraction of carbon dioxide, kg/kg		
15. Inlet air mass fraction of hydrogen, kg/kg		
16. Inlet air mass fraction of helium, kg/kg		
17. Inlet air mass fraction of neon, kg/kg		
18. Inlet air mass fraction of argon, kg/kg		
19. Inlet air mass fraction of krypton, kg/kg		
20. Inlet air mass fraction of xenon, kg/kg		
21. Inlet air mass fraction of radon, kg/kg		
22. Inlet air mass fraction of uranium, kg/kg		
23. Inlet air mass fraction of plutonium, kg/kg		
24. Inlet air mass fraction of americium, kg/kg		
25. Inlet air mass fraction of curium, kg/kg		
26. Inlet air mass fraction of berkelium, kg/kg		
27. Inlet air mass fraction of californium, kg/kg		
28. Inlet air mass fraction of einsteinium, kg/kg		
29. Inlet air mass fraction of fermium, kg/kg		
30. Inlet air mass fraction of mendelevium, kg/kg		
31. Inlet air mass fraction of nobelium, kg/kg		
32. Inlet air mass fraction of lawrencium, kg/kg		
33. Inlet air mass fraction of rutherfordium, kg/kg		
34. Inlet air mass fraction of dubnium, kg/kg		
35. Inlet air mass fraction of seaborgium, kg/kg		
36. Inlet air mass fraction of bohrium, kg/kg		
37. Inlet air mass fraction of hassium, kg/kg		
38. Inlet air mass fraction of meitnerium, kg/kg		
39. Inlet air mass fraction of darmstadtium, kg/kg		
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41. Inlet air mass fraction of copernicium, kg/kg		
42. Inlet air mass fraction of nihonium, kg/kg		
43. Inlet air mass fraction of flerovium, kg/kg		
44. Inlet air mass fraction of livermorium, kg/kg		
45. Inlet air mass fraction of tennessine, kg/kg		
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81. Inlet air mass fraction of ununseptium, kg/kg		
82. Inlet air mass fraction of ununseptium, kg/kg		
83. Inlet air mass fraction of ununseptium, kg/kg		
84. Inlet air		

Model	CFM	S.P.	Fan Drive	Service

NOTES:

	CFM	Size	Velocity (fpm)	F

NOTES:

Model	Mounting	Face Size	Material

	Mounting	Face Size	Neck Size	Material

NOTES:

CMC OA	Der. Occ. Density	No. of	2022 CMC OA	2022 CMC Min. OA	2022 CEC Table 120.1A
1.0	0.0000	0	1.0	1.0	1.0
2.0	0.0000	0	2.0	2.0	2.0
3.0	0.0000	0	3.0	3.0	3.0
4.0	0.0000	0	4.0	4.0	4.0
5.0	0.0000	0	5.0	5.0	5.0
6.0	0.0000	0	6.0	6.0	6.0
7.0	0.0000	0	7.0	7.0	7.0
8.0	0.0000	0	8.0	8.0	8.0
9.0	0.0000	0	9.0	9.0	9.0
10.0	0.0000	0	10.0	10.0	10.0
11.0	0.0000	0	11.0	11.0	11.0
12.0	0.0000	0	12.0	12.0	12.0
13.0	0.0000	0	13.0	13.0	13.0
14.0	0.0000	0	14.0	14.0	14.0
15.0	0.0000	0	15.0	15.0	15.0
16.0	0.0000	0	16.0	16.0	16.0
17.0	0.0000	0	17.0	17.0	17.0
18.0	0.0000	0	18.0	18.0	18.0
19.0	0.0000	0	19.0	19.0	19.0
20.0	0.0000	0	20.0	20.0	20.0
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61.0	0.0000	0	61.0	61.0	61.0
62					

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TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

MECHANICAL SPECIFICATIONS

DATE OF ISSUE:
7/12/2023

SCALE:

PROJECT NO:

427.11
DRAWING NO:

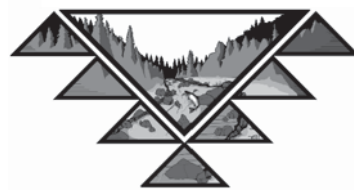
M1.1



MECHANICAL SPECIFICATIONS

PART 1 – GENERAL	2.1 DELIVERY, STORAGE, AND HANDLING	2.4 DUCTWORK ACCESSORIES	3.2 EQUIPMENT, GENERAL REQUIREMENTS
1.1 INCLUDED A. THIS SECTION COVERS MECHANICAL WORK, COMPLETE. WORK INCLUDES FURNISHING, INSTALLING, CALIBRATING, ADJUSTING, TESTING, DOCUMENTING, AND STARTING UP EQUIPMENT IN ACCORDANCE WITH THESE SPECIFICATIONS, THE ACCOMPANYING PLANS, AND THE DIRECTIONS OF THE ENGINEER.	A. CONTRACTOR SHALL BE RESPONSIBLE FOR DELIVERY, STORAGE, PROTECTION, AND PLACING OF ALL EQUIPMENT AND MATERIALS. CONTRACTOR SHALL PROTECT THE WORK AND MATERIALS FROM DAMAGE DURING THE PROJECT. EQUIPMENT STORED AT THE JOB SITE SHALL BE PROTECTED FROM DUST, WATER, OR OTHER DAMAGE, AND BE COVERED IF EQUIPMENT IS EXPOSED TO WEATHER. PROTECT INTERIORS OF NEW EQUIPMENT AND PIPING SYSTEMS AGAINST ENTRY OF FOREIGN MATTER. CLEAN BOTH INSIDE AND OUTSIDE BEFORE PAINTING OR PLACING EQUIPMENT IN OPERATION. ANY ITEMS DAMAGED SHALL BE REPAIRED OR REPLACED, AT NO ADDITIONAL COST TO THE OWNER.	A. FLEXIBLE DUCT CONNECTIONS - DURO-DYNE "METAL-FAB" WITH DUROIRON, VENTFABRICS "VENTGLASS," OR APPROVED EQUAL. - INSTALL AT EACH POINT WHERE A BLOWER UNIT IS CONNECTED TO A DUCT. A MINIMUM CLEARANCE OF THREE INCHES BETWEEN THE DUCT AND THE SOURCE OF VIBRATION SHALL BE MAINTAINED. INSTALL PER FIGURE 2-17.	A. EQUIPMENT SHALL OPERATE QUIETLY AND WITHOUT OBJECTIONABLE VIBRATION. SUCH PROBLEMS, OTHER THAN FROM EQUIPMENT OPERATING AT OPTIMUM CONDITIONS, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE ELIMINATED AT THE DIRECTION OF THE ARCHITECT.
1.2 CODES AND STANDARDS A. ALL WORK SHALL BE DONE IN CODE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL BUILDING SAFETY CODES, ORDINANCES, AND REGULATIONS. ADDITIONALLY, ALL WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING STANDARDS: - NATIONAL FIRE PROTECTION ASSOCIATION. - CALIFORNIA MECHANICAL CODE. - CALIFORNIA PLUMBING CODE. - UNDERWRITERS LABORATORIES. - TITLES 8, 17, 19, 21, 24 OF THE CALIFORNIA CODE OF REGULATIONS. - CALIFORNIA ELECTRIC CODE. - SMACNA STANDARDS. - ASHRAE STANDARDS 55 AND 62.1. B. WHEN THE CONTRACT DOCUMENTS CALL FOR MATERIALS OR CONSTRUCTION OF A HIGHER STANDARD THAN IS REQUIRED BY THE ABOVE, THE CONTRACT DOCUMENT REQUIREMENTS SHALL TAKE PRECEDENCE OVER THE REQUIREMENTS OF THE APPLICABLE LAWS, ORDINANCES, RULES, OR REGULATIONS. NOTHING IN THE CONTRACT DOCUMENTS SHALL BE INTERPRETED AS PERMITTING WORK IN VIOLATION OF SAID LAWS, RULES, AND/OR REGULATIONS. C. THE CONTRACTOR FOR THIS WORK SHALL FURNISH, WITHOUT EXTRA CHARGE, ANY ADDITIONAL MATERIALS AND/OR LABOR AS MAY BE REQUIRED FOR COMPLIANCE WITH THESE LAWS, RULES, AND/OR REGULATIONS THOUGH SUCH MATERIALS AND/OR LABOR ARE NOT SPECIALLY SET FORTH IN THE CONTRACT DOCUMENTS.	1.11 WARRANTIES A. EQUIPMENT WARRANTIES SHALL BE PROVIDED FOR ALL EQUIPMENT, WITH ALL NECESSARY INFORMATION FILLED IN, EXCEPT PURCHASE DATE, IN FAVOR OF THE OWNER. B. THE CONTRACTOR SHALL GUARANTEE THAT ALL WORK UNDER THIS SECTION IS FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FILING THE NOTICE OF COMPLETION. REPLACEMENT OF DEFECTIVE WORK AND DAMAGE CAUSED TO WORK OF OTHER TRADES AS A RESULT OF SUCH DEFECTIVE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE MADE AT NO COST TO THE OWNER. 1.12 ALTERNATIVE MATERIALS AND METHODS A. THESE PLANS AND SPECIFICATIONS DESCRIBE THE GENERAL SCOPE OF THE MECHANICAL SYSTEMS. THESE PLANS AND SPECIFICATIONS DO NOT PRECLUDE THE SUBMITTAL OF ALTERNATIVE METHODS OR MATERIALS. MANUFACTURER'S NAMES AND CATALOG NUMBERS ARE STATED TO IDENTIFY THE TYPE AND QUALITY OF THE EQUIPMENT OR MATERIALS REQUIRED FOR THE PROJECT. B. THE CONTRACTOR MAY SUBMIT SHOP DRAWINGS AND/OR TECHNICAL INFORMATION ON ALTERNATIVE EQUIPMENT, MATERIALS OR INSTALLATION DETAILS TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS. APPROVAL OF THE ALTERNATIVE EQUIPMENT, MATERIALS OR INSTALLATION DETAILS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY FOR COMPLYING WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SUBMIT THE MANUFACTURER'S TECHNICAL INFORMATION, SHOP DRAWINGS, AND/OR WRITTEN DESCRIPTION OF ALTERNATIVE METHODS FOR EACH ITEM DESCRIBED BY MANUFACTURER'S NAME AND CATALOG NUMBER AND FOR EACH COMPONENT, EQUIPMENT, MATERIAL, OR INSTALLATION DETAIL REQUIRED.	B. SCREENS – INSTALL REMOVABLE BIRD SCREENS AT ALL OUTSIDE INTAKES AND EXHAUST AIR DISCHARGES. SCREENS SHALL BE FABRICATED FROM ½" X 14 GAUGE MESH SECURED IN FULL FRAMES. SCREENS AND FRAMES SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE DUCT, HOOD, OR EQUIPMENT TO WHICH ATTACHED. C. JOINTS – TAPE ALL JOINTS AIRTIGHT USING HARDCAST TYPE "DT" PRESSURELESS TAPE AND "HD-20" ADHESIVE, PER MANUFACTURER'S DIRECTIONS. D. DAMPERS – PROVIDE BUTTERFLY OR MULTI-BLADE DAMPERS WHERE INDICATED ON THE DRAWINGS OR AS REQUIRED TO VALUES TO VALUES SHOWN WITHOUT GENERATING EXCESSIVE NOISE. PROVIDE DURO-DYNE "KS-385," OR APPROVED EQUAL. LOCKING QUADRANTS ON EACH MANUAL DAMPER. LOCATE DAMPERS IN FURRED CEILINGS NEAR ACCESS PANELS WHERE POSSIBLE. - BUTTERFLY DAMPERS SHALL BE CONSTRUCTED AS PER FIGURE 7-4, FIGURE A, B, AND C IN THE DUCT MANUAL. - MULTI-BLADE DAMPERS SHALL CONFORM TO FIGURE 7-5. - BACK-DRAFT DAMPERS SHALL BE AIR BALANCE "AIR DYNAMIC" MODEL DY-1002-V, OR EQUAL.	B. INSTALL EQUIPMENT TO PROVIDE GOOD APPEARANCE, EASY ACCESS, AND ADEQUATE SPACE TO ALLOW REPLACEMENT AND MAINTENANCE. PROVIDE BASES, SUPPORTS, ANCHOR BOLTS, AND OTHER ITEMS REQUIRED TO ACHIEVE THIS. INSTALLATION SHALL BE LEVEL, ABOVE MOISTURE LEVEL, AND ADEQUATELY BRACED. C. THOROUGHLY LUBRICATE EQUIPMENT BEFORE OPERATING. REPAIR OF DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE THE CONTRACTOR'S RESPONSIBILITY. D. CONNECTIONS TO PIPING SHALL BE SECURED AND PROPERLY ALIGNED AND ALL UTILITY AND CONTROL CONNECTIONS SHALL BE PROPERLY ISOLATED FROM THE BUILDING STRUCTURE BY MEANS OF ISOLATORS AND FLEXIBLE CONNECTIONS. ANY EQUIPMENT NOT MEETING THIS REQUIREMENT WILL BE MODIFIED AND REINSTALLED AT NO EXPENSE TO THE OWNER. E. MOVE EQUIPMENT INTO BUILDING THROUGH AVAILABLE OPENINGS. DISMANTLE EQUIPMENT WHERE NECESSARY TO ACCOMPLISH THIS. AFTER REASSEMBLY, TEST EQUIPMENT TO VERIFY ITS SATISFACTORY OPERATING CONDITION.
1.3 LICENSING REQUIREMENTS A. ALL WORK OF DIVISION 22 AND 23 SHALL BE PERFORMED BY AN APPROPRIATELY LICENSED CONTRACTOR. THE LICENSES SHALL BE CURRENT, VALID THROUGH THE TERM OF THE CONTRACT AND IN THE NAME OF THE CONTRACTOR.	2.2 THERMOSTATS A. ELECTRIC, SOLID-STATE, MICROCOMPUTER-BASED ROOM THERMOSTAT WITH THE FOLLOWING FEATURES: - AUTOMATIC SWITCHING FROM HEATING TO COOLING. - PREFERENCE TO MINIMIZE OVERSHOOT AND DEVIATION FROM SET POINT. - SET UP FOR FOUR SEPARATE TEMPERATURES PER DAY. - INSTANT OVERRIDE OF SET POINT FOR CONTINUOUS OR TIMED PERIOD FROM 1 HOUR TO 31 DAYS. - SHORT-CYCLE PROTECTION. - PROGRAMMING BASED ON EVERY DAY OF WEEK. - SELECTION FEATURES INCLUDE DEGREE F OR DEGREE C DISPLAY, 12- OR 24-HOUR CLOCK, KEYBOARD DISABLE, REMOTE SENSOR, AND FAN ON-AUTO. - BATTERY RECHARGE WITHOUT PROGRAM LOSS. - THERMOSTAT DISPLAY FEATURES INCLUDE THE FOLLOWING: - TIME OF DAY. - ACTUAL ROOM TEMPERATURE. - PROGRAMMED TEMPERATURE. - PROGRAMMED TIME. - DURATION OF TIMED OVERRIDE. - DAY OF WEEK. - SYSTEM MODE INDICATIONS INCLUDE "HEATING," "OFF," "FAN AUTO," AND "FAN ON."	2.5 INSULATION A. EXTERIOR OF DUCTWORK: - UNLESS SPECIFIED TO BE LINED, ALL SHEET METAL SUPPLY AND RETURN DUCTS IN INDIRECTLY CONDITIONED SPACES SHALL BE INSULATED ON THE OUTSIDE WITH JOHNS MANVILLE "MICROLITE XG" FLEXIBLE FIBERGLASS BLANKET-TYPE DUCT WRAP, WITH FACTORY APPLIED FSK ALUMINUM FOIL FACING, WITH A COMPOSITE UL RATING OF 25/50, MINIMUM R-6 INSTALLED. - UNLESS SPECIFIED TO BE LINED, ALL SHEET METAL SUPPLY AND RETURN DUCTS IN UNCONDITIONED SPACES SHALL BE INSULATED ON THE OUTSIDE WITH JOHNS MANVILLE "MICROLITE XG" FLEXIBLE FIBERGLASS BLANKET-TYPE DUCT WRAP, WITH FACTORY APPLIED FSK ALUMINUM FOIL FACING, WITH A COMPOSITE UL RATING OF 25/50, MINIMUM R-8 INSTALLED.	3.3 DUCTWORK A. ALL DUCTWORK SHALL BE INSTALLED WITHIN SPACES PROVIDED WHERE POSSIBLE. DUCTS SHALL BE INSTALLED TRUE TO LINE AND GRADE, FULLY SECURED TO STRUCTURAL FAMING WITH SPECIFIED HANGERS AND SUPPORTS, INSULATED, AND VIBRATION ISOLATED, WHERE REQUIRED.
1.4 COOPERATION WITH OTHER TRADES A. COOPERATE FULLY WITH OTHER TRADES DOING WORK ON THE PROJECT AS MAY BE NECESSARY FOR THE PROPER COMPLETION OF THE PROJECT. REFER TO THE STRUCTURAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR DETAILS OF THE BUILDING STRUCTURE AND EQUIPMENT INSTALLATION THAT WILL TEND TO OVERLAP, CONFLICT WITH OR REQUIRE COORDINATION WITH THE WORK OF THIS SECTION, AND SCHEDULE THIS WORK ACCORDINGLY. B. ANY WORK DONE WITHOUT REGARD FOR OTHER TRADES SHALL BE MOVED, REPLACED, OR REDONE AS REQUIRED, WITHOUT EXTRA CHARGES TO OWNER.	2.3 DUCTWORK A. SHEET METAL DUCTWORK - RECTANGULAR - DUCTS AND PLENUMS SHALL BE FABRICATED AND INSTALLED IN CONFORMANCE WITH THE LATEST EDITIONS OF: NFPA Pamphlet No. 90A; CALIFORNIA BUILDING CODE; CALIFORNIA MECHANICAL CODE AND THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS (METAL AND FLEXIBLE). DUCTS AND PLENUMS SHALL BE CONSTRUCTED OF HOT DIPPED GALVANIZED MILD STEEL AND SHALL HAVE AIRTIGHT CLASS "B" SEALS AT ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS. TABLES AND FIGURES HEREINAFTER REFERENCED ARE FROM THE 2005 EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS (METAL AND FLEXIBLE). - RECTANGULAR DUCT CONSTRUCTION SHALL CONFORM TO TABLE 2-3. ALL TRANSVERSE JOINTS SHALL BE FLANGED PER TABLE 2-32, WITH CORNER CLOSURES OR "DUCT MATE" FLANGED CONNECTIONS WITH CORNER CLOSURES PER FIGURE 2-17. ELBOWS SHALL BE STANDARD RADIUS (TYPE RE 1) OR SQUARE THROAT WITH VANES (TYPE RE 2) PER FIGURE 4-2. WITH DOUBLE THICKNESS TURNING VANES PER FIGURES 4-3 AND 4-4. OFFSETS AND TRANSITIONS SHALL BE PER FIGURE 4-7. SUPPLY, RETURN, AND EXHAUST BRANCH CONNECTIONS SHALL BE PER FIGURE 4-5 OR 4-6. SPLITTERS SHALL NOT BE USED. - LINED DUCTS SHALL BE FABRICATED SUCH THAT THE NET INSIDE DIMENSIONS EQUALS THE DUCT SIZES SHOWN ON THE DRAWINGS.	B. INTERIOR OF DUCTWORK: - DUCT LINING SHALL BE INSTALLED IN SUPPLY AND RETURN DUCTS AND PLENUMS WHERE NOTED ON THE DRAWINGS. LINING SHALL BE JOHNS MANVILLE "PERMACOTELINACOUSTIC R" RIGID FIBERGLASS BOARD FOR PLENUMS AND "PERMACOTELINACOUSTIC HP" FIBERGLASS DUCT LINER FOR DUCTS, 1" THICK, UNLESS OTHERWISE NOTED, WITH FIRE RESISTANT COATING. DUCT LINER SHALL MEET ASTM C 1071, WITH AIR SURFACE COATED WITH ACRYLIC COATING TREATED WITH EPA REGISTERED ANTI-MICROBIAL AGENT PROVE TO RESIST MICROBIAL GROWTH AS DETERMINED BY ASTM G 21 AND G 22. INSULATION WITH TORN OR BROKEN COATING SHALL BE REMOVED AND REPLACED. LOOSE CORNERS, EDGES, AND BUTT JOINTS WILL NOT BE ACCEPTED. - ALL EXPOSED EXTERIOR SUPPLY AND RETURN DUCTWORK SHALL HAVE MINIMUM 2" INTERIOR INSULATION, AS SPECIFIED IN THIS SECTION. - MAXIMUM VELOCITY: 5,000 FT/MIN. - FASTENERS: DUCT LINER GALVANIZED STEEL PINS, WELDED OR MECHANICALLY FASTENED. - DEVELOPED SMOKE DENSITY SHALL NOT EXCEED 50. FLAME SPREAD RATING SHALL NOT EXCEED 25.	3.4 CONTROLS A. THIS CONTRACTOR SHALL PROVIDE ALL

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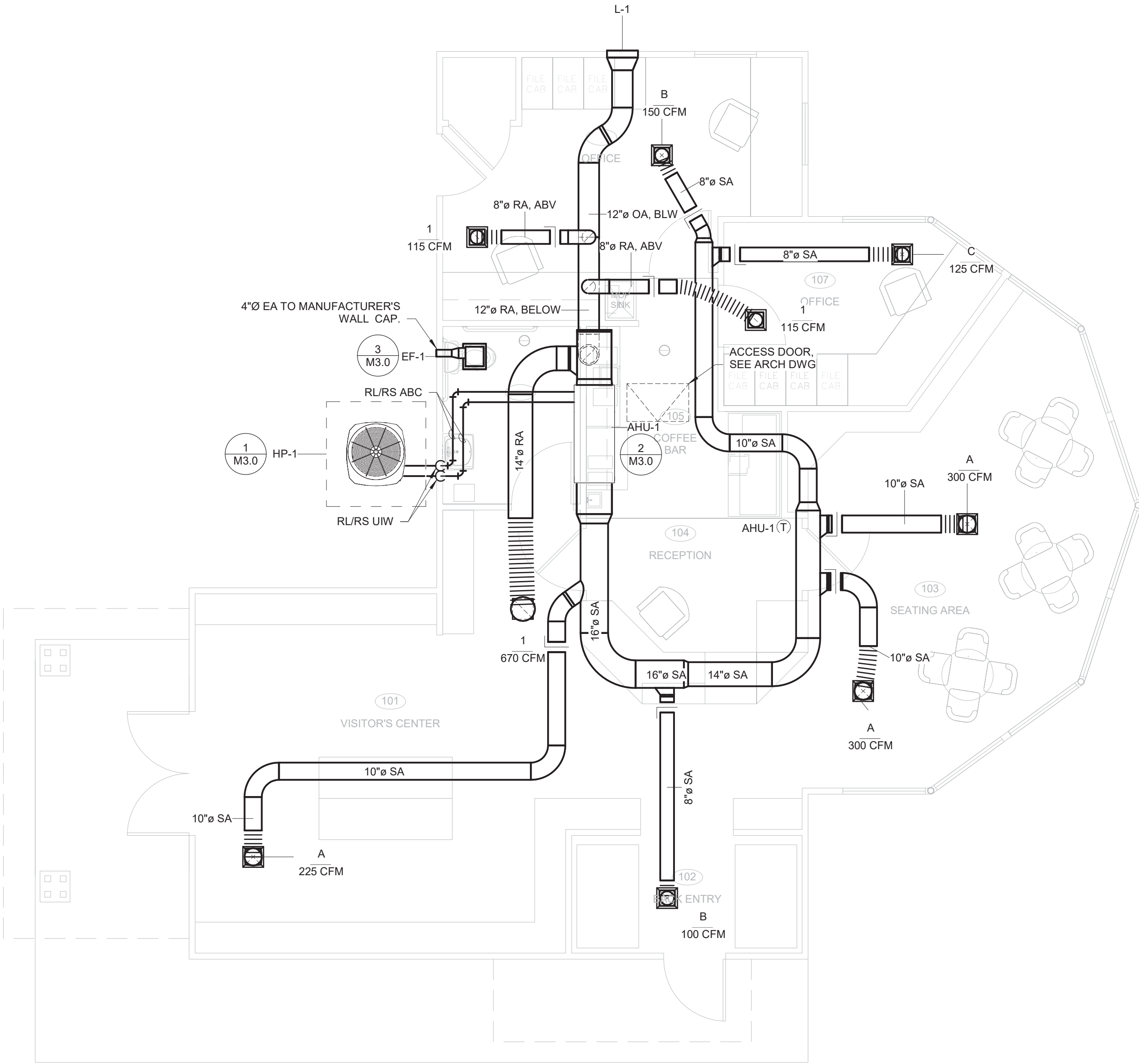
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REV	DATE	DESCRIPTION	APP BY	CHK BY	DES BY	DWN BY

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570
MECHANICAL FLOOR PLAN
HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:
7/12/2023
SCALE:
1/4" = 1'-0"
PROJECT NO:
427.11
DRAWING NO:
M2.0



1 MECHANICAL FLOOR PLAN
M2.0 1/4" = 1'-0"



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TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

MECHANICAL DETAILS

HUMBOLDT COUNTY, CALIFORNIA

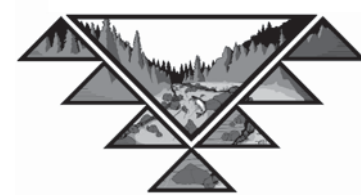
DATE OF ISSUE:
7/12/2023

SCALE:
1/8" = 1'-0"

PROJECT NO:
427.11

DRAWING NO:
M3.0





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TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570

PLUMBING LEGEND AND SCHEDULES

HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:

7/12/2023

SCALE:
1/8" = 1'-0"

PROJECT NO: 427.11

DRAWING NO:

P1.0



PLUMBING LEGEND

SYMBOLS	ABBREVIATIONS	
	ABC	ABOVE CEILING
	BFP	BACKFLOW PREVENTER
		BALL VALVE
	BG	BELOW GRADE
	BS	BELOW SLAB
		CHECK VALVE
	CW	COLD WATER SUPPLY
	CD	CONDENSATE DRAIN
	CDO	CONDENSATE DRAIN OVERFLOW
		CONNECTION TO BOTTOM OF PIPE
		CONNECTION TO TOP OF PIPE
-----	D	DEMO
-----		DOMESTIC COLD WATER
-----		DOMESTIC HOT WATER
	DN	DOWN
	DIW	DOWN IN WALL
	E. EX	EXISTING
		FLANGE
	FCO	FLOOR CLEAN OUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	GSM	GALVANIZED SHEET METAL
	GCO	GRADE CLEAN OUT
	GW	GREASE WASTE
	HB	HOSE BIB
	HW	HOT WATER SUPPLY
	HWR	HOT WATER RECIRC
	N	NEW
		NEW CONNECTION TO EXISTING
	OH	OVERHEAD
		PIPE CAP
		PIPE TURNED DOWN
		PIPE TURNED UP
		PRESSURE GAUGE
		PRESSURE REDUCING VALVE
		P-TRAP
		RELIEF VALVE
		REMOVE TO THIS POINT
	SS	SANITARY SEWAGE (BELOW GRADE)
	SOV	SHUT-OFF VALVE
	SK	SINK
		STRAINER
		THERMOMETER
	TMV	THERMOSTATIC VALVE
	TP	TRAP PRIMER
		TRIPLE DUTY VALVE
	UG	UNDERGROUND
		UNION
	UIW	UP IN WALL
	UR	URINAL
-----	V	VENT
	VTR	VENT TO ROOF
	WC	WATER CLOSET
	WHA	WATER HAMMER ARRESTER
	WCO	WALL CLEANOUT

PIPING MATERIALS SCHEDULE

Service	Location	Size	Material	Notes
WASTE & VENT	INTERIOR, AFF	ALL	STANDARD WEIGHT HUBLESS CAST IRON	SLOPED AT 1/4" PER FOOT
	INTERIOR, BELOW SLAB		STANDARD WEIGHT HUBLESS CAST IRON	
CW / HW	INTERIOR, ABOVE GROUND	ALL	TYPE "L" COPPER	PEX PIPING NOT ACCEPTABLE; INSULATE PER SECTION 22 00 00
	INTERIOR, BELOW SLAB	ALL	TYPE "K" COPPER	
COND. DRAIN	ALL	ALL	TYPE M - HARD TEMPER COPPER	

Water and Waste Fixture Unit Calculations

Project:		Trinidad Interpretive Center				Occupancy:		Public	
Plan Tag	No.	Cold Water		Hot Water		Waste		DFU TOTAL	
		FU/FIX	FU TOTAL	FU/FIX	FU TOTAL	DFU/FIX			
WC-1	1	5.0	5	--	--	4.0		4	
L-1	1	1.0	1	0.750	0.75	1.0		1	
SK-1	3	1.5	4.5	1.125	3.375	2.0		6	
MS-1	1	3.0	3	2.25	2.25	3.0		3	
FD-1	1	--	--	--	--	2.0		2	
FS-1	1	--	--	--	--	4.0		4	
Total Fixture Units		CW FU	13.5	HW FU	6.375	DFU		20.0	
		Line Size	1-1/4"	Line Size	1"	San. Size		4"	
		GPM	10.4	GPM	6.5	Max DFU		216.0	
		FPS	2.7	FPS	2.4				
		PSI / 100	1.5	PSI / 100	1.8				
Pressure Available at Water Main						60		psi	
Meter Loss						5		psi	
Backflow Preventer Loss						15		psi	
Elevation Loss						10	ft	4.3	psi
Minimum Pressure Required at Fixture						25		psi	
Total Pipe Friction Loss Available						10.7		psi	
Approximate Total Equivalent Length						80		ft.	
Maximum Allowable Pipe Friction Loss per 100 Feet						13.3		psi	

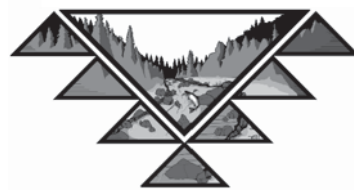
PLUMBING FIXTURE SCHEDULE

ID	Make	Model No.	Description	Mounting	Material
WC-1	KOHLER	K-3999	ACCESSIBLE GRAVITY TANK WATER CLOSET, 1.28 GPF., COMFORT HEIGHT, ELONGATED BOWL, WITH KOHLER K-4731-SC-0 OPEN TOILET SEAT, RIGHT HAND OR LEFT HAND TRIP LEVER DIMENSIONS: 29-3/4" x 18" x 31-1/4"	FLOOR	VIT CHINA
L-1	KOHLER	K-2005	WALL HUNG LAVATORY WITH OVERFLOW, HOT/COLD WATER HOLES 4" O.C. CHICAGO FAUCETS 420-1452805/ABCP ASSE 1070 LISTED THERMOSTATIC MIXING FAUCET, 0.50 GPM AERATOR, CHROME PLATE FINISH, J.R. SMITH CONCEALED ARM SUPPORT, CHICAGO 1013-ABCP ANGLE STOPS, PRE-FABRICATED CLOSED CELL VINYL INSULATE SAFETY COVER OVER TRAP AND WATER PIPING. DIMENSIONS: 20" x 18"	WALL	VIT CHINA
WH-1	AO SMITH	DEL 30	30 GALLON LOW PROFILE ELECTRIC WATER HEATER, TWO SIMULTANEOUS 4.5KW ELEMENTS ELECTRIC: 208/1160 9KW.	ABOVE CEILING	GLASS LINED STEEL
ET-1	AMTROL	ST-5-C	4.0 GALLON STAINLESS STEEL EXPANSION TANK, 200°F MAXIMUM OPERATING TEMP., 150 PSIG MAX WORKING PRESSURE, POLYPROPYLENE LINER, SHEEL CONSTRUCTED OF POWDER COATED STEEL. DIMENSIONS: 15-1/2" H, 14-1/4" DIAMETER WEIGHT: 35 LBS EMPTY, 85 LBS FULL	WALL	STEEL
TP-1	PPP	LTP-500	11/2" TAIL PIECE FLOOR DRAIN TRAP PRIMING ASSEMBLY, 1/2" BRAIDED STAINLESS STEEL PRIME WATER LINE WITH 1/2" COMPRESSION FITTINGS, CHROME-PLATED ESCUTCHEONS FOR BOTH WALL TUBE AND MAKE UP WATER LINE.	UNDER SINK	BRASS
RCP-1	B&G	E3-6V/BURPZ	OPEN SYSTEM RECIRCULATION PUMP, 230°F MAX TEMP, 36°F MIN TEMP, 150 PSI MAX SYSTEM PRESSURE, ADJUSTABLE THERMOSTAT, 1/2" LEAD-FREE BRASS UNION CONNECTIONS, E3 TIMER AND HIGH EFFICIENCY ECM MOTOR. ELECTRICAL: 115/1160	PIPE	BRASS
TMV-1	ZURN	1070XL	ASSE 1070 LISTED THERMOSTATIC MIXING VALVE, 0.35GPM ACTIVATION FLOW, 110°F OUTLET TEMPERATURE, WAX BASED THERMOSTATIC MOTOR DESIGN, MOUNT AT ALL KITCHEN HANDWASHING FIXTURES, FIXTURES TO BE SPECIFIED BY OWNER.	UNDER SINK	BRASS
FD-1	JR SMITH	2005Y	2" NPT CONNECTION, 5" NICKEL BRONZE ADJUSTABLE STRAINER HEAD, TRAP PRIMER CONNECTION.	FLOOR	BRONZE
FS-1	JR SMITH	3420Y-12	CAST IRON FLOOR SINK WITH 12" SQUARE TOP, 6" DEEP, ACID RESISTANT COATED INTERIOR, LOOSE SET ACID RESISTANCE COATED CAST IRON 1/2 GRATE, AND ALUMINUM DOME BOTTOM STRAINER, 3" WASTE CONNECTION.	FLOOR	CAST IRON
BFP-1	WATTS	SD3	DUAL CHECK VALVES BACKFLOW PREVENTER, W/ ATMOSPHERIC VENT, LEAD FREE.	--	STAINLESS STEEL

PLUMBING FIXTURE CONNECTION SCHEDULE

ID	Description	Accessible	Connection Size (Inches)			
			Waste	Vent	CW	HW
WC-1	WATER CLOSET	YES	3"	2"	3/4	--
L-1	LAVATORY	YES	2"	1-1/2"	1/2"	1/2"
FD-1	FLOOR DRAIN	--	2"	1-1/2"	1/2"	--
FS-1	FLOOR SINK	--	2"	1-1/2"	--	--

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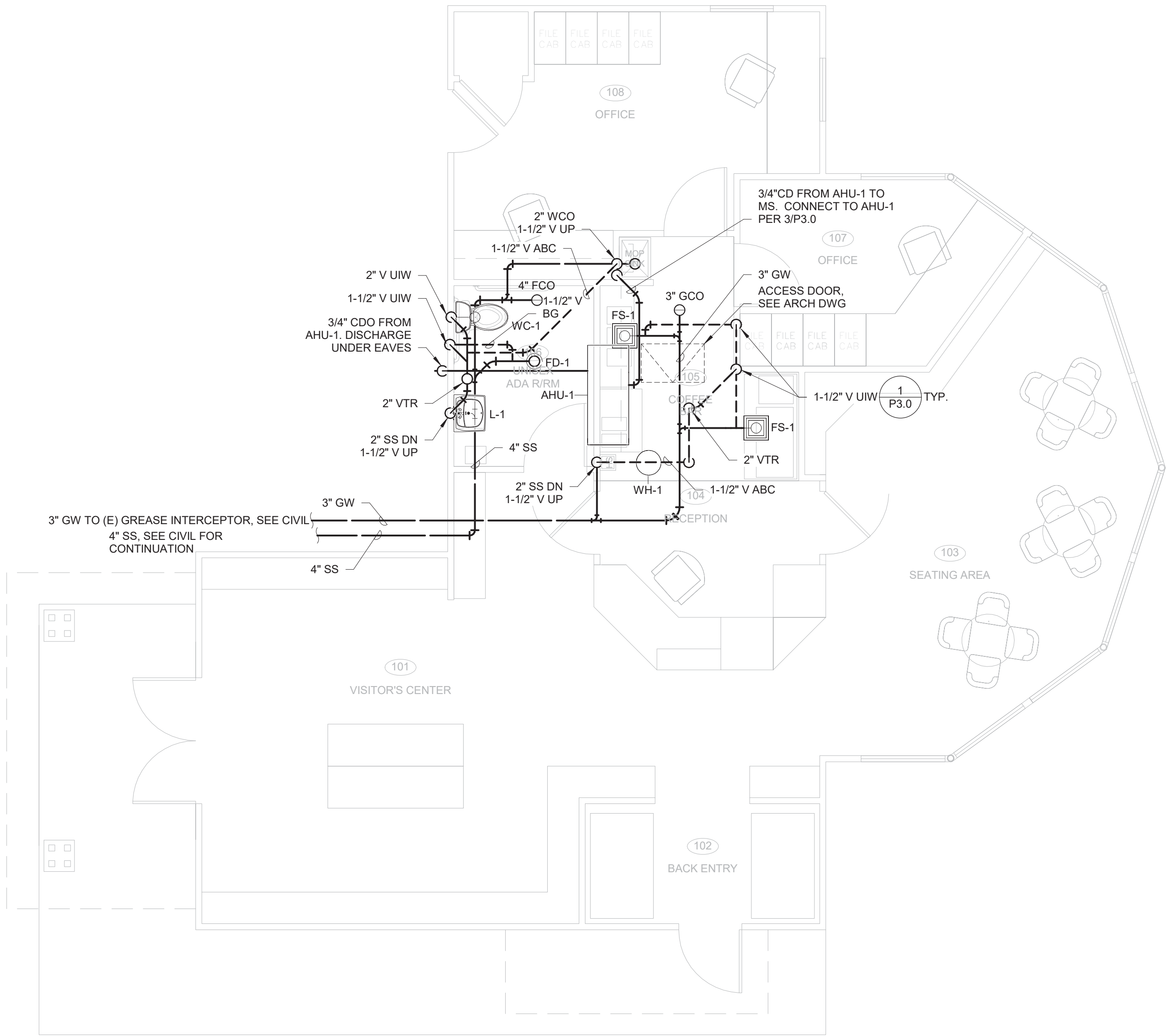
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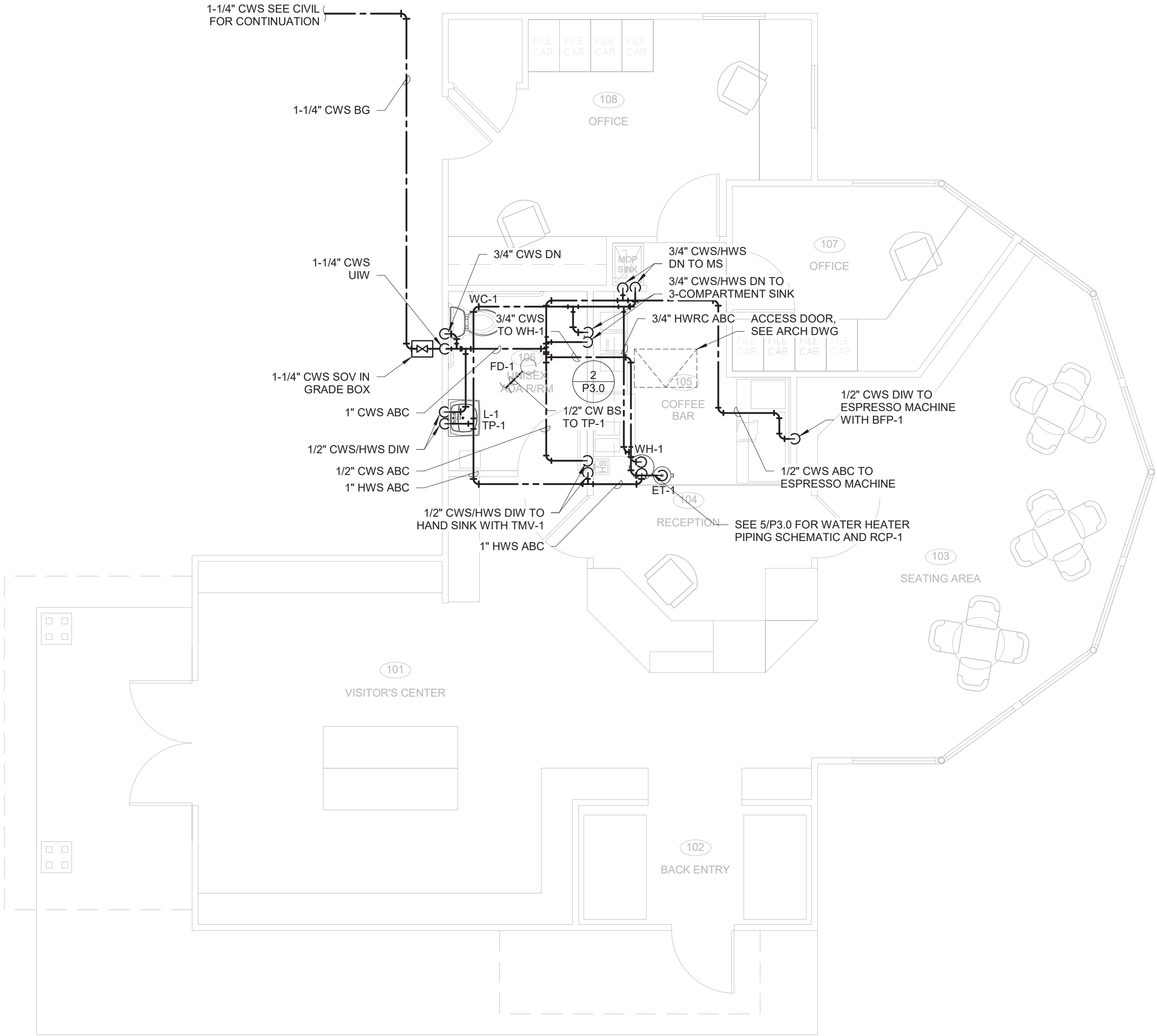
REV	DATE	DESCRIPTION	APP'D BY	CHK'D BY

TRINIDAD RANCHERIA
INTERPRETIVE CENTER
TRINIDAD, CA. 95570
PLUMBING FLOOR PLANS
HUMBOLDT COUNTY, CALIFORNIA

DATE OF ISSUE:	7/12/2023
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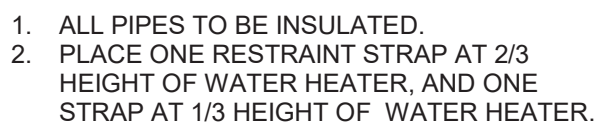
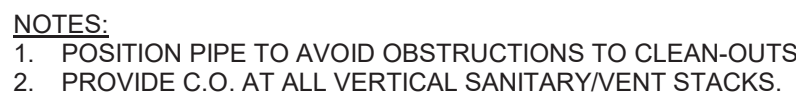


2 PLUMBING FLOOR PLAN - DWV
P2.0 1/4" = 1'-0"



1 PLUMBING FLOOR PLAN - WATER & GAS
P2.0 1/4" = 1'-0"





The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2022 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Report Generated: 2023-06-29 10:08:28
Schema Version: rev 20220601 Compliance ID: EnergyPro-1734-0623-0073

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Report Generated: 2023-06-29 10:08:28
Schema Version: rev 20220601 Compliance ID: EnergyPro-1734-0623-007

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Schema Version: rev 20220601 Compliance ID: EnergyPro-1734-0623-0077

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Report Generated: 2023-06-29 10:08:21
Schema Version: rev 20220601 Compliance ID: EnergyPro-1734-0623-007

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD										NRCC-PBF-E	
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G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)										
01	02	03	04	05	06	07	08	09		
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type	Certification Method ¹	Assembly Method	Area (ft ²)	Overall U-Factor	Overall SHGC	Overall VT	Status ²		
Double Metal Clear Doors	Vertical fenestration Glazed door Metal	Default 110.6	Manufactured	42	0.77	0.7	0.53	N		
Double Non Metal Clear Glass Doors	Vertical fenestration Glazed door Non-metal	Default 110.6	Manufactured	42	0.53	0.65	0.53	N		
NFRC Rated Window	Vertical fenestration Operable window N/A	NFRC	Manufactured	230	0.46	0.22	0.5	N		

¹ Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix A4A and are used in the analysis.

² Status: N - New, A - Altered, E - Existing

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)												
01	02	03	04	05	06	07	08	09	10	11	12	
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status ¹	
Heat Pump or Eq.	Single Zone Heat Pump (SZHP) Air System	1	49.99	0	N/A	NA	46.09	EER SEER	12.2 16	No Economizer	N	

¹ Status: N - New, A - Altered, E - Existing

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K2. INDOOR CONDITIONED LIGHTING SCHEDULE										
Luminaire Schedule (includes all permanent installed lighting in conditioned space, and portable lighting over 0.3 w/ft ² in offices)										
01	02	03	04	05	06					
Name or Item Tag	Complete Luminaire Description (i.e., 3-lamp fluorescent troffer, T22T8, one dimmable electronic ballast)	Watts per luminaire	How is Wattage determined	Total number of Luminaires	Installed Watts					
106UnisexADARR	4-Recessed Mount LED 31W	31	According to	1	31					
101Visitors	4-Recessed Mount LED 31W	31	According to	8	248					
102BackEntry	4-Recessed Mount LED 31W	31	According to	1	31					
103Seating	1-Recess Mount Fixture 39W	39	According to	4	156					
1103Seating	5-din Recessed Downlight LED 10W	10	According to	5	50					
104Reception	4-Recessed Mount LED 31W	31	According to	1	31					
105CoffeeBar	4-Recessed Mount LED 31W	31	According to	2	62					
107Office	1-Recess Mount Fixture 39W	39	According to	2	78					
108Office	4-Recessed Mount LED 31W	31	According to	3	93					

¹ If lighting power densities were used in the compliance model Building Departments will need to check prescriptive forms for Luminaire Schedule details.

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Documentation Author's Declaration Statement
 I, I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Anthony K. McQuay, CEA Documentation Author Signature: *Anthony K. McQuay*

Company: ABBAY TECHNICAL SERVICES Signature Date: 06/29/23

Address: 1125 16th Street, Ste 216 CEA/HERS Certification Identification (if applicable): R19-21-30083 / NR19-23-30043

City/State/Zip: Arcata, CA 95521 Phone: 707.826.1433

Responsible Person's Declaration statement

- I certify the following under penalty of perjury, under the laws of the State of California:
- The information provided on this Certificate of Compliance is true and correct.
 - 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).
 - 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.
 - 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.
 - I understand that a registered 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, and I will take the necessary steps to accomplish this requirement.
 - I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name: Trinity Valley Consulting Engineers Responsible Designer Signature: *[Redacted]*
 Company: Trinity Valley Consulting Engineers Address: P.O. Box 1567 Date Signed: *[Redacted]*
 City/State/Zip: Willow Creek, CA 95573 License #: *[Redacted]* Title: *[Redacted]* Scope: *[Redacted]*
 Phone: 530.629.3000

Responsible Designer Name: Trinity Valley Consulting Engineers Responsible Designer Signature: *[Redacted]*

Company: Trinity Valley Consulting Engineers Address: P.O. Box 1567 Date Signed: *[Redacted]*

City/State/Zip: Willow Creek, CA 95573 License #: *[Redacted]* Title: *[Redacted]* Scope: *[Redacted]*

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H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY												
01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	Status ¹
Heat Pump or Eq.	1	402.01	1,600	0.75	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

¹ Status: N - New, A - Altered, E - Existing

H5. GENERAL EXHAUST FAN SUMMARY							
01	02	03	04	05	06	07	08
System ID	Zone Name	Qty	CFM	Power	Power Units	Continuous Operation?	Status ¹
106 Unisex ADA Restroom3	1-106 Unisex ADA Restroom	1		80	0.02	BHP	No

¹ Status: N - New, A - Altered, E - Existing

H8. SYSTEM SPECIAL FEATURES			
01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(a) ¹	Other Special Features and Controls
Heat Pump or Eq.	Single Zone Heat Pump (SZHP) Air System	No	
DHW1 - SHW	Service Hot Water	N/A	Fixed Temperature Control

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

¹ Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.

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K3. INDOOR CONDITIONED LIGHTING CONTROL CREDITS										
Lighting Control Credits Schedule (includes all lighting controls installed in conditioned space for compliance credit per 140.6(a)(2) and Table 140.6-A)										
01	02	03	04	05	06	07	08	09		
Area Description	Primary Function Area (must meet requirements of Table 140.6-A and 170.2-1)	Type of Lighting Control	Power Adjustment Factor (PAF) ¹	Luminaire Item Tag	Watts per Luminaire	# of Luminaires	Lighting Controlled (Watts)	Control Credit (Watts)		
S-1-106 Unisex ADA Restroom	Restroom	N/A	N/A	106UnisexADA RR	31	1	31	0		
S-2-101 Visitors Center	Retail Merchandise Sales	N/A	N/A	101Visitors	31	8	248	0		
S-3-102 Back Entry	Main Entry Lobby	N/A	N/A	102BackEntry	31	1	31	0		
S-4-103 Seating Area	Lounge	N/A	N/A	103Seating	39	4	156	0		
S-4-103 Seating Area	Lounge	N/A	N/A	1103Seating	10	5	50	0		
S-5-104 Reception	Office (250 square feet)	N/A	N/A	104Reception	31	1	31	0		
S-6-105 Coffee Bar	Lounge	N/A	N/A	105CoffeeBar	31	2	62	0		
S-7-107 Office	Office (250 square feet)	N/A	N/A	107Office	39	2	78	0		
S-8-108 Office	Office (250 square feet)	N/A	N/A	108Office	31	3	93	0		
							Lighting Control Credits (Conditioned) Total (Watts)		0	

K4. INDOOR CONDITIONED LIGHTING MANDATORY LIGHTING CONTROL									
Building Level Controls									
01			02						
Mandatory Demand Response 110.12(c)			Shut-Off Controls 130.1(c) & 160.5(b)(4C)						
NA			NA						
Area Level Controls (includes all lighting controls installed in conditioned space to meet mandatory requirements per 130.1)									
03	04	05	06	07	08	09			

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Responsible Designer Name: Trinity Valley Consulting Engineers Responsible Designer Signature: *[Redacted]*
 Company: Trinity Valley Consulting Engineers Address: P.O. Box 1567 Date Signed: *[Redacted]*
 City/State/Zip: Willow Creek, CA 95573 License #: *[Redacted]* Title: *[Redacted]* Scope: *[Redacted]*
 Phone: 530.629.3000

CALIFORNIA ENERGY COMMISSION										NRCC-ELC-E	
ELECTRICAL POWER DISTRIBUTION										(Page 1 of 6)	
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)(3) for alterations. For multifamily addition or alterations compliance will be documented per 160.1(a) or 160.2 (b)(6)(ii).										6/29/2023	
Project Name: Trinidad Interpretive Center										Report Page: 1	
Project Address: Trinidad Pier										Date Prepared: 6/29/2023	
A. GENERAL INFORMATION											
01	02	03	04	05	06	07	08	09	10	11	12
Project Location (city)	Trinidad	Climate Zone									
		Occupancy Types Within Project:									
B. PROJECT SCOPE											
This table includes electrical systems that are within the scope of the permit application.											
01	02	03	04	05	06	07	08	09	10	11	12
Electrical Service Designation/ Description	Scope of Work ¹	Rating ¹ (kVA)	Utility Provided Metering System Exception to 130.5(a) / 160.6(a) ²	System subject to CA Elec. Code Article 517 Exception to 130.5(a)and (b)	Demand Response Controls	Provides power to dwelling units/common living areas only in multifamily occupancy					
New Service	New electrical service equipment and meter	50	☐	☐	Where required, demand response controls must be specified which are capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. Sections 120.2 / 160.3, 130.1 / 160.5, and 130.3 / 160.5, and mechanical, indoor lighting, and sign lighting Certificate of Compliance documents will indicate when demand response controls are required.	☐					

¹ FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(i) / 160.6(i), no other requirements from 130.5 / 160.6 are required.

² If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.

³ Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.

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H9. NONRESIDENTIAL

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Electrical Power Distribution
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G. SEPARATION OF ELECTRICAL CIRCUITS FOR ENERGY MONITORING					
This table includes entirely new or complete replacement electrical power distribution systems to demonstrate compliance with 130.5(b) / 160.6(b). Any load types that are not included in the service do not need to be shown. For multifamily occupancies, submetered systems that provide power to dwelling units do not need to meet these separation requirements and therefore load types on those submetered systems also do not need to be shown.					
01	02	03	04	05	
Load Type per Table 130.5-B ¹	Minimum Required Separation of Load per Table 130.5-B	Compliance Method ²	Location of Requirements in Construction Documents	Field Inspector	
New Service				Pass	Fail
Renewable power sources (net or total)	Each group	Method 1: Switchboards, motor control centers, or panelboard loads disaggregated for each load type	Electrical Sheets	☐	☐
Charging stations for electrical vehicle	All loads in aggregate	Method 1: Switchboards, motor control centers, or panelboard loads disaggregated for each load type	Electrical Sheets	☐	☐
* NOTES: If "Other" is selected under Compliance Method above, please indicate how compliance has been achieved in the space provided below.					
FOOTNOTES: For each separate load type, up to 10% of the connected load may be any type: Method 1: Switchboards / motor control centers / panelboard loads disaggregated for each load type. Method 2: Switchboards / motor control centers / panelboard supply other distribution equipment with loads disaggregated for each load type. Method 3: Branch circuits serve load types individually and provisions for adding future branch circuit monitoring. Method 4: Complete metering system measures and reports loads by type. See Chapter 8 of the Nonresidential Compliance Manual for more detail on Compliance Methods.					

H. VOLTAGE DROP
This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c) / 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)(2) / 160.2(b)(4)(b).

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STATE OF CALIFORNIA
Indoor Lighting
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
Project Address: Trinidad Pier
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A. GENERAL INFORMATION					
01 Project Location (city)	Trinidad	04 Total Conditioned Floor Area (ft²)	1,367		
02 Climate Zone	1	05 Total Unconditioned Floor Area (ft²)	0		
03 Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)			
☐ Office ☐ Retail ☐ Support Areas ☐ All Other Occupancies					
B. PROJECT SCOPE					
This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)(2) / 160.2(b)(4) for alterations.					
Scope of Work		Conditioned Spaces		Unconditioned Spaces	
01		02		03	
04		05		06	
My Project Consists of (check all that apply):		Calculation Method		Calculation Method	
☒ New Lighting System		Area (ft²)		Area (ft²)	
☐ New Lighting System - Parking Garage		Area Category Method		Area Category Method	
Total Area of Work (ft²)		1,367		0	

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Indoor Lighting
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H. INDOOR LIGHTING CONTROLS (Not including PAFs)					
108 Office	Office (<=250 square feet)	Readily Accessible	NA: General Lig <= 0.5W/ft²	Occupancy Sensor	NA: General Lig < 120W
				No	☐
				13	
				Plan Sheet Showing Daylit Zones: Lighting/Electrical Sheets	

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS					
Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used.					
01	02	03	04	05	06
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment PAF
106 Unisex ADA Restroom	Restroom	0.65	63	41	No
101 Visitor's Center	Retail Merchandise Sales	0.95	447	424.6	No
102 Back Entry	Main Entry Lobby	0.7	71	49.7	No
103 Seating Area	Lounge	0.55	298	163.9	No
104 Reception	Office (<=250 square feet)	0.65	94	61.1	No
105 Coffee Bar	Lounge	0.55	93	51.2	No
107 Office	Office (<=250 square feet)	0.65	102	66.3	No
108 Office	Office (<=250 square feet)	0.65	199	129.4	No
TOTALS:		1,367	987.2	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM
This section does not apply to this project.

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Electrical Power Distribution
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H. VOLTAGE DROP					
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method	Location of Voltage Drop Calculations ¹	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector	
New Service	☒ Voltage drop less than 5% ☐ Permitted by EA EEC Code (Exception to 130.5(d))	Contractor Responsible	Electrical Sheets	☐	☐
* NOTES: If "Permitted by EA EEC Code" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.					
FOOTNOTES: Voltage drop calculations may be attached to the permit application under the construction documents (if allowed by the Authority Having Jurisdiction. Select "attached" if applicable. If calculations will be the responsibility of the installing contractor, select "Contractor Responsible".					
I. CIRCUIT CONTROLS FOR 120-VOLT RECEPTACLES AND CONTROLLED RECEPTACLES					
This table includes entirely new or complete replacement electrical power distribution systems to demonstrate compliance with 130.5(d) / 160.6(d). Both controlled and uncontrolled receptacles must be provided in office areas, lobbies, conference rooms, kitchen areas in office spaces, copy rooms and hotel/motel guest rooms.					
01	02	03	04	05	06
Room name or Description	Location/Type of Controlled Receptacles ¹	Shut-Off Controls	Demand Responsive Controls	Permanent Durable Marking Will be Used	Location of Requirements in Construction Documents
	Within 6ft of uncontrolled	Auto Time-Switch with applicable overrides	NA: Building does not require demand responsive lighting controls per 110.12(c)	☒	Electrical Sheets
* NOTES: If "Other" is selected under Shut-Off Controls above, please indicate how compliance has been achieved in the space provided below.					
FOOTNOTES: Receptacles dedicated to refrigerators and water dispensers in kitchens, located a minimum of 6ft above the floor specifically for clerks, network copiers, fax machines, A/V and data equipment other than personal computers in copy rooms, circuits rated more than 20 Amps, or connected to a UPS that are intended to be in continuous use and are marked to differentiate them from other receptacles or circuits are excepted from the requirements.					

J. ELECTRIC READY BUILDINGS
This section does not apply to this project.

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STATE OF CALIFORNIA
Indoor Lighting
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C. COMPLIANCE RESULTS									
If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.									
Allowed Lighting Power per 140.6(b) / 170.2(a) (Watts)					Adjusted Lighting Power per 140.6(a) / 170.2(a) (Watts)			Compliance Results	
01	02	03	04	05	06	07	08	09	
Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b) / 170.2(a)	Complete Building 140.6(c)1	Area Category Additional 140.6(c)2 / 170.2(a)4a	Tailored 140.6(c)3 / 170.2(a)4b (+)	=	Total Designed (Watts)	PAF Lighting Control Credits 140.6(a)2 / 170.2(a)1b (-)	Total Adjusted (Watts) Includes Adjustments	05 must be >= 08 140.6 / 170.2(c)	
	(See Table I)	(See Table I)	(See Table K)		(See Table F)	(See Table F)			
Conditioned	987.2	0		=	987	0	=	780	COMPLIES
Unconditioned				=			=		COMPLIES
Controls Compliance (See Table H for Details)									
Rated Power Reduction Compliance (See Table Q for Details)									

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.

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Indoor Lighting
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K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE
This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY
This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING
This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS
This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE
This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))
This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS
This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS
This section does not apply to this project.

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STATE OF CALIFORNIA
Electrical Power Distribution
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
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K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Form/Title
NRCC-ELC-E - Must be submitted for all buildings

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STATE OF CALIFORNIA
Indoor Lighting
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
Project Address: Trinidad Pier
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F. INDOOR LIGHTING FIXTURE SCHEDULE														
This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. Using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.														
Designed Wattage: Conditioned Spaces														
01	02	03	04	05	06	07	08	09	10	Field Inspector				
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change ²	Watts per luminaire ¹	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(a)2C	Design Watts	Pass	Fail	Pass	Fail	Pass	Fail
101Visitors	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	8	No	248	☐	☐				
102BackEntry	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	1	No	31	☐	☐				
103Seating	1-Recess Mount Fixture 39W	No	NA	39	Mfr. Spec	4	No	156	☐	☐				
104Reception	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	1	No	31	☐	☐				
105CoffeeBar	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	2	No	62	☐	☐				
106UnisexADA ARR	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	1	No	31	☐	☐				
107Office	1-Recess Mount Fixture 39W	No	NA	39	Mfr. Spec	2	No	78	☐	☐				
108Office	4-Recessed Mount LED 31W	No	NA	31	Mfr. Spec	3	No	93	☐	☐				
110Seating	5-ft-in Recessed Downlight LED 10W	No	NA	10	Mfr. Spec	5	No	50	☐	☐				
Total Designed Watts: CONDITIONED SPACES									780					

¹FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)(4) / 170.2(a)(2D) is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.
²Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS
This section does not apply to this project.

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STATE OF CALIFORNIA
Indoor Lighting
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
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S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)
This section does not apply to this project.

T. DWELLING UNIT LIGHTING
This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Form/Title
NRCC-LTI-E - Must be submitted for all buildings

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE	
Form/Title	Systems/Spaces To Be Field Verified
NRCC-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	101 Visitor's Center, 102 Back Entry, 103 Seating Area, 104 Reception, 105 Coffee Bar, 106 Unisex ADA RR, 107 Office, 108 Office.
NRCC-LTI-03-A - Must be submitted for automatic daylight controls.	101 Visitor's Center, 103 Seating Area.

Registration Number: CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
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STATE OF CALIFORNIA
Electrical Power Distribution
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
Project Address: Trinidad Pier
Report Page: (Page 6 of 6)
Date Prepared: 6/29/2023

CALIFORNIA ENERGY COMMISSION
NRCC-ELC-E
(Page 6 of 6)
6/29/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.
Documentation Author Name: Anthony K. McQueeny, CEA
Signature Date: 06/29/23
Address: 1125 16th Street, Ste 216
City/State/Zip: Arcata CA 95521
Phone: 707.826.1433
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: Trinity Valley Consulting Engineers
Signature Date: 2023-06-29
Address: P.O. Box 1567
City/State/Zip: Willow Creek CA 95573
Phone: 530.629.3000

Registration Number: CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Generated Date/Time: Report Version: 2022.0.000
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Compliance ID: EnergyPro-1734-0623-0649
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STATE OF CALIFORNIA
Indoor Lighting
CERTIFICATE OF COMPLIANCE
Project Name: Trinidad Interpretive Center
Project Address: Trinidad Pier
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Date Prepared: 6/29/2023

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)											
This table includes lighting controls for conditioned and unconditioned spaces.											
Building Level Controls				02				03			
01				02				03			
Mandatory Demand Response 110.12(c)				Shut-off controls/Space Limit / 160.50(d)(4C)				Field Inspector			
NA - 4,000W subject to multi-level				See Area/Space Limit				☐ Pass ☐ Fail			
Area Level Controls											
04				05				06			
Area Description				Complete Building or Area Category Primary Function Area				Field Inspector			
Manual Area Controls 130.1(a) / 160.50(d)(4)				Multi-Level Controls 130.1(b) / 160.50(d)(4)				Shut-Off Controls 130.1(c) / 160.50(d)(4C)			
Primary/3W It Dialing/10 130.1(d) / 160.50(d)(4C)				Secondary 130.1(e) / 160.50(d)(4)				Interlocked Systems 140.46(a)(7) / 170.2(e)(2)			
								☐ Pass ☐ Fail			
101 Visitor's Center				Retail Merchandise Sales				Readily Accessible			
Dimmer				Occupancy Sensor				NA: Enclosed area w/ 1 luminaire +c2 Lamp			
102 Back Entry				Main Entry Lobby				Readily Accessible			
Occupancy Sensor				NA: Rm c 24sf Glazing				NA: Rm c 24sf Glazing			
103 Seating Area				Lounge				Readily Accessible			
Occupancy Sensor				Included				Included			
104 Reception				Office (<250 square feet)				Readily Accessible			
Occupancy Sensor				NA: Rm c 24sf Glazing				NA: Rm c 24sf Glazing			
105 Coffee Bar				Lounge				Readily Accessible			
Occupancy Sensor				NA: Rm c 24sf Glazing				NA: Rm c 24sf Glazing			
106 Unex ADA RR				Restroom				Readily Accessible			
Occupancy Sensor				NA: General Itg c 120W				NA: Rm c 24sf Glazing			
107 Office				Office (<250 square feet)				Readily Accessible			
Dimmer				Occupancy Sensor				NA: General Itg c 120W			

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Outdoor Lighting

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Project Name: Trinidad Interpretive Center

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Date Prepared: 6/29/2023

This document is used to demonstrate compliance with requirements in 110.9, 130.0, 130.2, 140.7, and 141.0(b)(2) for outdoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e), 180.1(a) and 180.2(b)(4b) for outdoor lighting scopes using the prescriptive path for multifamily and mixed-use occupancies. Multifamily includes dormitory and senior living facilities.

Project Name: Trinidad Interpretive Center

Report Page: (Page 1 of 7)

Project Address: Trinidad Pier

Date Prepared: 6/29/2023

A. GENERAL INFORMATION

01 Project Location (city)

Trinidad

04 Total Illuminated Hardcape Area (ft²)

132

02 Climate Zone

1

03 Outdoor Lighting Zone per Title 24 Part 1 10.114 or as designated by Authority Having Jurisdiction (AHJ):

☐ L2-0: Very Low - Undeveloped Parkland

☐ L2-2: Moderate - Urban Clusters

☐ L2-4: High - Must be reviewed by CA Energy Commission for Approval

☐ L2-1: Low - Rural Areas

☒ L2-3: Moderately High - Urban Areas

05 Occupancy types within Project

☐ Office ☒ Retail ☐ Support Areas ☐ Warehouse

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 / 170.2(e) or 141.0(b)(2) / 180.2(b)(4b) for alterations.

My Project Consists of:

01

☒ New Lighting System

Must Comply with Allowances from 140.7 / 170.2(e)

☐ Altered Lighting System

Is your alteration increasing the connected lighting load (Watts)?

☒ Yes

☐ No

03

% of Existing Luminaires Being Altered¹

Sum Total of Luminaires Being Added or Altered

05

Calculation Method

< 10%

☐

>= 10% and < 50%

☐

>= 50%

☐

Please proceed to Table F: Outdoor Lighting Fixture Schedule to define the project's luminaires.

FOOTNOTES: ¹% of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

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CALIFORNIA ENERGY COMMISSION

Outdoor Lighting

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Trinidad Interpretive Center

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L. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardcape Allowance is per Table 140.7-A; Table 170.2-A while "Use it or lose it" Allowances are per Table 140.7-B; Table 170.2-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. Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Calculated General Hardcape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel

02

03

04

05

06

07

08

09

Area Description

Illuminated Area (ft²)

Allowed Density (W/ft²)

Area Allowance (Watts)

Perimeter Length (W/ft)

Allowed Density (W/ft)

Linear Allowance (Watts)

Total General AWA + LWA (Watts)

General Site Lighting - Pedestrian

132

0.021

2.8

63

0.2

12.6

15

Initial Wattage Allowance for entire site (Watts)

250

Instances of Initial Wattage Allowance (B2 only)

265

General Hardcape Allowance (Watts):

265

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.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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Solar And Battery

CERTIFICATE OF COMPLIANCE

NRCC-SAB-E

Project Name: Trinidad Interpretive Center

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Date Prepared: 6/29/2023

Compliance with Solar Photovoltaic (PV) and Battery Requirements in 140.10/ 170.2(g) and h)

01

☐ Provided PV system and battery storage sized per 140.10/ 170.2 (g) and h) as documented in Table J.

☐ Exception to PV and Battery: Not enough Solar Access Roof Area

☐ Exception to PV and Battery: Required PV < 4kW

☐ Exception to PV and Battery: No contiguous Solar Access Roof Area

☐ Exception to PV and Battery: Can't meet snow load

☐ Exception to PV and Battery: Multi-tenant without VNEM or Community Solar

☐ The prescriptive PV/battery requirement has been traded off using the performance compliance approach as documented on the PVF Certificate of Compliance form.

The project has included an installed PV system and battery storage system per requirements in 140.10/ 170.2(g) and h) as documented in Table J.

The total of all available Solar Access Roof Area(s) of the project site is less than three percent of the conditioned floor area as documented in Table J.

The required PV system size is less than 4 kW dc as documented in Table J.

The Solar Access Roof Area(s) of the project site contains less than 80 contiguous square feet as documented in Table J.

The project has a roof design where the enforcement authority has verified it is not possible for the PV system, including panels, modules, components, supports, and attachments to the roof structure, to meet ASCE 7-16 Chapter 7, Snow Loads.

The project is a multi-tenant building in an area where a load serving entity does not provide either a Virtual Net Metering (VNEM) or community solar program.

The project is a multi-tenant building in an area where a load serving entity does not provide either a Virtual Net Metering (VNEM) or community solar program.

Compliance with Solar Thermal Water Heating Requirements in 170.2(d)(3) (Multifamily and hotel/ motel occupancies only)

01

☐ The project includes a hotel/motel or multifamily occupancy with a gas or propane central water-heating system (serves 2+ dwelling units) and includes a permanently installed domestic solar water-heating system to comply with 170.2(d)(3) and Reference Residential Appendix B44, as documented in Table H.

Compliance meets Exception 2 to solar ready requirements in 110.10(b).

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Outdoor Lighting

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Date Prepared: 6/29/2023

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 G. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(e) or 141.0(b)(2) / 180.2(b)(4b)

01

02

03

04

05

06

07

08

09

General Hardcape Allowance 140.7(d) / 170.2(a)(6) (See Table I)

Per Application 140.7(d) / 170.2(a)(6) (See Table I)

Sales Frontage 140.7(d)(2) / 170.2(a)(6) (See Table K)

Ornamental 140.7(d)(2) / 170.2(a)(6) (See Table L)

Per Specific Area 140.7(d)(2) / 170.2(a)(6) (See Table M)

Existing Power Allowance 141.0(b)(2) / 180.2(b)(4b) (See Table N)

Total Allowed (Watts)

Total Actual (Watts)

07 must be >= 08

265

+

+

+

OR

265

>=

150

COMPLIES

N/A

Shielding Compliance (See Table G for Details)

Controls Compliance (See Table H for Details)

COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unreadable 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.

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NRCC-LTO-4

Project Name: Trinidad Interpretive Center

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Date Prepared: 6/29/2023

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This section does not apply to this project.

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-LTO-E - Must be submitted for all buildings

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Form/Title

Systems/Spaces To Be Field Verified

NRCC-LTO-Q2-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.

WEST WALL.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Solar And Battery

CERTIFICATE OF COMPLIANCE

NRCC-SAB-E

Project Name: Trinidad Interpretive Center

Report Page: (Page 3 of 6)

Project Address: Trinidad Pier

Date Prepared: 6/29/2023

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 "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table G, for guidance or see the applicable Table referenced below.

Allocated Solar Zone

Installed PV System

Installed SWH System

Smart Tstat and Alternative EE Measure

Compliance Results

01

02

03

04

05

06

07

08

Required Minimum Area (ft²)

<=

Designated Area (ft²)

OR

Required Minimum DC Power Rating (Watts)

<=

Designed DC Power Rating (Watts)

OR

Required Minimum Solar Savings Fraction

<=

Designed/Rat ed Solar Savings Fraction

OR

JAS Compliant Thermostat Specified?

OR

Alternative Energy Efficiency Measure

(See Table F)

(See Tables G or J)

(See Table H)

(See Table I)

205

<=

210

OR

<=

OR

COMPLIES

Location in construction documents showing the location for inverters and metering equipment and a pathway for the routing of conduit/plumbing to the electrical service/ water heating system per §110.10(b).

COMPLIES

Battery storage system design meets the minimum requirements in Joint Appendix J412 and the minimum energy (kWh)/ power (kW) capacity per Table J.

Not Applicable

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unreadable 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:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Outdoor Lighting

CERTIFICATE OF COMPLIANCE

NRCC-LTO-1

Project Name: Trinidad Interpretive Center

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Project Address: Trinidad Pier

Date Prepared: 6/29/2023

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e) 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)(2), only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (i.e. existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Designed Wattage:

01

02

03

04

05

06

07

08

09

10

Name or Item Tag

Complete Luminaire Description

Watts per luminaire¹

How is Wattage determined

Total Number Luminaires¹

Luminaire Status²

Excluded per 140.7(a) / 170.2(e)(A)

Design Watts

Cutoff Req. > 6,200 Initial lumen output 130.2(b) / 160.5(c)¹

Pass

Fail

South

2=Wall Mount Fixture 25W

☐ Linear

25

Mfr. Spec

3

New

☐

75

NA < 6200 lumens

☐

☐

West

2=Wall Mount Fixture 25W

☐ Linear

25

Mfr. Spec

3

New

☐

75

NA < 6200 lumens

☐

☐

Total Design Watts:

150

¹ NOTES: Selections with a "1" require a note in the space below explaining how compliance is achieved.
² Luminaire is lighting a mirror. (EXCEPTION 2 in 180.2(b))

³ FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(h).
⁴ For linear luminaires, wattage should be indicated as W/ft instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.

⁵ 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 "Installed to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstated" for existing luminaires which are being removed and reinstated as part of the project scope.
⁶ Compliance with mandatory shielding requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by 130.2(b) / 160.5(c).

G. SHIELDING REQUIREMENTS (BUG)

This section does not apply to this project.

Registration Number:

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NRCC-LTO-4

Project Name: Trinidad Interpretive Center

Report Page: (Page 4 of 7)

Project Address: Trinidad Pier

Date Prepared: 6/29/2023

DOCUMENTATION AUTHOUR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Anthony K. McQuerry, CEA

Signature Date: 2023-06-29

CEA/ HERS Certification Identification (if applicable): N19-21-30083 / NR19-23-30043

Address: 1125 16th Street, Ste 216

City/State/Zip: Arcata CA 95521

Phone: 707.826.1433

Documentation Author Signature: Anthony K. McQuerry

Signature Date: 2023-06-29

CEA/ HERS Certification Identification (if applicable): N19-21-30083 / NR19-23-30043

Address: 1125 16th Street, Ste 216

City/State/Zip: Arcata CA 95521

Phone: 707.826.1433

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 9 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: Trinity Valley Consulting Engineers

Design Signed: 2023-06-29

Company: Trinity Valley Consulting Engineers

Address: P.O. Box 1567

City/State/Zip: Willow Creek CA 95573

Phone: 530.629.3000

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 9 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: Trinity Valley Consulting Engineers

Design Signed: 2023-06-29

Company: Trinity Valley Consulting Engineers

Address: P.O. Box 1567

City/State/Zip: Willow Creek CA 95573

Phone: 530.629.3000

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Solar And Battery

CERTIFICATE OF COMPLIANCE

NRCC-SAB-E

Project Name: Trinidad Interpretive Center

Report Page: (Page 4 of 6)

Project Address: Trinidad Pier

Date Prepared: 6/29/2023

F. ALLOCATED SOLAR ZONE

This table is completed if the project is designating a solar zone to comply with §110.10(b)(1)(B). New construction consider the total roof area. Additions consider newly added roof area. This table demonstrates that the project has designated the minimum area required for the Allocated Solar Zone, and also that the requirements for Solar Zone Subareas have been met. Each subarea must be shown on a roof plan or documented in construction documents. The solar zones must also comply with fire code requirements, including, but not limited to, setbacks and pathway requirements. Requirements for interconnection pathways must also be included in construction documents, and the location is specified in this table.

Required Minimum Solar Zone

01

02

03

04

05

06

07

08

Minimum Solar Zone Area Calculation Method

Total New or Added Roof Area (ft²)

Total New or Added Roof Area Covered with Skylights (ft²)

Minimum Solar Zone Based on Total or Added Roof Area (0.15 x (Roof-Skyls) (ft²)

Method/ Tools Used to Determine Annual Solar Access for Potential Zones¹

Low-Sloped Area (<= 2.12 pitch) Oriented 90° ± 300° (ft²)

Potential Solar Zone Areas: Roof areas with >= 70% Solar Access

Deep-Sloped Area (> 2.12 pitch) Oriented 90° ± 300° (ft²)

Minimum Solar Zone Based on Potential Zone (0.5 x (Total Potential Zone) (ft²)

Required Minimum Solar Zone Area (ft²)

Total New or Added Roof Area

1367

0

205

COMPLIES

Designated Solar Zone Subareas

09

10

11

12

13

14

15

16

17

18

19

Subarea Name or Tag

Building Plan Reference

Is Steep-Sloped Roof or Overhang (pitch) (steep > 2.12 pitch) (steep > 2.12 pitch)

Subarea Complies with Title 24, Part 9

Solar Zone Subarea Free of Obstructions per §110.10(b)(3) Δ

Subarea Is Required Distance from Potential Obstructions per §110.10(b)(3) Δ

Is the Smallest Dimension 5 feet or greater?

Min. Area Required per Subarea (ft²)

Designated Area (ft²)

Subarea Complies?

Solar Ready Area

Per engineer

Steep slope

No

Yes

Yes

Yes

Yes

80

210

COMPLIES

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Outdoor Lighting

CERTIFICATE OF COMPLIANCE

NRCC-LTO-1

Project Name: Trinidad Interpretive Center

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Project Address: Trinidad Pier

Date Prepared: 6/29/2023

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.

Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit.

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01

02

03

04

05

Area Description

Shut-Off 130.2(c)(1) / 160.5(c)

Auto Schedule 130.2(c)(2) / 160.5(c)

Motion Sensor 130.2(c)(3) / 160.5(c)

Field Inspector

WEST WALL

Photocontrol

Provided

Provided

Pass

Fail

Field Inspector

Pass

Fail

FOOTNOTE: Test has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.

¹Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.

²Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are exempted from i and ii.

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Solar And Battery

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NRCC-SAB-E

Project Name: Trinidad Interpretive Center

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Project Address: Trinidad Pier

Date Prepared: 6/29/2023

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardcape Allowance is per Table 140.7-A; Table 170.2-A while "Use it or lose it" Allowances are per Table 140.7-B; Table 170.2-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. Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Calculated General Hardcape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel

02

03

04

05

06

07

08

09

Area Description

Illuminated Area (ft²)

Allowed Density (W/ft²)

Area Allowance (Watts)

Perimeter Length (W/ft)

Allowed Density (W/ft)

Linear Allowance (Watts)

Total General AWA + LWA (Watts)

General Site Lighting - Pedestrian

132

0.021

2.8

63

0.2

12.6

15

Initial Wattage Allowance for entire site (Watts)

250

Instances of Initial Wattage Allowance (B2 only)

265

General Hardcape Allowance (Watts):

265

B. PROJECT SCOPE

The compliance path the project is using to comply per 110.10(b)(1B) / 140.10 / 170.2(g and h) is indicated below.

Compliance with Solar Readiness Requirements in 110.10(b)(1B)

01

☒ Provide Solar Ready Area: no exceptions

☐ Exception to Solar Ready Area: Installed Solar Photovoltaic System

☐ Exception to Solar Ready Area: Installed Solar Water Heating System

☐ Exception to Solar Ready Area: Smart Thermostat and Alternative Energy Efficiency Measure

☐ Exception to Solar Ready Area: Roof is designed for vehicular traffic, parking or for heliport

☐ Exception to Solar Ready Area: Roof too small

☐ Exception to Solar Ready Area: Number of building stories

The project has allocated a solar zone on the roof plan per requirements in §110.10(b), as documented in Table F.

The project includes a permanently installed solar electric system having a nameplate DC power rating, measured under Standard Test Conditions, of no less than one watt per square foot of roof area as documented in Table G.

The project is a hotel/motel or high-rise multifamily occupancy and includes a permanently installed domestic solar water-heating system complying with 170.2(d)(3) and Reference Residential Appendix B44, as documented in Table H.

The project is a multifamily occupancy where all thermostats in each dwelling unit comply with §110.10(b)(3) AND at least one additional measure listed in Exception 4 to §110.10(b)(3) is installed, as documented in Table I.

The project is new construction and has a total roof area <= 533 square feet¹

The project is nonresidential > 3 stories or multifamily/hotel/motel > 10 stories.

FOOTNOTE: Buildings with roof area <=533 ft² would have a required solar zone < 80 ft² and are therefore exempt per 110.10(b)(1).

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Date Prepared: 6/29/2023

Interconnection Pathways

Location in construction documents showing the location for inverters and metering equipment and a pathway for the routing of conduit/ plumbing to the electrical service/ water heating system per §110.10(b).

FOOTNOTE: This field is used to document how the percentage of annual solar access was determined per §110.10(b)(1)(B). Solar access is the ratio of solar isolation including shade to the solar isolation without shade. Shading from obstructions located on the roof or any other part of the building shall not be included in the determination of annual solar access.

G. PERMANENTLY INSTALLED SOLAR PV FOR SOLAR READY EXCEPTION

This section does not apply to this project.

H. PERMANENTLY INSTALLED SOLAR HOT WATER SYSTEMS

This section does not apply to this project.

I. SMART THERMOST

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:
Anthony K. McQuinnery, CEA

Signature Date:
06/29/23

Company:
ABBAY TECHNICAL SERVICES

Address:
1125 16th Street, Ste 216
Arcata CA 95521

City/State/Zip:
Arcata CA 95521

Documentation Author Signature:
Anthony K. McQuinnery

Signature Date:
06/29/23

Company:
ABBAY TECHNICAL SERVICES

Address:
1125 16th Street, Ste 216
Arcata CA 95521

City/State/Zip:
Arcata CA 95521

CEA
CERTIFIED ENERGY ANALYST

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:
Trinity Valley Consulting Engineers

Responsible Designer Signature:
[Signature]

Company:
Trinity Valley Consulting Engineers

Date Signed:
2023-06-29

Address:
P.O. Box 1567
Willow Creek CA 95573

City/State/Zip:
Willow Creek CA 95573

Responsible Designer Signature:
[Signature]

Date Signed:
2023-06-29

Company:
Trinity Valley Consulting Engineers

Address:
P.O. Box 1567
Willow Creek CA 95573

City/State/Zip:
Willow Creek CA 95573

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HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY									
Project Name Trinidad Interpretive Center						Date 6/29/2023			
System Name Heat Pump or Eq.						Floor Area 1,367			
ENGINEERING CHECKS		SYSTEM LOAD							
Number of Systems		COIL COOLING PEAK				COIL HTG. PEAK			
		CFM	Sensible	Latent		CFM	Sensible		
Heating System									
Output per System		48,000	Total Room Loads						
Total Output (Btu/h)		48,000	Return Ventral Lighting						
Output (Btu/h)ft ²		35.1	Return Air Ducts						
Cooling System									
Output per System		48,000	Return Fan						
Total Output (Btu/h)		48,000	Ventilation						
Total Output (Tons)		4.0	Supply Fan						
Total Output (Btu/h)ft ²		35.1	Supply Air Ducts						
Total Output (Btu/h)ft ²		35.1	TOTAL SYSTEM LOAD						
Air System									
CFM per System		1,000	HVAC EQUIPMENT SELECTION						
Airflow (cfm)		1,000	Heat Pump or Eq.				34,131	16,286	31,033
Airflow (cfm)ft ²		1.17							
Airflow (cfm)ft ²		400.0							
Outside Air (cfm)		42.2%	Total Adjusted System Output				34,131	16,286	31,033
Outside Air (cfm)ft ²		0.48	(Adjusted for Peak Design conditions)						
Note values above given at AHU conditions									
HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)		TIME OF SYSTEM PEAK							
		Jul 4 PM				Jan 1 AM			
COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)									