City of Los Banos
At the Crossroads of California

FOR BIDDING PURPOSES ONLY

Contract Documents
for
Construction of

BASIN AND STORMWATER CAPTURE PROJECT

September 2025

Bid Proposals must be received no later than 2:00 p.m. Friday October 3, 2025
City of Los Banos City Clerk
520 J Street
Los Banos, CA 93635

City of Los Banos
Public Works Department

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Table of Contents

Advertisement for Bids

Information for Bidders

Bid

Bid Bond

Sample Forms

- Agreement
- Certificate of Contractor
- Payment Bond
- Performance Bond
- Notice of Award
- Notice to Proceed
- Change Order

General Provisions

1. Terms and Definitions
2. Order of Precedence of Contract Documents
3. Venue
4. Giving Notice
5. Cumulative Remedies
6. Non-Discrimination
7. Non-Discrimination of the Disabled
8. Additional Instructions and Detail Drawings
9. Schedules, Reports and Records
10. Drawings and Specifications
11. Shop Drawings, Product Data and Samples
12. Materials, Services and Facilities
13. Inspection and Testing
14. Substitutions
15. Patents
16. Surveys, Permits and Regulations
17. Protection of Work, Property and Persons
18. Supervision by Contractor
19. Changes in the Work
20. Changes in Contract Price
21. Time for Completion and Liquidated Damages
22. Correction of Work
23. Suspension of Work, Termination and Delay
24. Progress Estimates
25. Progress Payments
26. Prompt Payment
27. Acceptance and Final Payment
28. Quantities and Unit Prices
29. Insurance
30. Contract Security
31. Assignments
32. Indemnification
33. Separate Contracts
34. Subcontracting
35. Employment of Apprentices
36. Payment of Prevailing Wages
37. Registration to Train Apprentices
38. Penalties

39. Engineer’s Authority
40. Land and Rights-of-Way
41. Warranty and Guarantee
42. One (1) Year Warranty Period
43. Correction of Defective Work
44. Early Completion
45. Extended Warranties and Guarantees
46. Arbitration
47. Taxes
48. Contractor’s Understanding
49. Accidents
50. Safety and Sanitation
51. Climatic Conditions
52. Officials Not to Benefit
53. Clean-Up
54. Notice to Owner
55. Payment of Withheld Funds
56. Storm Water Pollution Prevention Measures

Special Provisions

1. Requirements
2. Description of Work
3. Commencement, Prosecution and Completion of Work
4. Hours of Work
5. City Permits and Business Licenses
6. Testing
7. Responsibility Regarding Existing Utilities and Private Property
8. Obstructions
9. Materials Furnished By Owner
10. Materials Furnished By Contractor
11. Schedule of Values, Material List and Substitutions
12. Request for Extension of Time
13. Rights-of-Way
14. Coordination with Other Work
15. Closure of Streets
16. Construction Signs, Barricades, Lights and Flagmen
17. Traffic Control Plan
18. Disposal of Waste Materials
19. Noise Control
20. Water Supply
21. Notifications
22. Work Not Listed in Proposal
23. Submittals
24. Bid Item Descriptions

Technical Specifications

DIVISION 01 - GENERAL REQUIREMENTS

01 00 05 Specifications
01 11 00 Description of Work and Schedule Constraints
01 11 05 Engineer's Status During Construction
01 11 10 Coordination of Work
01 20 00 Measurement & Payment
01 22 00 Explanation of Bid Items
01 31 19 Project Meetings
01 33 00 Submittal Procedures
01 35 00 Material Substitution Procedures
01 42 13 Definitions & Abbreviations
01 43 00 Quality Control and Testing
01 50 00 Temporary Facilities
01 51 36 Watering
01 53 00 Permits
01 56 29 Cultural and Archaeological Compliance
01 56 32 Threatened and Endangered Species
01 57 19 Environmental Protection Measures
01 57 23 Storm Water Pollution Prevention Plan
01 57 27 Dust Control
01 57 50 Construction Stakes, Lines and Grades
01 77 00 Contract Closeout

DIVISION 02 - EXISTING CONDITIONS

02 01 20 Protection of Underground Facilities and Monuments
02 41 00 Demolition

DIVISION 03 - CONCRETE

03 11 00 Concrete Formwork
03 15 00 Concrete Accessories
03 15 20 Anchor Bolts & Post Installed Anchors
03 20 00 Concrete Reinforcing
03 30 00 Cast-in-Place Concrete
03 39 00 Concrete Curing
03 60 00 Grout

DIVISION 05 - METALS

05 05 20 Bolts, Washers, Anchors and Eyebolts
05 50 00 Fabricated Metal

DIVISION 07 - THERMAL-MOISTURE PROTECTION

07 92 00 Caulking & Sealants

DIVISION 09 - FINISHES

09 90 00 Painting and Coating
09 97 61 Fusion Bonded Epoxy Linings and Coatings

DIVISION 11 - EQUIPMENT

11 00 00 General Equipment Stipulations

DIVISION 31 - EARTHWORK

31 05 00 Earthwork
31 11 00 Clearing and Grubbing
31 23 17 Trenching Backfilling and Compacting
31 23 19 Dewatering
31 23 35 Disposal of Materials
31 37 10 Rip Rap

DIVISION 33 - UTILITIES

33 05 23 Jack & Bore
33 05 26 Utility Line Markings
33 46 18 High Density Polyethylene Pipe and Fittings

DIVISION 35 – WATERWAY AND MARINE CONSTRUCTION

35 20 16 Water Control Gate

DIVISION 40 – PROCESS INTEGRATION

40 05 00 Pipe & Fittings
40 05 14 Fabricated Steel Specials
40 05 21 Tapping Saddles Sleeves and Valves
40 05 24 Steel Process Pipe
40 91 24 Propeller Meter

APPENDIX

A. San Joaquin Valley Air Pollution Control District – Indirect Source Review Permit
B. San Joaquin Valley Air Pollution Control District – Dust Control Plan (Bidding Purposes Only)
C. California Environmental Quality Act – Mitigation Monitoring and Reporting Program
D. San Luis & Delta Mendota Water Authority Access Permit No. P26241024
E. Contractor's Request for Construction Staking
F. Geotechnical Engineering Investigation entitled, PROPOSED NEW RECHARGE BASIN AND SEWER IMPROVEMENTS by BSK ASSOCIATES, dated JANUARY 15, 2024.
G. Stormwater Pollution Prevention Plan (Bidding Purposes Only)

Advertisement for Bids

CITY OF LOS BANOS
520 J Street
Los Banos, California 93635

Notice is hereby given that separate sealed bids for the award of contract for the **Construction of BASIN AND STORMWATER CAPTURE PROJECT** will be received by the City of Los Banos at the office of the City Clerk until 2:00 p.m. local time, October 3, 2025 and then at said office publicly opened and read aloud.

The Work consists of furnishing all labor, materials and equipment necessary to construct three (3) basin cells covering approximately 185-acres, 24-inch turnout, two (2) interbasin concrete structures, an outlet structure with 60-inch stand pipe with a 30-inch propeller flow meter, and other miscellaneous items to provide for fully functioning regulation basins, in the County of Merced, in accordance with the Plans and the Specifications.

The time for completion shall be one hundred fifty (150) calendar days.

The Contract Documents, in their entirety, can be viewed and/or obtained from the City of Los Banos website at www.losbanos.org or at the following locations:

Central California Builders Exchange (www.cencalbx.com)

Builders Exchange of Stockton (www.besonline.com)

Valley Builders Exchange, Inc. (www.valleybx.com)

Builders Exchange of Santa Clara County (www.bxscco.com)

Dodge Data & Analytics (www.construction.com/plans/)

A payment bond prepared and executed in accordance with California Civil Code Section 9550 and a bond for faithful performance of the contract will be required of the successful bidder who is awarded the contract.

The successful bidder must comply with the latest general prevailing rate of per diem wages as determined by the Director of Industrial Relations, State of California, Department of Industrial Relations and is to be paid to the various craftsmen and laborers required to construct said improvements and is made a part of the specifications and contract for said work to which reference is hereby made for further particulars.

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

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Contractor registration information can be found at:

http://www.dir.ca.gov/Public-Works/PublicWorks.html

Each bid shall be accompanied by cashier's or certified check or by a bidder's bond, made payable to the City of Los Banos and executed by a corporate surety licensed to issue surety bonds in the State of California, for an amount equal to at least ten percent (10%) of the amount of said bid and no bid shall be considered unless such cashier's or certified check or bidder's bond is enclosed therewith.

The successful bidder of this project shall have the following current and active California State Contractor's License at the time of the submission of the bid and throughout the duration of the contract: **Class A**.

A non-mandatory pre-bid meeting and project site tour will be held on September 19, 2025. The address for the non-mandatory meeting is 17963 Henry Miller Road, Los Banos, CA 93635. The start time for the meeting is 10 a.m. local time, sharp.

Bidders shall refer to the Contract Document's Information for Bidders for complete instructions.

Bidders are solely responsible for the cost of preparing their bids.

The City specifically reserves the right, in its sole discretion, to reject any or all bids, to re-bid, or to waive inconsequential defects, in bidding not involving time, or quality of the work. The City may reject any and all bids and waive any minor irregularities in the bids.

Information for Bidders

Sealed bids will be received by the City of Los Banos (herein called the "Owner"), at the office of the City Clerk until 2:00 p.m. local time, on October 3, 2025, then at said office, publicly opened and read aloud. Owner shall reject all bids received after the specified time and will return such bids to bidder, unopened. Bidders must submit bids in accordance with these instructions. No emailed or faxed bids will be accepted.

The Work consists of furnishing all labor, materials and equipment necessary to construct three (3) basin cells covering approximately 185-acres, 24-inch turnout, two (2) interbasin concrete structures, an outlet structure with 60-inch stand pipe with a 30-inch propeller flow meter, and other miscellaneous items to provide for fully functioning regulation basins, in the County of Merced, in accordance with the Plans and the Specifications.

The time for completion shall be one hundred fifty (150) calendar days.

Each bid must be submitted in a sealed envelope and addressed to the City of Los Banos at 520 J Street, Los Banos, CA 93635. Each sealed envelope containing a bid must be plainly marked on the outside as **BASIN AND STORMWATER CAPTURE PROJECT: Attention City Clerk**," and the envelope shall also bear on the outside, the name of the bidder, and their address. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the City of Los Banos at 520 J Street, Los Banos, CA, 93635, and also clearly state, "**BASIN AND STORMWATER CAPTURE PROJECT: Attention City Clerk**".

A complete bid includes the Bid Form, List of Subcontractors, Preliminary Construction Schedule, with daily earth material (soil) production rate, Equal Employment Opportunity, Non-Collusion Affidavit, Debarment and Suspension Certification, Bid Schedule, Experience, Bid Bond with surety, and a copy of a current California State Contractor's License. A signed Addendum, if issued, must also be submitted with the sealed bid. The Total Bid Amount must be filled in, in ink or typewritten, and the bid must be fully completed and executed when submitted. Only one set of original bid forms are required to be submitted. Mistakes must be corrected and the correction inserted; correction must be initialed in ink by person or persons signing the bid. No conditional bids will be accepted.

The bid shall be signed by a person or persons legally authorized to bind bidder to the contract. The individual or individuals signing each document shall warrant that they are authorized to bind the bidder.

The Owner may waive any informalities or minor defects or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 30 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 bidder.

Each bid must be accompanied by a bid bond payable to the Owner for ten percent (10%) of the total amount of the bid. As soon as the bid amounts have been compared, the Owner will return the bid security of all except the three lowest responsive and responsible bidders. Once a bid has been awarded, and the payment bond and performance bond of the successful bidder has been received by the Owner, the bid security of the three remaining lowest responsive and responsible bidders will be returned.

All bonds must be acknowledged before a Notary Public by both the bidder and the surety. Attorneys-in-fact who sign bid bonds or payment bonds and performance bonds must file with each bond a certified and effective dated copy of their power of attorney.

Award and Execution of Contract

The party to whom the contract is awarded will be required to execute the Agreement, and obtain the performance bond and payment bond along with satisfactory evidence of insurance within ten (10)

calendar days from the date when the Notice of Award is delivered to the successful bidder. The Notice of Award shall be accompanied by the necessary agreement and bond forms. In case of failure of the bidder to execute the Agreement, the Owner may, at his option, consider the bidder in default, in which case the bid bond accompanying the bid shall become the property of the Owner.

A performance bond and a payment bond, each in the amount of 100 percent of the Contract Price, with a corporate surety named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570, will be required for the faithful performance of the contract. The payment bond must be issued by an admitted surety insurer holding a certificate of authority to transact surety insurance in California issued by the Insurance Commissioner.

All bonds must be acknowledged before a Notary Public by both the bidder and the surety. Attorneys-in-fact who sign bid bonds or payment bonds and performance bonds must file with each bond a certified and effective dated copy of their power of attorney.

The Owner, within 15 calendar days of receipt of the performance bond, payment bond and agreement signed by the party to whom the contract 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, by written notice, withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

The Notice to Proceed shall be issued within 10 calendar days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed has not been issued within such period, the time may be extended by mutually agreed upon, and the bidder may terminate the Agreement without further liability on the part of either party.

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.

Subcontractors

The subcontractors listed by bidder in the bid shall list therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one-half of one percent of the total bid or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

Registration with California Department of Industrial Relations (DIR)

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded. Labor Code Section 1771.1(a) requires contractors and their subcontractors to possess and maintain such registration with DIR in order to be awarded and to perform on public works projects (regardless of funding source).

Pursuant to Section 1771.4, each contractor and subcontractor shall furnish certified payroll records to the Labor Commissioner at least monthly and in a format prescribed by the Labor Commissioner of the DIR. Until such time that the DIR gives awarding agencies direct access to all certified payrolls submitted by contractors and subcontractors, contractor and his subcontractors are also required to submit copies of payroll records to Owner on a monthly basis. Information on the above can be found at:

http://www.dir.ca.gov/Public-Works/PublicWorks.html

Prevailing Wage

This work is subject to prevailing wage requirements. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the prevailing wage rates determined by the Director of the Department of Industrial Relations of the State of California for similar classification of labor, the contractor and his subcontractor shall not pay less than the higher wage rate. In accordance with the provisions of Section 1773 of the Labor Code of the State of California, the Owner has obtained from the Director of the Department of Industrial Relations, the general prevailing rate for each craft, classification, or type of workman required for execution of the Agreement. A copy of said prevailing rate of per diem wages is on file in the office of the Owner, and available from the California Department of Industrial Relations' Internet web site at **http://www.dir.ca.gov/DLSR/PWD**.

The Federal minimum wage rates for this work as predetermined by the United States Secretary of Labor may be examined at the offices described above where the Contract Documents may be seen. Addenda to modify the Federal minimum wage rates, if necessary, will be posted on the internet at **www.losbanos.org**. Future effective general prevailing wage rates, which have been predetermined are on file with the California Department of Industrial Relations and are referenced but not printed in the general prevailing wage rates.

Pre-Bid Meeting

A non-mandatory pre-bid meeting and project site tour will be held on September 19, 2025. The address for the non-mandatory meeting is 17963 Henry Miller Road., Los Banos, CA 93635. The start time for the meeting is 10 a.m. local time, sharp.

Bidders must satisfy themselves as to the accuracy of the estimated quantities in the Bid Schedule by examination of the site and a review of the drawings and specifications including addenda. After bids have been submitted, the bidder shall not assert that there was misunderstanding concerning the quantities of work or the nature of the work to be done. The failure or omission of any bidder to do any of the foregoing shall not relieve any bidder from any obligation with respect to his bid.

The Contract Documents contain the provisions required for the construction of the project. The Owner will not be responsible for, nor be bound by, any oral instructions, interpretations, or explanations issued by the Owner or its representatives. Any request for clarifications or questions of the Contract Documents shall be made in writing or email and deliverable to:

City of Los Banos Public Works Department
Attn: Public Works Director.
411 Madison Avenue
Los Banos, CA 93635

Requests for clarification or questions shall be delivered to the Owner before 5:00 p.m. local time on September 26, 2025. Any Owner response to a request for clarification, questions and answers will be posted to the City's website at www.losbanos.org no later than 2:00 p.m. local time on September 30, 2025 and if necessary, shall become a part of the bid as an addendum.

Proposed timeline of events associated with the awarding of bid:

Release of Advertisement for Bid		September 3, 2025
Non-Mandatory Pre-Bid Meeting–On Site	10:00 a.m.	September 19, 2025
Deadline to Submit Questions/Clarifications	2:00 p.m.	September 26, 2025
Addendum/Questions/Clarifications posted	2:00 p.m.	September 30, 2025
Bid Opening	2:00 p.m.	October 3, 2025
City Council Considers Bid	6:00 p.m.	October 15, 2025 (Tentative)
Issuance of a Notice of Award	On or before:	October 22, 2025 (Tentative)
Issuance of a Notice to Proceed	On or before:	October 29, 2025 (Tentative)
Conduct Pre-Construction Conference		November 5, 2025 (Tentative)
Construction to Begin	On or before:	November 12, 2025 (Tentative)
Complete Construction		April 11, 2026 (Tentative)

Qualification of Bidder

The Owner may make such investigation as it deems necessary to determine the ability of the bidder to provide the services requested, and the bidder shall furnish to the Owner all information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid should the evidence submitted by, or investigation of, the bidder fail to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the bid and to complete the requirements contemplated therein.

Governing Law and Venue

This bid, or any contract that may result from the award of this bid, shall be deemed to be made under, and shall be governed by and construed in accordance with, the laws of the State of California. Any action brought to enforce the terms, or provision of this bid or any contract that may result from the award of this bid, shall have venue in the County of Merced, State of California.

Mandatory Bid Protest Procedure

The lack of prompt procedure to resolve disputes regarding the bidding process would impair the Owner's ability to carry out its purpose of contracting this project in a timely manner. Therefore, to the maximum extent authorized by law and notwithstanding any other procedures specified in these Contract Documents, all disputes and/or protests regarding the bidding process shall be subject to the following procedure. In submitting a bid to the Owner for this work, the bidder agrees to comply with and to be bound by this procedure.

Any bid protest must be submitted in writing to the Owner before 5:00 p.m. on the fifth (5^{th}) calendar day following bid opening.

1. The initial protest document must contain a complete statement of the basis for the protest, and all supporting documentation. A non-refundable fee of One Thousand Dollars ($1,000.00) made payable to the "City of Los Banos" shall accompany the protest documents and will be used by the Owner to recover costs in evaluating the bid protest. A bid protest submitted without the requisite fee shall not be considered by the Owner.
2. The party filing the protest must have actually submitted a bid for the work. A subcontractor of a party submitting a bid for the work may not submit a bid protest. Only bidders who the Owner otherwise determines are responsive and responsible are eligible to protest a bid.
3. A party may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest.
4. The protest must refer to the specific portion of the Contract Documents which forms the basis for the protest.
5. The protest must include the name, address and telephone number of the person representing the protesting party.
6. The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest which may be adversely affected by the outcome of the protest. Such parties shall include all other bidders who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.
7. The Owner will give the protested bidder five (5) calendar days after the receipt of the protest to submit a written response. The responding bidder shall transmit the response to the protesting bidder concurrent with the delivery to the Owner.
8. The procedure and time limits set forth in this paragraph are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. The bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings.

If the Owner determines that a protest is frivolous, the protesting bidder may be determined to be non-responsive and/or non-responsible and that bidder may be determined to be ineligible for future contract awards.

Cancellation of Contract

The Owner may terminate any contract derived from this bid as follows:

- WITHOUT CAUSE at any time by giving thirty (30) calendar days written notice to the successful bidder;
- WITH CAUSE (Default) at any time by giving ten (10) calendar days written notice to the successful bidder. Cancellation for cause shall be at the discretion of the Owner and shall be, but is not limited to, failure to supply the items, materials, equipment or services specified within the time allowed or within the terms, conditions or provisions of this bid. The successful bidder may not cancel any contract derived from this bid, without prior written consent of the Owner.

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Bid Form

TO: City of Los Banos
520 J Street
Los Banos, CA 93635

In compliance with the Advertisement for Bids the undersigned, as bidder, hereby offers to provide to the Owner, in accordance with the terms and conditions in the provisions set forth in the Contract Documents the stated total bid amount quoted on this Bid Form for the work of

BASIN AND STORMWATER CAPTURE PROJECT

Total Bid Amount: $_____

_____
(Total Bid Amount in Written Form)

The undersigned certifies under penalty of perjury under the laws of the State of California and the United States of America, that the above quotation constitutes a bona-fide offer for the work, that undersigned is a duly authorized representative of the company listed, that the quotation is in no way sham or collusive, and that the executed Agreement between the bidder and Owner constitutes acceptance of bidder's total bid for the work stated in the Contract Documents. The undersigned has read the General Provisions, Special Provisions, and Technical Specifications in these Contract Documents. The undersigned further certifies, under penalty of perjury that the Non-Collusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; and the Title 49 Code of Federal Regulations, Part 29 Debarment and Suspension Certification are true and correct.

The undersigned acknowledges receipt of the following addenda: _____

_____

Signature: _____ Date: _____

Print Name: _____ Title: _____

Name of Business: _____

Doing business as: (*Circle One*): An Individual A Partnership A Corporation

Business Address: _____

Telephone No.: _____ Fax No.: _____

E-Mail Address: _____

License Number: _____ Class & Expiration Date: _____

List of Subcontractors

As of March 1,2015, Contractors (and sub-contractors) wishing to bid on public works contracts shall be registered with the State Division of Industrial Relations and certified to bid on Public Works contracts. Please register at: https://www.dir.ca.gov/Public-Works/Contractor-Registration.html

In accordance with Title 49, Section 26.11 of the Code of Federal Regulations, and Section 4104 of the Public Contract Code of the State of California, as amended, the following information is required for each sub-contractor who will perform work amounting to more than one half of one percent (0.5%) of the Total Base Bid of $10,000 (whichever is greater). **Photocopy this form for additional firms.**

Project: **BASIN AND STORMWATER CAPTURE PROJECT**

The following work will be performed (or provided) by the following subcontractors, and coordinated by bidder:

Bid Item No.	Description of Work to be Performed	Percent of Total Contract	Subcontractor's License No.	DIR Registration No.	Subcontractor's Name and Address

Equal Employment Opportunity

Contractor hereby certifies that bidder and subcontractors

- ☐ Have
- ☐ Have Not

participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, have filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Note: The above certification is part of the bid. Signing this bid on the signature portion thereof shall also constitute signature of these certifications.

Non-Collusion Affidavit

PUBLIC CONTRACT CODE 7106

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Debarment and Suspension Certification

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, and manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
- Does not have a proposed debarment pending; and
- Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions to an additional sheet of paper and include with the bid.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate on an additional sheet of paper to whom it applies, initiating agency, and dates of action.

NPDES/MS4 Compliance Certification

All construction projects within the City limits must comply with the National Pollutant Discharge Elimination System (NPDES) storm water regulation adopted by the EPA and the Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit requirements, regardless of size.

The City is required under these permits to provide information to Contractors performing work within City limits about training opportunities to assist in managing potential pollutants from construction –related activities, selection, installation, implementation, and maintenance of Best Management Practices (BMPs), as well as overall program compliance. The City has provided such information and helpful links on their website at http://www.losbanos.org/city-government/departments/public-works/, under the Storm Water Management Plan tab.

The Bidder acknowledges that they are aware of the necessity to be in compliance with the NPDES and MS4 permits while working within City limits, and that information regarding such is available on the City's website.

Note: The above certifications are part of the bid. Signing this bid on the signature portion thereof shall also constitute signature of these certifications.

Experience

Bidder shall identify three (3) most recently completed projects similar to work described in these Contract Documents. At least two (2) of the projects shall demonstrate proficiency in construction of embankments for groundwater recharge basins (earthwork).

	1	2	3
Project Title			
Public Agency			
Address			
Telephone No.			
Engineer in Charge			
Project Value ($)			
Date Accepted			
Claims Filed?*			

* If yes, please explain below:

Bid Schedule
For
BASIN AND STORMWATER CAPTURE PROJECT

Bidder agrees to perform all the work described in the Contract Documents for the following unit and lump sum prices and understands that the quantity of work shown is approximate only. The schedule shall be completed by the bidder with the unit and lump sum prices entered in numerals. The extensions shall be made by the bidder. In case of discrepancy between the unit prices and the extension thereof, the unit price shall be considered as correct when evaluating bids.

ITEM NO.	ITEM	QUANTITY AND UNIT		UNIT PRICE	AMOUNT
	GENERAL CONDITIONS				
1	Mobilization/Demobilization, Bonds, Insurance, and Permits	1	LS	$	$
2	Worker and Public Protection	1	LS	$	$
3	Miscellaneous Facilities and Operations (3%)	1	LS	$	$
4	SWPPP and DCP Implementation	1	LS	$	$
	BASE BID				
5	Clearing and Grubbing (F)	185	AC	$	$
6	Construct Basin Levees (F)	242,300	CY	$	$
7	Construct San Luis Canal Turnout	1	LS	$	$
8	Construct South to Center Interbasin Structure	1	LS	$	$
9	Construct Center to North Interbasin Structure	1	LS	$	$
10	Construct San Luis Canal Outlet	1	LS	$	$
	ADDITIVE ALTERNATE BID ITEMS				
	F&I Project Sign	1	LS	$	

TOTAL: BASE BID **$** _____

TOTAL: BASE BID + ALTERNATIVE BID ITEMS **$** _____

Note: The representations made herein are made under penalty of perjury. Any information contained in the bid which is proven false shall be considered nonresponsive and this bid shall be rejected.

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Bid Bond

We, _____

as Contractor, and _____

as Surety, jointly and severally, bind ourselves, our heirs, representatives, successors and assigns, as set forth herein, to the **City of Los Banos** (herein called "Owner") for payment of the penal sum of _____

_____ Dollars ($_____),

lawful money of the United States. Contractor has submitted the accompanying bid proposal for the construction of: **BASIN AND STORMWATER CAPTURE PROJECT**

If the Contractor is awarded the contract and enters into a written agreement, in the form prescribed by the Owner, at the price designated by Bid Schedule, and files a payment bond and performance bond with the Owner, or substitute security in lieu thereof, in the time and manner specified by the Owner, and carries all insurance in type and amount which conforms to the General Provisions, Special Provisions, and Technical Specifications in these Contract Documents and furnishes required certificates and endorsements thereof, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Forfeiture of this bond, or any deposit made in lieu thereof, shall not preclude the Owner from seeking all other remedies provided by law to cover losses sustained as a result of the Contractor's failure to do any of the foregoing.

Contractor and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner's reasonable attorney's fees incurred with or without suit.

Executed on _____, 20____

_____
Contractor

(Seal if Corporation)

By: _____

Title _____

[SIGNATURE SHEET CONTINUES ONTO NEXT PAGE]

Any claims under this bond may be addressed to:

_____ (name and address of Surety)

_____

_____

_____ (name and address of Surety's agent for service of process in California, if different from above)

_____

_____

_____ (phone number of Surety's agent in California)

(Attach Acknowledgment)

_____
Surety

By _____
(Attorney-in-Fact)

Notice: No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California.

All bond forms must be acknowledged before a Notary Public by both the Contractor and the Surety. Attorneys-in-fact who sign bond forms must file with each bond a certified and effective dated copy of their power of attorney.

Agreement

THIS Agreement is dated as of the _____day of _____in the year 20__ by and between the **City of Los Banos, a California municipal corporation** ("Owner") and _____ ("Contractor").

Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

1. WORK. Contractor shall complete the work indicated in Owner's Contract Documents entitled "**BASIN AND STORMWATER CAPTURE PROJECT**."

The work is generally described as follows:

- Furnishing all labor, materials and equipment necessary to construct three (3) basin cells covering approximately 185-acres, 24-inch turnout, two (2) interbasin concrete structures, an outlet structure with 60-inch stand pipe with a 30-inch propeller flow meter, and other miscellaneous items to provide for fully functioning regulation basins, in the County of Merced, in accordance with the Plans and the Specifications.

- Contractor shall furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the work described herein.

2. CONTRACT TIME. Contractor shall commence the work required by the Contract Documents within 10 calendar days after the date of the Notice to Proceed and will complete the same within the time period set forth in the bid, unless the period for completion is extended otherwise by the Contract Documents.

3. LIQUIDATED DAMAGES. Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the work is not completed within the time specified in Paragraph 2 herein, plus any extensions thereof allowed in accordance with Paragraph 21, Time for Completion and Liquidated Damages, of the General Provisions. The parties also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner Two Thousand Dollars ($ 2,000.00) for each working day that passes after the time specified in the Notice to Proceed.

4. CONTRACT PRICE. Owner shall pay Contractor for completion of the work in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s). The Contractor agrees to perform all of the work described in the Contract Documents for the unit and lump sum prices set forth in the Bid Schedule(s).

5. PAYMENT PROCEDURES. Contractor shall submit applications for payment in accordance with Paragraph 24, Progress Estimates, of the General Provisions. Applications for payment will be processed by Owner as provided in the General Provisions.

6. CONTRACT DOCUMENTS. The Contract Documents which comprise the entire agreement between Owner and Contractor concerning the work consists of this Agreement and the following attachments to this Agreement:

(A) Advertisement for Bids
(B) Information for Bidders

(C) Bid
(D) Bid Bond
(E) Agreement
(F) Payment Bond
(G) Performance Bond
(H) Notice of Award
(I) Notice to Proceed
(J) Change Order
(K) General Provisions
(L) Special Provisions
(M) Technical Specifications prepared by PROVOST & PRITCHARD CONSULTING GROUP entitled "BASIN AND STORMWATER CAPTURE PROJECT", dated September 3, 2025.
(N) Drawings prepared by PROVOST & PRITCHARD CONSULTING GROUP numbered 1 (Sheet G1) through 18 (Sheet S3).
(O) Addenda

No. _____, dated_____20__

No. _____, dated_____20__

There are no Contract Documents other than those listed in this Paragraph 6. The Contract Documents may only be amended by change order as provided in Paragraph 19, Changes in the Work, of the General Provisions.

7. MISCELLANEOUS.

A. Terms used in this Agreement which are defined in Paragraph 1 of the General Provisions will have the meanings indicated in the General Provisions.

B. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

C. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

D. The Laws of the State of California shall govern this Agreement. Venue is Merced County. The provisions of this paragraph shall survive expiration or other termination of this Agreement regardless of the cause of such termination.

E. All bids become property of the Owner. All bids, including the accepted bid and any subsequent contract become public records per the requirements of the California Government Code, Sections 6250-6270, "California Public Records Act". Proprietary material must be clearly marked as such. Pricing and service elements of the successful bid are not consider proprietary information. The Owner will treat all information submitted in a bid as available for public inspection once the Owner has selected a contractor. If you believe that you have a legally justifiable basis under the California Public Records Act (Government Section 6250 et. seq.) for protecting the confidentiality of any information contained within

your bid, you must identify any such information, together with the legal basis of your claim in your bid. In order for the Owner to assess confidentiality of any such information on your behalf, you must request, execute and submit an Owner-prepared written agreement to defend and indemnify the Owner for any liability, costs, and expenses incurred in asserting such confidentiality as part of your bid. The final determination as to whether the Owner will assert your claim of confidentiality on your behalf shall be sole discretion of the Owner.

F. This Agreement shall not be interpreted in favor of any Party by virtue of said Party not having prepared this Agreement.

G. If any time period provided for in this Agreement ends on the day other than a Calendar Day, the time period shall be extended to the next Calendar Day.

IN WITNESS WHEREOF, Owner and Contractor have caused this Agreement to be executed the day and year first above written.

_____ By: _____
Date Authorized Representative of Owner

Title: _____

ATTEST:

_____
Lucille L. Mallonee
City Clerk

APPROVED AS TO FORM:

_____
William A. Vaughn
City Attorney

_____ By: _____
Date Authorized Representative of Contractor

Title: _____

(Seal if Corporation)

(Attach Acknowledgement for Authorized Representative of Contractor)

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Certificate of Contractor

I, _____
(Name)

certify that I am a/the _____
(Title)

designate sole proprietor, partner in partnership, or corporate officer with Contractor License Number _____ in the entity named as Contractor in the foregoing Agreement. I hereby expressly certify that the name of the entity to which I am associated is

_____
(Company Name)

that this entity is in good standing and has complied with all applicable laws and regulations, and that I have been expressly authorized by the proper parties in this entity to execute the Agreement on behalf of the above-named entity.

ATTEST:

Signature:_____

This form must be acknowledged before a Notary Public. The acknowledgement must be attached.

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Payment Bond

We, _____

as Contractor, and _____

as Surety, jointly and severally, bind ourselves, our heirs, representatives, successors and assigns, as set forth herein, to the **City of Los Banos** (herein called "Owner") for payment of the penal sum of _____

_____ Dollars ($ _____),

lawful money of the United States. Owner has awarded the contract and entered into an Agreement with the Contractor for the construction of:

BASIN AND STORMWATER CAPTURE PROJECT

If Contractor or any of his subcontractors fails to pay any of the persons named in Section 9100 of the California Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract or during the one-year guarantee period, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and his subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, then Surety will pay the same in an amount not exceeding the sum specified above, and also will pay, in case suit is brought upon this bond, such reasonable attorney's fees as shall be fixed by the court.

This bond shall insure to the benefit of any of the persons named in Section 9100 of the California Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Surety agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the work to be performed, or the Provisions shall in any way affect its obligation on this bond, and it does hereby waive notice thereof.

Contractor and Surety agree that should Owner become a party to any action on this bond that each will also pay Owner's reasonable attorney's fees incurred therein in addition to the above sum.

[SIGNATURE SHEET BEGINS ON NEXT PAGE]

Executed in four original counterparts on: _____, 20_____

_____
Contractor

(Seal if Corporation) By: _____

Title: _____

(Attach Acknowledgment of Authorized Representative of Contractor)

Any claims under this bond may be addressed to:

_____ (name and address of Surety)

_____

_____

_____ (name and address of Surety's agent for service of process in California, if different from above)

_____

_____

_____

_____ (phone number of Surety's agent in California)

(Attach Acknowledgment)

_____
Surety

By _____
(Attorney-in-Fact)

Notice: No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California.

All bond forms must be acknowledged before a Notary Public by both the Contractor and the Surety. Attorneys-in-fact who sign bond forms must file with each bond a certified and effective dated copy of their power of attorney.

Performance Bond

We, _____

as Contractor, and _____

as Surety, jointly and severally, bind ourselves, our heirs, representatives, successors and assigns, as set forth herein, to the **City of Los Banos** (herein called "Owner") for payment of the penal sum of _____

_____ Dollars ($ _____),

lawful money of the United States. Owner has awarded the contract and entered into an Agreement with the Contractor for the construction of:

BASIN AND STORMWATER CAPTURE PROJECT

The condition of this obligation is such that if the Contractor shall in all things abide by and well and truly keep and perform the covenants, and agreements in the said Contract Agreement, and any alteration thereof made as therein provided, on his part to be kept and performed at the time and in the manner therein specified, and shall faithfully fulfill the one-year guarantee of all materials and workmanship, and shall indemnify and save harmless the Owner and the Owner's Representative, and their consultants, and each of their directors, officers, employees and agents, as therein stipulated, this obligation shall become null and void, otherwise, it shall be and remain in full force and effect.

This Performance Bond shall remain in full effect during the one-year guaranty period following the completion of the work.

Surety agrees that no change, extension of time, alteration, or addition to the terms of the General Provisions, Special Provisions, and Technical Specifications in these Contract Documents shall in anyway affect its obligation in the bond, and it does hereby waive notice thereof.

Contractor and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner's reasonable attorney's fees incurred with or without suit, in addition to the above sum.

[SIGNATURE SHEET BEGINS ON NEXT PAGE]

Executed in four original counterparts on : _____, 20_____

_____
Contractor

(Seal if Corporation) By: _____

Title: _____

(Attach Acknowledgment of Authorized Representative of Contractor)

Any claims under this bond may be addressed to:

_____ (name and address of Surety)

_____

_____

_____ (name and address of Surety's agent for service of process in California, if different from above)

_____

_____

_____ (phone number of Surety's agent in California)

(Attach Acknowledgment)

_____
Surety

By _____
(Attorney-in-Fact)

Notice: No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California.

All bond forms must be acknowledged before a Notary Public by both the Contractor and the Surety. Attorneys-in-fact who sign bond forms must file with each bond a certified and effective dated copy of their power of attorney.

Notice of Award

To: _____ Date: _____

_____ Project: _____

_____ _____

The Owner has considered the bid submitted by you for the above described work dated_____, 20_____.

You are hereby notified that your bid has been accepted for the unit and lump sum prices set forth in the Bid Schedule totaling $_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required Contractor's performance bond and payment bond within ten (10) calendar days for the date of this Notice to you.

Before the Notice to Proceed can be issued, all required certificates of insurance, as stated in Section 29 of the General Provisions, and a copy of your Los Banos Business License must be submitted.

If you fail to execute said Agreement and to furnish said bonds within ten calendar days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

_____
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by

_____
Contractor

this _____ day of _____ ,20_____

By _____

Title _____

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Notice to Proceed

To: _____ Date: _____

_____ Project: _____

_____ _____

You are hereby notified to commence work in accordance with the Agreement dated _____, 20_____, on or before _____20_____, and you are to complete the work by _____, 20_____.

You are required to return an acknowledged copy of this Notice to Proceed to the Owner.

_____

Owner

By _____

Title _____

ACCEPTANCE OF NOTICE
Receipt of the above Notice to Proceed is hereby
acknowledged by

_____

Contractor

this _____ day of _____ ,20_____

By _____

Title _____

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Change Order

Order No._____

Date: _____

Agreement Date:_____

Project: _____

Owner: _____

Contractor: _____

The following changes are hereby made to the Contract Documents:

Justification:

Change to Contract Price:

Original Contract Price: $_____

Current Contract Price adjusted by previous Change Order: $_____

The Contract Price due to this Change Order will be (increased) (decreased) by: $_____

The new Contract Price including this Change Order will be: $_____

Change to Contract Time:

The Contract Time will be (increased) (decreased) by calendar days. _____

The date for completion of all work will be: _____

The undersigned hereby agrees to the above-described amendment of the Agreement.

_____

Contractor

_____

Owner

This Change Order shall become a part of the Contract Documents only upon signature of both parties.

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General Provisions

1. Terms and Definitions

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:

Addenda - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, by additions, deletions, clarifications or corrections.

ANSI – American National Standards Institute, current designation as of the Bid date unless otherwise indicated.

ASME – American Society of Mechanical Engineers, current designation as of the Bid date unless otherwise indicated.

ASTM – American Society for Testing Materials, current designation as of the Bid date unless otherwise indicated.

AWWA – American Water Works Association, current designation as of the Bid date unless otherwise indicated.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.

Bidder - Any person, firm or corporation submitting a bid for the work.

Bonds - Bid, Performance and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.

Calendar Day – Every day shown on the calendar.

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.

Completion - That date as certified by the Engineer when the construction of the project or a specified part thereof 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.

Contract Documents - the contract, including Advertisement for Bids, Information for Bidders, Bid, including Bid Representations and Certifications, Bid Bond, Agreement, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Change Order, General Provisions, Special Provisions, Technical Specifications, Drawings, and Addenda.

Contract Price – The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

Contract Time – The number of calendar or working days as stated in the Contract Documents for the completion of the work.

Contractor – The person, firm or corporation with whom the Owner has executed the Agreement.

Drawings – The part of the Contract Documents which shows the characteristics and scope of the work to be performed and which have been prepared or approved by the Engineer.

Engineer – City Engineer of the City of Los Banos, acting either directly or through properly authorized agents, such agents, acting within the scope of the particular duties entrusted to them.

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 Engineer to the Contractor during construction.

IEEE – Institute of Electrical and Electronics Engineers, current designation as of the bid date unless otherwise indicated.

NEMA – National Electrical Manufacturers Association, current designation as of the bid date unless otherwise indicated.

Notice of Award – The written notice of the acceptance of the Bid from the Owner to the successful bidder.

Notice to Proceed – Written communication issued by the Owner to the Contractor authorizing him to proceed with the work and establishing the date of commencement of the work.

Owner – City of Los Banos.

Production Data – All illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the work.

Project – The undertaking to be performed as provided in the Contract Documents.

REA – Rural Electrification Association, current designation as of the bid date unless otherwise indicated.

Samples – Physical examples which illustrate materials, equipment or workmanship, and establish standards by which the work will be judged.

Shop Drawings – All drawings, diagrams, schedules and other data which are specifically prepared for the work by the Contractor, a subcontractor, manufacturer, supplier or distributor, to illustrate some portion of the work.

Specifications – A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

Standards - City of Los Banos Standard Specifications, The Standard Specifications of the Department of Transportation of the State of California (Caltrans) dated 2010 and subsequent updates to that 2010 edition, and The Standard Plans of the Department of Transportation of the State of California (Caltrans) dated 2010 and subsequent updates to this 2010 edition.

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.

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.

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.

Working Days – Any weekday (Monday through Friday), not a designated national holiday, during which weather allows the Contractor to work four or more hours consecutively, starting no later than 10:00 AM

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. Order of Precedence of Contract Documents

In resolving conflicts resulting from errors or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

1. Permits from other agencies as may be required by law
2. Change orders
3. Agreement
4. Addenda
5. Contractor’s Bid (Bid Form)

6. Advertisement for Bids
7. Information for Bidders
8. Supplementary General Conditions
9. General Provisions
10. Special Provisions
11. Technical Specifications
12. Drawings
13. Referenced Standard Specifications

If the conflicts cannot be resolved by the precedence prescribed above, the most stringent requirements shall prevail.

3. Venue

Contractor, and any subcontractor, supplier and any other person or organization performing any part of work, agree that each of them will waive jurisdiction and venue and shall submit to the jurisdiction of the courts of the State of California in the County of Merced, regardless of residence or domicile, with respect to any actions or suits at law or in equity arising under or related to the bidding, award or performance of the work or with regard to any matter whatsoever arising out of or relating to the validity, construction, interpretation or reinforcement of the Agreement as against Owner or any of their consultants, and/or any of their respective directors, officers, employees, representatives or agents.

4. Giving Notice

Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

5. Cumulative Remedies

The duties and obligations imposed by these General Provisions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor by the General Provisions and all of the rights and remedies available to Owner thereunder are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

6. Non-discrimination

During the performance of the project, Contractor and subcontractors shall not unlawfully discriminate against any employee or applicant for employment because of race, color, ancestry, religion, sex, national origin, marital status, age, medical condition (cancer related), physical handicap (including AIDS), or sexual orientation. Equal employment extends, but is not limited to recruitment, compensation, benefits, layoff, termination, and all other conditions of employment. Contractor and subcontractors shall ensure that the evaluation/treatment of their employees and applicants for employment are free of such discrimination. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12900 et seq.) and the applicable regulations promulgated there under (California Administrative Code, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12900, set forth in Chapter 5 of Division 4 of Title 2 of the California Administrative Code and incorporated into this agreement by reference and made a part hereof as if set forth in full.

Contractor and any subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

Contractor shall include the nondiscrimination and compliance provisions of the clause in all subcontracts to perform work under the contract.

Contractor shall grant access by representative of the Department of Fair Employment and Housing and the Owner upon reasonable notice at any time during normal business hours, but in no case less than twenty-four (24) hours notice, to such of its books, records, accounts, other sources of information and its facilities as said Owner shall require to ascertain compliance with this clause.

7. Non-discrimination of the Disabled

The Owner will not aid or perpetuate discrimination against a qualified disabled individual by funding as an agency, organization, or person that discriminates on the basis of handicap in providing aid, benefit, or service to beneficiaries of the program or activity. The Owner is committed to provide access to all Owner services, programs, and meetings open to the public for people with disabilities. In this regard the Owner and all of its vendors and Contractor will take all reasonable steps to ensure that disabled individuals have the maximum opportunity for the same level of aid, benefit, or service as any other individual.

8. Additional Instructions and Detail Drawings

The Contractor may be furnished additional instructions and detail drawings by the Engineer, as necessary to carry out the work required by the Contract Documents. The additional drawings and instructions 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.

9. Schedules, Reports and Records

The Contractor shall submit to the Owner such schedules, reports, records and other data as the Owner may request concerning work performed or to be performed.

Prior to the first partial payment estimate, the Contractor shall submit schedules showing the order in which he proposed to carry on the work, including dates at which he will start the various parts of the work, estimated date of completion of each part and, as applicable:

A. A detailed cost breakdown of the work under each bid item awarded. The breakdown, after receiving favorable review by the Engineer, will become the basis for partial payment determination. Elements of work shall be grouped by building, structure, pipeline, system, etc. Within each grouping, work shall be itemized by readily measurable quantities of work completed in place. For example, concrete should be in units of cubic yard including form work and reinforcing steel. Mobilization costs, bond and insurance costs, and overhead costs shall not be prorated over items of work. In the event the cost breakdown is not favorably reviewed by the Engineer, another cost breakdown shall be submitted that is mutually acceptable to the Contractor and the Engineer.

B. The dates at which special detail drawings will be required; and respective dates for submission of shop drawings, the beginning of manufacture, the testing and the installation of materials, supplies and equipment. The Contractor shall also submit a schedule of payments that he anticipates he will earn during the course of the work.

10. Drawings and Specifications

The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the Owner.

In case of conflict between the drawings and specifications, the specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions and detailed drawings shall govern over general drawings.

Any discrepancies found between the drawings and specifications and site condition or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported to the Engineer, 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.

The Owner will furnish to the Contractor, free of charge, six copies of drawings and specifications for the work. The Contractor shall keep one copy of all current drawings and specifications on the job site, in good order, available to the Engineer and his representatives.

All drawings, specifications, and copies thereof furnished by the Owner are the property of the Owner. They are not to be used on other work, and, with the exception of the signed contract set, are to be returned to the Owner on request, at the completion of the work.

11. Shop Drawings, Production Data and Samples

The Contractor shall review, approve and submit to the Engineer all Shop Drawings, Production Data and Samples as may be necessary for prosecution of the Work and as required by the Contract Documents. The Contractor shall review and approve all Shop Drawings, Production Data and Samples prior to submitting them to the Engineer. By approving and submitting Shop Drawings, Production Data and Samples, the Contractor represents that he has determined and verified all materials, measurements and criteria related thereto, and that he has checked and coordinated the information contained within such submittals with the requirements of the Contract Documents. Any Shop Drawing, Production Data or Sample submitted to the Engineer without having been approved by the Contractor will be returned unreviewed to the Contractor.

For each item where shop drawings, production data or samples are required, the Contractor shall submit a minimum of six approved sets, hard copies, or one set, electronically. The Engineer shall review all shop drawings, production data and samples and retain three sets after his review. The remaining sets shall be returned to the Contractor with actions defined as follows:

A. NO EXCEPTIONS TAKEN – Accepted subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission.

B. MAKE CORRECTIONS NOTED – Same as NO EXCEPTIONS TAKEN except that minor corrections as noted shall be made by the Contractor.

C. REVISE AND RESUBMIT – Rejected because of major inconsistencies or errors which shall be resolved by the Contractor prior to subsequent review by the Engineer.

D. REJECTED – Submitted material does not conform to Contract Documents in major respect.

The Engineer's review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. It shall not include review of quantities, dimensions, weights or gauges, fabrications processes, construction methods, coordination with other trades, or construction safety precautions, all of which are the responsibility of the Contractor.

The Engineer shall not be responsible for any deviations from the Contract Documents not brought to the attention of the Engineer in writing by the Contractor and acknowledged in writing by the Engineer.

Portions of the work requiring shop drawings, production data and samples shall not begin until the submission has been favorably reviewed by the Engineer. A copy of each favorably reviewed shop drawing, product data and sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

12. Materials, Services and Facilities

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, and all other services and facilities of any nature whatsoever necessary to execute,

complete, and deliver the work within the specified time.

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.

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and reviewed by the Engineer.

Materials, supplies or equipment to be incorporated into the work shall not be purchased by the Contractor or any subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

13. Inspection and Testing

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.

The Contractor shall provide, at his expense, the necessary testing and inspection services required by the Contract Documents, unless otherwise provided. (See Section 6 of the Special Provisions)

The Owner shall provide all other inspections and testing services not required by the Contract Documents. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction specifically require any work to be inspected, tested, approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

Neither observations by the Engineer nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

The Engineer and his representatives will at all times have access to the Work. In addition, authorized representatives and agents of the Owner and appropriate Federal or State agencies shall be permitted to inspect all work, material, 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.

If any work is covered contrary to the written request of the Engineer, it must, if requested by the Engineer be uncovered of his observation and replaced at the Contractor’s expense.

If any work has been covered which the Engineer has not specifically requested to observe prior to it being covered, or if the Engineer considers it necessary or advisable that covered work be inspected or tested by others, the Contractor, at the Engineer’s request, will uncover expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is not found to be defective, the Contractor will be allowed an increase in the contract price of 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.

14. Substitutions

Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance of 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

Engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor. 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.

15. Patents

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 or manufacturers is specified, but 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 Engineer.

16. Surveys, Permits and Regulations

The Engineer will furnish lines and grades as required for the construction of the work. The Contractor shall make a general check of all lines, dimensions and elevations and shall make all necessary rechecks during the progress of the work to avoid errors in construction. The Contractor shall be responsible for proper dimensions and fittings of all items of work being performed by him. Should any discrepancy be found in lines, dimensions or elevations, they shall be reported to the Engineer immediately.

The Contractor shall protect all existing property and survey monuments, including survey control monuments for this work. The Contractor is responsible for protecting and preserving survey monuments and other survey markers. Any survey monuments damaged as a direct or indirect result of construction activities shall be re-established by a duly licensed land surveyor at the Contractor's sole expense. A corner record shall be filed in accordance with State law for any reset monuments at the Contractor's sole expense.

The Contractor shall carefully preserve benchmarks, 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.

Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor. 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 Engineer in writing, and any necessary changes shall be adjusted as provided in Paragraph 19 of these General Provisions, Changes in the Work.

17. Protection of Work, Property and Persons

The Contractor shall 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 shall 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, including trees, shrubs, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them. The Contractor shall remedy all damages, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or

omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury or loss. He will give the Engineer prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby, and a change order shall thereupon be issued covering the changes and deviations involved.

18. Supervision by Contractor

The Contractor shall supervise and direct the work. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall 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 be present on the site at all times as required to perform adequate supervision and coordination of the work.

19. Changes in the Work

The Owner 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 written change order.

The Engineer may also, 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 so ordered by the Engineer unless the Contractor believes that such field order entitles him to a change in contract price or contract time, or both, in which event he shall give the Engineer written notice thereof within seven (7) calendar days after the receipt of the ordered change, and the Contractor shall not execute such changes pending the receipt of an executed change order or further instruction from the Owner.

20. Changes in Contract Price

The contract price may be changed only by a written 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:

A. Unit prices previously approved.

B. An agreed lump sum.

C. If a lump sum or unit price cannot be mutually agreed upon, the Contractor shall be entitled to the sum of the following costs of doing the extra work:

1. Direct Labor Costs. Charges for cost of all the labor furnished and used by the Contractor shall be made for manual classifications up to and including general foreman. It will not include charges for assistant superintendents, superintendents, office personnel, timekeepers, and maintenance and mechanics. The time charged to extra work shall be subject to the daily approval of the Engineer and evidence of such daily approval shall be submitted with the billing. Labor rates used to calculate the costs shall be those so designated in the Advertisement for Bids. No time or charges will be allowed, except when the men are actually engaged in the proper, efficient, and diligent performance or completion of the extra work as authorized. Overtime shall not be worked without prior approval by the Engineer.

2. Equipment Costs. Charges for the rental and operation of the equipment furnished and used by the Contractor shall be made for all prime construction and automotive equipment. It will not include charges for equipment or tools with a new cost of $1,000.00 or less. Equipment time charges must be subject to the daily approval submitted with the

billing. The equipment rental and operation rates used shall be those agreed upon by the Engineer and the Contractor prior to commencement of the extra work. No time or charges will be allowed except when equipment is actually being used for the proper and efficient performance or completion of the extra work as authorized.

3. Material Costs. Charges for the cost of materials furnished by the Contractor shall be made providing such furnishing was specifically authorized in the extra work order and the actual use verified by the Engineer. Charges must be net cost to the Contractor delivered at the job, and vendor's invoice must accompany the billing along with verification of use of such materials by the Engineer.

4. Tools, Supplies, Overhead, Supervision and Profit. A charge for tools, supplies, overhead, supervision and profit will be allowed in the amount of 15% of the Total Direct Labor Costs, and Material Costs, as defined above.

Any extra work performed hereunder shall be subject to all of the provisions of the contract and the Contractor's sureties shall be bound with reference thereto as under the Contract.

21. Time for Completion and Liquidated Damages

The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed.

Time is of the essence in this Agreement. The Contractor shall proceed with the work at such a rate of progress to ensure full completion within the contract time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the contract time for the completion of the work described herein is a reasonable time.

The parties hereto agree that it is extremely difficult and impractical in this case to determine the actual damages the Owner will suffer if the Contractor fails to complete the work within the contract time and for said reason, if the Contractor shall fail to complete the work within the contract time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Agreement for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents. The time for completion of the work shall be extended, and 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 Engineer:

A. To any preference, priority or allocation order duly issued by the Owner.

B. To unforeseeable caused 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 climatic conditions which, in the opinion of the Engineer, make prosecution of the work unreasonably difficult.

C. To any delays of subcontractors occasioned by any of the causes specified in the above paragraphs.

22. Correction of Work

The Contractor shall promptly remove from the premises all work rejected by the Engineer 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.

23. Suspension of Work, Termination and Delay

The Owner may, at any time and without cause, suspend the work or any portion thereof for a period of

not more than ninety calendar days, or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Engineer, 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 such suspension.

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 if 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 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 over the work or if he disregards the authority of the Engineer, or if he otherwise violates any provision of the Contract Documents, then the Owner may, without prejudice to any other right or remedy and after giving the Contractor and his surety a minimum of ten (10) calendar days from delivery of a written notice, terminate the services of 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, the Contractor shall pay the difference to the Owner. Such costs incurred by the Owner will be determined by the Engineer and incorporated in a change order.

Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractors 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.

After ten (10) calendar days from delivery of a written notice to the Contractor and the Engineer, the Owner 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.

If, through on act or fault of the Contractor, the work is suspended for a period of more than ninety (90) calendar days by the Owner or under an order of court or other public authority, or the Engineer 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 Engineer or awarded by arbitrators within thirty (30) calendar days of its approval and presentation, then the Contractor may, after the (10) calendar days from delivery of a written notice to the Owner and the Engineer 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.

24. Progress Estimates

On or about the last day of the calendar month, the Contractor will, except as hereinafter provided, make in writing and certify to the Owner an estimate which, in his opinion, is just and fair of the amount and value of the work completed by the Contractor up to that time in the performance of the contract. In case of work for which unit prices are named in the contract, the estimate shall be computed on the basis of said unit prices. In the case of work for which a lump sum is named in the contract, the Engineer may use a breakdown of the lump sum price submitted by the Contractor, provided that such breakdown is submitted within 10 calendar days after the execution of the Agreement in a form acceptable to the Engineer. No payment will be made to the Contractor until such schedule has been submitted to and reviewed by the Engineer. To the figure thus arrived at shall be added any amounts due the Contractor for extra work and the amount of any approved claims for extra costs to the date of the progress estimate the retained percentage hereinafter provided for shall be deducted from the total thus computed; and from the remainder, there shall be further deducted any amounts due the Owner from the Contractor for supplies or materials furnished or services rendered and any other amounts that may be due the Owner under the terms of the contract. In preparing estimates for partial payment, consideration shall be given to delivery on the site of pipe, and fittings which will become a part of the finished construction work and for which payment in full has been made by the Contractor, but no consideration will be given to

preparatory work done or other materials on hand. From the balance thus determined shall be deducted the amount of all previous payments and the remainder shall constitute the partial estimate for that month. Such partial estimates shall not be required to be made by strict measurement, but may be made by measurement or by estimation or partly by one method and partly by the other and it shall be sufficient if they are approximate only. Partial estimates may be withheld or reduced if, in the opinion of the Engineer, the Contractor is not diligently and efficiently endeavoring to comply with the intent of the Agreement.

25. Progress Payments

The Owner will make payments on account of the contract as follows: Not later than the 30th day of the month following the month in which the contract is awarded, and the 30th day of each calendar month thereafter, the Owner will pay to the Contractor 95% of the amount earned by the Contractor during the preceding month at the rate of prices set forth in the contract, based on the estimate of the Engineer.

The retention will be held by the Owner until 35 calendar days following filing of the Notice of Completion.

26. Prompt Payment

The Contractor shall promptly pay all subcontractors and suppliers within ten (10) calendar days of receipt of any progress payment, final payment or retention paid by the Owner to the Contractor. Contractor shall advise all subcontractors and suppliers that all second-tier subcontractors and suppliers must be paid within then (10) calendar days of their receipt of payment from the Contractor.

27. Acceptance and Final Payment

Upon receipt of written notice from the Contractor that the work is ready for final inspection and acceptance, the Engineer will promptly make such inspection, and when he finds the work acceptable under the contract, and the contract fully performed, he will promptly issue a final certificate, over his own signature, stating that the work required by this contract has been completed. The Owner then shall issue a formal Notice of Completion, and the entire balance found to be due shall be paid to the Contractor by the Owner 35 calendar days from the date of recording by the Owner of the Notice of Completion of all work covered by this contract.

Before issuance of the Notice of Completion, the Contractor shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid, or if not paid, then the Contractor shall submit evidence of the status of any unpaid indebtedness.

The making and acceptance of the final payment shall constitute a waiver of all claims by the Owner except the following:

A. those arising from unsettled liens;

B. those arising from faulty work appearing within 12 months after the date of filing of the Notice of Completion;

C. those arising from failure to meet the requirements of the Contract Documents or the specifications; or,

D. those arising from manufacturers' guarantees.

The acceptance by Contractor of the final payment referred to in this paragraph 27 herein, shall be a release of Owner from all claims of liability to Contractor for anything done or furnished for, or relating to, the work or for any act or neglect of Owner or of any person relating to or affecting the work, except demands against Owner for the remainder, if any, of the amounts kept or retained under the provisions of Paragraph 25, Progress Payments, herein; and excepting pending, unresolved claims.

28. Quantities and Unit Prices

The quantities noted in the schedule are approximation for comparing bids, and no claim shall be made against the Owner for excess or deficiency therein. Payment at the unit prices set forth in the schedule

will constitute payment in full for the completed work and will include materials, supplies, labor, tools, machinery, and all other expenditures incident to satisfactory compliance with the contract, unless otherwise specifically provided.

The quantities of work performed will be computed for payment by the Engineer on the basis of measurements taken by the Engineer, and these measurements shall be final and binding.

29. Insurance

The Contractor shall not commence work under this Agreement until he has obtained all the insurance required under this section and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved. All insurance required under this section shall be maintained at the expense of the Contractor continuously during the life of the contract up to the date of acceptance of the work by the Owner.

Commercial General Liability and Automobile Liability Insurance – The Contractor shall provide and maintain the following commercial general liability and automobile liability insurance:

A. Coverage – Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 0001)

2. Insurance Service Office Form Number CA 0001 (ed. 1/87) covering Automobile Liability, Code 1 (any auto)

B. Limits – The Contractor shall maintain limits no less than the following:

1. General Liability – Two million dollars ($2,000,000) per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2501 or insurer's equivalent endorsement provided to the Owner) or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability – One million dollars ($1,000,000) per accident for bodily injury and property damage combine single limit.

C. Required provisions – The general liability and automobile liability policies are to contain, to be endorsed to contain the following provisions:

1. The Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents and volunteers are to be covered as insured as respects: liability arising out of activities performed by or on behalf of the Contractor, products and completed operations of the Contractor, premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Owner and its directors, officers, employees, agents, and volunteers.

2. For any claims related to this work, the Contractor's insurance shall be the primary insurance as respects the Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and its directors, officers, employees, agents and volunteers. Any insurance, pooled coverage or self-insurance maintained by the Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of

Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents and volunteers shall not contribute to it.

3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents and volunteers.

4. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

5. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) calendar days prior written notice by certified mail, return receipt requested, has been given to the Owner.

D. Deductibles and Self-Insured Retentions – Any deductible or self-insured retention must be declared to and approved by the Owner. At the option of the Owner, either the insurer shall reduce or eliminate such deductibles or self-insured retentions.

E. Acceptability of Insurers – Insurance is to be placed with insurers having a current A.M. Best's rating of no less than A-: VII or equivalent.

Workers' Compensation and Employer's Liability Insurance – The Contractor and all subcontractors shall cover or insure under the applicable laws relating to workers' compensation insurance, all of their employees working on or about the construction site, regardless of whether such coverage or insurance is mandatory or merely elective under law, and the Contractor shall defend, protect and save harmless the Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents and volunteers from and against all claims, suits, and actions arising from any failure of the Contractor or any subcontractor to maintain such insurance. Before beginning work, Contractor shall furnish to the Owner satisfactory proof that Contractor has taken out for the period covered by the work under this Contract, full compensation insurance for all persons employed directly by Contractor or through subcontractors in carrying out the work contemplated under this Contract, all in accordance with the "Workers' Compensation and Insurance Act," Division IV of the Labor Code of the State of California and any Acts amendatory thereof.

The Contractor shall provide employer's liability insurance in the amount of, at least, $1,000,000 per accident for bodily injury and disease.

The Contractor shall provide the Owner with a certificate of Workers' Compensation and Employers liability insurance coverage.

In signing the Agreement, Contractor makes the following certification required by Section 1861 of the Labor Code:

"I am aware of the provisions of Section 3700 of the Labor Code which requires each employer to be insured against liability for workmen's compensation or to undertake self insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

Evidences and Cancellation of Insurance – Prior to execution of the Agreement, the Contractor shall file with the Owner evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include original copies of the ISO CG 2010 (or insurer's equivalent) signed by the insurer's representative and certificate of insurance (Accord Form 25-S or

equivalent). All evidence of shall be certified by a properly authorized officer, agent or qualified representative of the insurer and shall certify the names of the insured, any additional primary insurers, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, the expiration date, and that the insurer will give by certified mail, written notice to the Owner at least thirty (30) calendar days prior to the effective date of any cancellation, lapse or material change in the policy.

The Contractor shall, upon demand of the Owner, deliver to the Owner all such policy or policies of insurance and the receipts for payment of premiums thereon; and should the Contractor neglect to obtain and maintain in force any such insurance or deliver such policy or policies and receipts to the Owner, then it shall be lawful for the Owner to obtain and maintain such insurance, and the Contractor hereby appoints the Owner the true and lawful attorney-in-fact to do all things necessary for this purpose. All money paid by the Owner for insurance premiums under the provisions of this article shall be charged to the Contractor.

30. Contract Security

The Contractor shall, within ten (10) calendar days after the receipt of the Notice of Award, furnish the Owner with a performance bond and a payment bond in penal sums equal to 100% 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 corporate bonding company licensed to transact such business in the state in which the Work is to be performed and named on the current list of "Surety Companies Acceptable Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any such bond is declared a bankrupt or loses its right to do business in the state in which the work is to be performed or is removed from the list of surety companies accepted on Federal bonds, Contractor shall within ten (10) calendar days after notice from the Owner 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 Owner. The premiums on such bond (s) shall be paid by 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 Owner.

Attached to the bonds shall be the original, or a certified copy, of the unrevoked appointment, power of attorney, bylaws or other instrument which entitles and authorizes the person to execute the bond to do so, a certified copy of the certificate of authority or the insurer issued by the Insurance Commissioner of the county in which the Owner is located which would state that the certificate of authority of the insurer (the bonding company) has not been surrendered, revoked, cancelled, annulled, or suspended.

The performance bond shall remain in full force and effect during the warranty period of 12 months from the date of acceptance of the work by the Owner.

If requested by the Owner or Engineer, copies of the insurer's most recent annual statement and quarterly statement filed with the Department of Insurance pursuant to Article 10 (commencing with Section 900) of Chapter 1 of Part 2 of Division 1 of the Insurance Code, shall be provided to the Owner or Engineer within 10 calendar days of the insurer's receipt of the request to submit the statements.

31. Assignments

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 obligation thereunder, without written consent of the other party.

32. Indemnification

Contractor shall indemnify and hold harmless and defend the Owner and the Engineer, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents or volunteers,

and each of them from and against:

A. Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind and nature whatsoever for, but not limited to, injury to or death of any person including Owner and/or Engineer and/or Contractor, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources, or any directors, officers, employees, agents volunteers of the Owner, Engineer or Contractor, and damages to or destruction of property of any person, including but not limited to, Owner, Engineer and/or Contractor, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents or volunteers arising out of or in any manner directly or indirectly connected with the work to be performed under this Agreement, however caused regardless of any negligence of the Owner or the Engineer, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources or their directors, officers, employees, agents, or volunteers, except the sole negligence of willful misconduct or active negligence of the Owner or the Engineer, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources or their directors, officers, employees, agents or volunteers:

B. Any and all actions, proceedings, damages, costs, expenses, penalties or liabilities in law or equity, of every kind or nature whatsoever, arising out of , resulting from or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor.

Contractor shall defend, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the Owner and the Engineer, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources or their directors, officers, employees, agents or volunteers.

Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the Owner and their directors, officers, employees, agents, or volunteers in any such suit, action or other legal proceedings.

Contractor shall reimburse the Owner, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources and their directors, officers, employees, agents and/or volunteers, for any and all legal expenses and costs incurred by them in connection therewith or in enforcing the indemnity herein provided.

Contractor agrees to carry insurance for this purpose as set out in the specifications. See Paragraph 29 of these General Provisions for insurance specifications and coverage. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the Owner and the Engineer, San Luis & Delta Mendota Water Authority, the United States Bureau of Reclamation, Grassland Water District, and the California Department of Water Resources or their directors, officers, employees, agents and/or volunteers.

33. Separate Contracts

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 depend upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for such proper execution and results.

The Owner may perform additional work related to the project by himself, or he may let other contracts

containing provisions similar to these. The Contractor will afford the 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.

In the performance of additional work by other contractors or the Owner is not noted in the Contract Documents prior to the execution of the Agreement, 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 requires additional expense or entitles him to an extension of the contract time, he may make a claim therefore as provided in Items 19 and 20 of these General Provisions.

34. Subcontracting

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

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 of the acts and omissions of persons directly employed by him.

The Contractor shall cause appropriate provisions to be inserted in all contracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract Documents in so far as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

35. Employment of Apprentices

The Contractor and any subcontractor under him shall comply with the requirements of Sections 1777.5 and 1777.6 of the Labor Code in the employment of apprentices. The responsibility for compliance with the provisions of said Section 1777.5 for all apprenticeship occupations shall rest with the Contractor. Information relative to apprenticeship standards, wage schedules and other requirements may be obtained from the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, or from its branch offices.

36. Payment of Prevailing Wages

The Contractor and all subcontractors under him shall pay all laborers, workmen and mechanics on all work included in this contract no less than the general prevailing rate of per diem wages for work performed, (to-wit, within the limits of the City), and no less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality, which per diem wages shall not be less than the stipulated rate contained in a schedule thereof which has been ascertained and determined by the Council to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this contract, and which is now on file with the City Clerk, as set forth in the Information for Bidders, and by reference it is incorporated herein and made a part hereof.

The Contractor shall forfeit, as a penalty to the Owner, two hundred dollars ($200.00) for each laborer, workman or mechanic employed for each calendar day or portion thereof such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under this contract by him or by any subcontractor under him in violation of Articles 1 and 2 of Chapter 1 Part 7 of Division 11 of the Labor Code of the State of California, and said sums and amounts which shall have been so forfeited pursuant to the herein paragraph and the said terms of said Labor Code shall

be withheld and retained from payments due to the Contractor under said contract, pursuant to this contract and the said terms of said Labor Code; but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the Division of Labor law Enforcement of the State Department of Industrial Relations or by said Council.

The difference between such stipulated prevailing wage rates and the amount paid to each workman for each calendar day, or a portion thereof, for which each workman was paid less than the stipulated prevailing wage rate shall be paid to each workman by the Contractor. The Contractor shall comply with the provisions of Section 1775 of the Labor Code of the State of California.

The Contractor and his subcontractors shall submit certified payroll information electronically to the Department of Industrial Relations as well as a hard copy of said certified payrolls to the Owner on a monthly basis.

37. Registration to Train Apprentices

Pursuant to Labor Code Section 1777.5, all contractors shall file with the appropriate Joint Apprenticeship Training Committee, a DAS-140 form registering to train apprentices. This requirement to register to train apprentices is mandated by Section 1777.5 whether or not you are signatory to or a party of any approved training program. Only those programs approved by the California Apprenticeship Council are applicable to accept DAS-140 registration forms.

If the contractor is approved to train apprentices, then apprentices must be called in a ratio not less than one apprentice hour for each five journeyman hours.

However, if the entire contract may be completed within 20 working days or the entire contract (nor subcontracts) is less than thirty thousand ($30,000), then the Contractor is exempt from requesting apprentices under Labor Code Section 1777.5.

In addition, all contractors are required to make appropriate training contributions as set forth in the prevailing wage determination to each appropriate JATC, or in the alternative, to the California Apprenticeship Council. Payments shall be made not less than monthly, calculated and paid by the fifteenth of each month, for work performed that prior month.

The address for the applicable Joint Apprenticeship Training Committee and for the California Apprenticeship Council can be obtained by calling the Division of Apprenticeship Standards.

38. Penalties

Failure to pay the appropriate prevailing wage can result in penalties being assessed as follows:

A. Up to $50.00 per day per worker for each and every violation; and,

B. debarment from future public works for a period not to exceed three years.

C. $50.00 per day per worker for each failure to comply with the payment of overtime for all hours worked in excess of 8 in one day or 40 in one week.

Failure to register to train apprentices or failure to pay the appropriate training contribution can result in penalties being assessed as follows:

A. $100.00 per day for each day of violation; and,

B. debarment from future public works for a period not to exceed three years.

39. Engineer’s Authority

The Engineer shall act as the Owner’s representative. 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 Engineer will make visits to the site and determine if the work is proceeding in accordance with the Contract Documents.

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.

The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

40. Land and Rights-of-Way

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.

The Owner shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.

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.

41. Warranty and Guarantee

Contractor warrants and guarantees to Owner that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of defects known to Owner shall be given to Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in Paragraph 19, Changes in the Work, of these General Provisions. Defective work may be rejected even if approved by prior inspection.

42. One (1) Year Warranty Period

The warranty period shall commence when the Notice of Completion is issued, at notice of beneficial occupancy or at notice of partial utilization of the work to be warranted has been issued, or a later date if so specified in the Agreement, or mutually agreed to, and extend until one (1) year after that date or whatever longer period may be prescribed by laws or regulations or by the terms of any applicable special guarantee or specific provision of the Contract Documents.

43. Correction of Defective Work

If within the designated warranty period, or such longer period as may be required by Laws or Regulations, the work, or any part of the work, is discovered to be defective, Contractor shall promptly, without an adjustment in contract price and in accordance with Owner's written instructions, either correct that defective work, or if it has been rejected by Owner, remove it from the site and replace it with non-defective work. If circumstances warrant it, including but not limited to, in an emergency, Owner may have the defective work corrected or the rejected work removed and replaced. In that event, Contractor shall not be allowed to recover any associated costs, and he shall reimburse Owner for all direct, indirect and consequential costs of Owner, and Owner shall be entitled to an appropriate decrease in contract price, to withhold a set-off against amount recommended for payment, or make a claim on Contractor's bond if Contractor has been paid in full. Where defective work (and damage to other work resulting therefrom) has been corrected, removed or replaced during the warranty period, the one (1) year warranty period with respect to such work will be extended for an additional period of one (1) year after such correction or removal and replacement has been satisfactorily completed.

44. Early Completion

The one (1) year warranty period will not begin until the Notice of Completion is filed. If Contractor completes the work or portions thereof prior to this time, he shall preserve the equipment and/or facilities by developing and implementing a preventive maintenance program in compliance with manufacturer's recommendations to maintain the equipment and/or facilities unless Owner has issued a notice of

beneficial occupancy or notice of partial utilization for the warranted work. At start up, Contractor will be required to get his equipment and/or facilities ready to put into service.

45. Extended Warranties and Guarantees

Owner may at its sole discretion extend the one (1) year warranty period up to twenty-four (24) months, in which case Contractor shall maintain the warranties and guarantees. If such extension of the one (1) year warranty period causes an increase in the cost of the warranties and guarantees provided by Contractor, an adjustment in contract price shall be made as provided by the Contract Documents.

46. Arbitration

With the prior approval of the Owner and the Contractor, all claims, disputes and other matters in question arising out of, or relation 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 Item 27 of these General Provisions, may be decided by arbitration in accordance with the Arbitration Rules of the American Arbitration Association. If entered into, the 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.

Notice of the request for arbitration shall be filed in writing with the other party to the Contract Documents and with the American Arbitration Association, and a copy shall be filed with the Engineer. The request for arbitration shall set forth specifically the dispute to be arbitrated. Acceptance by the other party of the request to arbitrate shall constitute the agreement to arbitrate and arbitration shall proceed forthwith. No legal proceedings other than to enforce arbitration shall be commenced on any issue covered by the arbitration agreement.

The Contractor shall carry on the work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

47. Taxes

The Contractor shall pay all sales, consumer, use and other similar taxes required by the law of the place where the work is performed.

48. Contractor’s Understanding

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and extent of the work, the character, quality, and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the Engineer or the Owner, either before or after the execution of this Agreement, shall affect or modify any of the terms or obligations herein contained.

49. Accidents

The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first-aid service to anyone who may be injured in connection with the work. The Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with the performance of the work, whether on or adjacent to the site which causes death, personal injury, or property damages, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer and the Owner. If any 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 Engineer, giving full details of the claim.

50. Safety and Sanitation

The Contractor shall provide adequate safety and sanitation facilities according to State laws and local ordinances.

The Contractor will assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and equipment. This responsibility shall apply continuously and not be limited to normal working hours.

51. Climatic Conditions

The Engineer may order the Contractor to suspend any work that may be subject to damage by climatic conditions. The Contractor may suspend work if climatic conditions are such that the Contractor is unable to work. In such case, the Contractor, within seven calendar days, shall request in writing a change order to extend the contract time.

52. Officials Not To Benefit

No official of the Owner shall receive any benefit that may arise by reason of this contract.

53. Clean-Up

During the progress of the work, the Contractor shall maintain the site and related structures and equipment in a clean, orderly condition and free from unsightly accumulations of rubbish. Upon completion of the work, the Contractor shall remove from the vicinity of the work all plants, buildings, rubbish, unused materials, concrete forms, temporary bridging, and other like material, belonging to him or used under his direction during construction, and in the event of his failure to do so, the same may be removed by the Owner after 10 calendar days notice to the Contractor at the expense of the Contractor, and his surety or sureties shall be liable therefore.

As part of the final clean-up, the Contractor shall dress up and grade the right-of-way to match existing ground surfaces, and shall remove therefrom all weeds and other growth. Where the construction has crossed yards or driveways, they shall be restored to a condition equivalent to the condition existing prior to the construction as determined by the Engineer.

No direct payment will be made to the Contractor for any clean-up work, but all compensation therefore shall be included in the prices bid in the schedule for the various items of work.

54. Notice to Owner

In the event this contract involves digging trenches or excavations that extend deeper that four feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify Owner, in writing, of any:

A. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;

B. Subsurface or latent physical conditions at the site differing from those indicated;

C. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

Owner shall promptly investigate the conditions. If Owner finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, Owner shall issue a change order under the procedures described in the contract.

In the event a dispute arises between Owner and Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor, shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the

contract. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between Contractor and Owner.

55. Payment of Withheld Funds

The Owner shall retain 5**%** of each payment from Contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Owner, of the agreed upon work, and pay retention to the Contractor based on these acceptances. The Contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 calendar days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract agreement work by the Owner. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 calendar days may take place only for good cause and with the Owner's prior written approval. Any violation of this provision shall subject the violating Contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor, deficient subcontract performance, or noncompliance. When the work is complete, the Owner will issue a Notice of Completion to the County. The Owner will pay all retention funds to the Contractor thirty-five (35) Calendar Days after Notice of Completion has been recorded.

56. Storm Water Pollution Prevention Measures

Storm Water Pollution Prevention Measures shall be performed in accordance with the provisions in Section 13-3, "Storm Water Pollution Prevention Plan," of the Standard Specifications and Section 01 57 23 of the Technical Specifications.

A. GENERAL

In compliance with the State and Federal regulations regarding storm water management during construction, the Contractor shall not allow any debris, waste materials or pollutants, originating from the Contractor's operations, to enter the storm drainage system, which leads to contamination of local creeks and ponding basins.

The Contractor shall properly dispose of all wastes and excess materials in a legal manner to the satisfaction of the Owner.

B. SELECTIVE BMPS FOR STORM WATER POLLUTION PREVENTION

As applicable to the project or directed by the Engineer, the Contractor shall implement any or all of the following Best Management Practices (BMPs):

1. Material Handling and Storage

a. Nonhazardous Materials

i. Designated Delivery and Storage Area

The Contractor shall propose areas in the vicinity of or within the project site or within the Contractor's staging site, which are suitable for material delivery and storage. To the maximum extent practicable, these areas shall be away from gutters, catch basins, drainage courses or creeks. The Contractor shall submit the proposed areas to and shall obtain the approval from the Engineer in writing prior to bringing in materials.

ii. Storage of Granular Materials

The Contractor shall store granular materials at least ten feet (10') away from any inlet or curb return and shall prevent the granular materials from entering the storm drain system, drainage courses or creeks. During wet

weather or when rain is forecast within 24 hours, the Contractor shall cover granular materials with a tarpaulin and surround the material with sandbags or other approved heavy objects.

b. Hazardous Materials

i. Hazardous materials include, but are not limited to, petroleum products, antifreeze, paints, thinners, solvents, pesticides, herbicides and various other toxic chemicals.

ii. The Contractor shall propose, within the project site or the Contractor's staging site, an area that is suitable for hazardous material delivery and storage. To the maximum extent practicable, the area shall be away from inlets, gutters, drainage courses or creeks. The Contractor shall submit the proposed area to and shall obtain approval from the Engineer in writing prior to bringing in hazardous materials.

iii. The Contractor shall label and store all hazardous materials and hazardous wastes in accordance with secondary containment regulations, the City of Los Banos Hazardous Materials Storage Ordinance and all applicable Merced County, State and Federal laws and regulations.

iv. The Contractor shall keep all hazardous materials or waste in containers and fully covered to avoid contamination of storm runoff.

v. The Contractor shall keep an accurate, up-to-date inventory, including Materials Safety Data Sheets (MSDSs), of hazardous materials and hazardous wastes stored on-site to assist emergency response personnel in the event of a hazardous material incident.

2. Hazardous Material Usage

a. The Contractor shall follow all local, State and Federal policies, laws and regulations governing the use of hazardous materials.

b. The Contractor shall use only Category III pesticides for pest control. If Category III pesticides are unavailable, have been tried but proven ineffective, or when it is necessary to prevent a pest outbreak that poses an immediate threat to public health or significant economic loss, the City may consider allowing the use of Category II pesticides with a dose of up to LD50 (a dose that kills 50 percent of the targeted pest population in the laboratory) provided that the risk to the applicator and impact to the environment can be justified. Use of Category I pesticides is prohibited.

c. Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging non-degraded pesticides into storm water system, drainage courses and creeks.

d. Mix only as much material as is necessary for treatment. Calibrate application equipment prior to and during use to ensure desired application rate. Do not mix or load pesticides adjacent to storm drain system, drainage courses or creeks.

e. The Contractor shall not overapply herbicides, pesticides or fertilizers and shall follow the manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals. Over-application of a pesticide is a "label violation" subject to an enforcement action by the Merced County Agriculture Department.

f. When rain is forecast within 48 hours or during wet weather, the Contractor shall not apply chemicals in outside areas unless otherwise

allowed by the Engineer in writing.

3. Integrated Pest Management Methods

The Contractor shall employ, in place of pesticides, integrated pest management methods including:

a. No control

b. Physical or mechanical methods

c. Least toxic chemicals (insecticidal soaps and oil, etc.)

4. Vehicle and Equipment Cleaning, Maintenance and Fueling

a. Cleaning

The Contractor shall not clean or wash vehicles or equipment on- site or in the streets. If allowed by the Engineer in writing, cleaning and washing shall be performed in a designated and bermed area approved by the Engineer using water only. No soaps, solvents, degreasers, steam cleaning equipment or similar methods are permitted. The Contractor shall not allow wash water to flow into streets, gutters, storm drain system, bare ground, drainage courses or creeks.

b. Maintenance and Fueling

i. The Contractor shall perform maintenance and fueling of vehicles or equipment in a designated, bermed area or over a drip pan that will prevent waste, leaks or spills from entering streets, gutters, storm drain system, bare ground, drainage courses or creeks.

ii. The Contractor shall inspect all vehicles and equipment arriving on-site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs can be made. Shut-off valves on equipment must be working properly.

5. Spill Prevention and Control

a. If hazardous materials are used on the project, the Contractor shall keep a stockpile of spill clean-up materials, such as rags or absorbents, readily accessible on-site.

b. Above-ground storage tanks and their installations shall comply with City, State and Federal requirements.

c. The Contractor shall immediately contain and prevent spills or leaks from entering storm drain system, drainage courses or creeks and shall properly clean up and dispose of the spills or leaks. The Contractor shall not wash the spills or leaks into streets, gutters, storm drain system, bare ground, drainage courses or creeks and shall not bury the spills or leaks.

d. In case of a hazardous material spillage, the Contractor shall immediately call 911 and shall handle the spilled material in accordance with the requirements of 6, “Disposal of Hazardous Waste,” below.

6. Disposal of Hazardous Waste

a. Unless the Contractor is a licensed hazardous waste handler, the Contractor shall contract with a licensed hazardous waste handler to remove and dispose of hazardous waste materials unless the waste quantities to be transported are below threshold limits for transportation as specified in the State and Federal regulations.

b. The Contractor shall arrange for regular hazardous waste collection to comply with limits for storage of hazardous waste.

c. The Contractor may dispose of dry, empty paint cans, buckets, paintbrushes, rollers, rags and drop cloths in the trash.

d. The Contractor shall dispose of hazardous waste at facilities authorized for treatment, storage and disposal of hazardous waste only.

7. Street Sweeping

At the end of each day or as directed by the Engineer, the Contractor shall sweep roadways of all debris and excess materials attributed to the Contractor's operations.

8. Water Usage

a. The Contractor shall use the least amount of water necessary for dust control and street sweeping operations.

b. The Contractor shall not use water to flush dust and debris down the street in place of street sweeping.

9. Dumpsters and Portable Sanitary Facilities

a. If dumpsters or portable sanitary facilities are used, they shall be stationed at least ten feet (10') away from storm drain facilities.

b. The Contractor shall arrange for regular waste collection to keep dumpsters and portable sanitary facilities from overflowing and shall regularly inspect these facilities for leaks. If a leak is discovered, the Contractor shall arrange for the repair or replacement of facilities that leak. The Contractor shall not wash the dumpsters or portable sanitary facilities on-site.

c. Dumpsters shall be covered at all times and shall be watertight.

d. Portable sanitary facilities shall have adequate secondary containment and be staked down or otherwise prevented from tipping.

10. Earthwork

The Contractor shall maximize the control of erosion and sediment by using the Best Management Practices for erosion and sedimentation control described in the California Storm Water Best Management Practice Handbook—Construction Activity or ABAG Manual of Standards for Erosion and Sediment Control Measures.

11. Dewatering

a. The Contractor shall route water through a control device, such as a sediment trap, sediment basin or Baker tank, to remove settleable solids prior to discharging the water into the storm drain system. Refer to the California Storm Water Management Practice Handbook for these sediment control measures.

b. Approval of the control device shall be obtained in advance from the Engineer.

c. Filtration of the water following the control device may be required on a case-by-case basis.

d. If the Engineer determines that the dewatering operation would not generate an appreciable amount of settleable solids, the control device may be waived.

12. Saw Cutting

a. During saw cutting or grinding operation, use as little water as possible.

b. During saw cutting, the Contractor shall cover or barricade catch basins using filter fabric, straw bales, sandbags or fine gravel dams to keep slurry out of the storm drain system. When protecting a catch basin, the Contractor shall ensure that the entire opening of the catch basin is covered. Refer to California Storm Water Best Management Practice Handbook for these control measures.

c. The Contractor shall shovel, absorb or vacuum saw cut slurry and pick up the waste as the work progresses prior to moving to the next location, as specified elsewhere in these specifications or as directed by the Engineer.

d. If saw cut slurry enters catch basins, the Contractor shall, at the Contractor's cost, clean up the storm drain system immediately.

13. Concrete, Grout and Mortar Related Work

a. Material Handling

i. The Contractor shall avoid mixing excess amounts of fresh concrete or cement mortar on-site.

ii. The Contractor shall store concrete, grout and mortar away from storm drain facilities or drainage courses and shall ensure that these materials do not enter the storm drain system. Material shall be covered with impervious materials or stored in a watertight container.

b. Washing of Concrete Truck and Tools

i. The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drain system, bare ground, drainage courses or creeks.

ii. The Contractor shall perform washing of concrete trucks and tools off-site or in a designated area on-site where the water will flow into a temporary impervious pit or impervious containment system.

14. Asphalt Concrete Paving

a. Project Site Management

i. When rain is forecast within 24 hours or during wet weather, the Engineer may prevent the Contractor from paving.

ii. The Engineer may direct the Contractor to protect drainage courses by using earth dike, straw wattle or sandbag to trap and filter sediment. Refer to California Storm Water Best Management Practice Handbook for these control measures.

iii. The Contractor shall place drip pans or impervious material with absorbent materials under paving equipment when not in use.

iv. The Contractor shall cover catch basins and manholes when paving or applying prime coat, tack coat, seal coat, fog seal or slurry seal.

v. If the paving operation includes an on-site mixing plant, the Contractor shall comply with Merced County NPDES General Industrial Activities Storm Water Permit requirements.

vi. The Contractor shall preheat, transfer or load hot bituminous material away from storm drain system, drainage courses or creeks.

b. Paving Waste Management

The Contractor shall not sweep or wash down excess sand (placed as part of a sand seal or to absorb excess oil) into streets, gutters, storm drain system or

creeks but shall collect the sand and dispose of it off-site. The Contractor shall not wash fresh asphalt concrete pavement.

15. Painting

a. General

i. The Contractor shall remove as much excess paint as possible from brushes, rollers and other tools before starting cleanup.

ii. The Contractor shall conduct cleaning of painting equipment and tools in a designated area approved by the Engineer.

iii. The Contractor shall not allow wash water from cleaning of painting equipment and tools into streets, gutters, storm drain system, bare ground, drainage courses or creeks.

b. Water-Based Paint

To the maximum extent practicable, the Contractor shall dispose of wash water from water cleaning of brushes, rollers and other tools used in water-based painting work to the sanitary sewer.

c. Oil-Based Paint

The Contractor shall dispose of waste thinner and solvent and sludge from cleaning of brushes, rollers and other tools used in oil- based painting work as hazardous waste and the Contractor shall handle the waste as described in Section 6, "Disposal of Hazardous Waste," above. To the maximum extent practicable, the Contractor shall filter paint thinner and solvents for reuse.

16. Thermoplastic

a. The Contractor shall transfer and load hot thermoplastic away from drainage systems or drainage courses or creeks.

b. The Contractor shall sweep thermoplastic grindings into plastic bags. Yellow thermoplastic grindings may require special handling as they may contain paint.

C. CONTRACTOR TRAINING AND AWARENESS

1. The Contractor shall train all employees and subcontractors on the storm water pollution prevention requirements contained in these specifications.

2. The Contractor shall inform subcontractors of the storm water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

3. The Contractor shall post warning signs in areas treated with chemicals.

D. BMP IMPLEMENTATION

The Contractor shall be responsible throughout the duration of the construction period for installing and maintaining the applicable BMPs and for removing and legally disposing of temporary control measures. Unless otherwise directed by the Engineer or specified elsewhere in these specifications, the Contractor's responsibility for BMP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.06, "Suspensions," of the Standard Specifications.

Throughout the rainy season, all soil-disturbed areas of the site shall be fully protected with soil stabilization and sediment control device approved by the Engineer at the end of the same day the soil is disturbed unless fair weather is predicted the next day and the protective measures are exempt by the Engineer. The Contractor shall monitor the weather forecast on a daily basis

and inform the Engineer of the forecast. The National Weather Service forecast shall be used for this purpose. If precipitation is predicted for the following day, construction schedule shall be altered as required to install appropriate BMPs or to ensure that the already installed BMPs are in good operating condition prior to the onset of rain.

E. BMP MAINTENANCE

To ensure proper implementation and effectiveness of the BMPs, the Contractor shall regularly inspect and maintain the deployed BMPs throughout the construction site. The Contractor shall identify corrective actions and the time needed to address any deficient BMPs or reinitiate any BMPs that have been discontinued. The Contractor shall keep written records of all BMP inspections, maintenance and corrective actions.

The frequency of the BMP inspection shall be as follows:

1. Prior to a forecast storm;
2. After any precipitation that causes runoff;
3. At 24-hour intervals during extended rain events; and
4. Routinely, at a minimum of once every week.

If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of a BMP, the deficiency shall be corrected immediately. If requested by the Contractor and approved by the Engineer in writing, the deficiency may be corrected at a later time or date but the corrective action shall not be later than the onset of the subsequent rain event. The correction of deficient BMPs shall be at no additional cost to the City.

F. RESPONSIBILITIES, CONSEQUENCES, AND REMEDIES

1. Conformance with the provisions of this section or other requirements in various other sections of these specifications shall not relieve the Contractor from the Contractor's responsibilities as provided in various relevant articles of Section 7, "Legal Relations and Responsibilities to the Public," of the Standard Specifications, and as specified herein.
2. For purposes of this section, costs and liabilities include, but are not limited to, fines, penalties and damages, whether assessed against the City or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Act.
3. If solid or liquid materials or waste, hazardous or otherwise, or pollutants originating from the Contractor's operation enter the storm drain system or water courses, the Contractor will be required to thoroughly clean up the affected storm drain facilities and water courses to the satisfaction of the Engineer. If the Contractor fails to clean up the affected facilities as required, the City will issue a stop-work order and take necessary actions to effect the cleanup of the affected facilities.
4. The Contractor shall be responsible for all costs, including fines, the City's cost of defense, the cost of cleanup by others ordered by the City, and liabilities imposed by law as a result of the Contractor's failure or negligence in complying with the requirements specified herein.
5. In accordance with the provisions of Section 7-1.05, "Indemnification," of the standard Specifications if the Contractor fails to accept or reject a tender of defense and indemnity within fifteen (15) calendar days, the City may, in addition to the remedies authorized by law, retain any sum due the Contractor until disposition has been made of all claims or suits for damages or until the Contractor accepts or rejects the tender of defense, whichever occurs first.

G. PAYMENT

Full compensation for storm water pollution control shall be considered as included in the payment for various other items of work and no additional compensation will be made therefore.

Special Provisions

1. Requirements

It is required that there be constructed and completed in accordance with the Contract Documents for "Construction of BASIN AND STORMWATER CAPTURE PROJECT" for the City of Los Banos, all work as described in these Contract Documents.

2. Description of Work

The principal components of the work to be performed under these Contract Documents include the following:

> The Work consists of furnishing all labor, materials and equipment necessary to construct three (3) basin cells covering approximately 185-acres, 24-inch turnout, two (2) interbasin concrete structures, an outlet structure with 60-inch stand pipe with a 30-inch propeller flow meter, and other miscellaneous items to provide for fully functioning regulation basins, in the County of Merced, in accordance with the Plans and the Specifications.

Any incidental work not described in the Contract Documents which is necessary to complete the Work shall be furnished and installed as part of this contract at no additional cost to the Owner. The work shall be complete and ready for service to the satisfaction of the Owner. The Contractor shall have had the opportunity to inspect the site and observe actual working conditions during the pre-bid meeting.

3. Commencement, Prosecution and Completion of Work

The Contractor shall commence work and shall complete all of the work in accordance with the schedule and within the time stated in the bid. The capacity of the Contractor's construction plant, sequence of operations, method of operations, and the forces employed shall at all times during the continuance of the contract, be subject to the approval of the Engineer and shall be such as to ensure the completion of the work within the time specified.

4. Hours of Work

Construction work shall be completed between the hours of 7:00 a.m. and 9:00 p.m. Monday through Friday using normal construction practices. No work shall be performed on Saturday or Sunday. The Contractor may request to the Owner to perform construction outside of these specified hours.

5. Permits and Business Licenses

The Contractor will not need an Encroachment Permit from the Public Works Department prior to start of construction. The Contractor and all subcontractors working within the city limits of Los Banos shall apply for and have issued a business license from the City of Los Banos (209-827-7000) prior to commencement of work.

6. Testing

Field density tests shall be made of each compacted layer (subbase and aggregate base) as directed by the Engineer. When these tests indicate that the density of any layer of fill or portion thereof is less than the specified density, that layer shall be reworked unit the required density has been obtained.

Field density tests (compaction testing) shall be performed by a geotechnical laboratory retained by the Owner and under the supervision of a registered geotechnical engineer.

Initial compaction testing will be paid by the Owner. Retesting of areas that failed the initial testing will be paid for by the Contractor.

7. Responsibility Regarding Existing Utilities and Private Property

The existence and location of public and private utilities indicated on the drawings are not guaranteed and any additional utilities and facilities not shown on the drawings shall be investigated and protected by the Contractor. The Contractor shall be held responsible for damage to and for maintenance and protection of existing pipelines, public utilities, drives, curbs and gutters, sidewalks, and fences. Excavation in the vicinity of existing public utility structures, underground electrical or telephone cable, oil or gas pipelines, and waterlines shall be carefully done by hand. The Contractor shall adequately protect all adjoining property and structures from damage, whether within or without of the Owner furnished rights-of-way, and shall be fully responsible for any damage to adjoining property and structures which may result from work done under this contract. The Contractor shall use extreme care during construction to prevent damage from dust to crops and adjacent property. The Contractor shall sprinkle the areas where the passage of operation of vehicles and equipment creates a dust problem, or take other preventive measures as directed by the Engineer. The Contractor shall furnish all labor, equipment, materials and means required to control dust which is in any way a result of the Contractor's operations.

The Contractor shall be responsible for all damage or injury which may result to any property, outside of the construction right-of-way or within the right-of-way where so noted, from the Contractor's operations hereunder, or otherwise, from the performance of the Agreement by said Contractor or any of his subcontractors or employees.

The Contractor shall attempt to maintain access to the residential and commercial driveways within the construction area at all times during working hours and shall provide access during non-working hours, weekends and holidays.

Payment for all work specified above shall be included in the unit or lump sum prices bid in the schedule for the various items of work.

8. Obstructions

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installation at least 3 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Failure to contact the notification center prohibits excavation. Regional notification centers include but are not limited to the following:

NOTIFICATION CENTER	TELEPHONE
Underground Service Alert Northern California (USA) www.usanorth811.org	811 or 1-800-227-2600

9. Materials Furnished By Owner

No labor, material, or other facilities shall be provided by the Owner unless otherwise indicated on the drawings or in the Contract Documents.

10. Materials Furnished By Contractor

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the execution and completion of the work.

11. Schedule of Values, Material List and Substitutions

Prior to the commencement of work, and within 10 calendar days following the signing of the contract by the Owner and the Contractor, the Contractor shall submit 2 copies of a Schedule of Values for all lump sum bid items in the Bid Schedule and a *complete* list of equipment and materials to be furnished, including all substitutions proposed to the Engineer for approval. Partial or incomplete material lists will not be

considered. No substitutions will be considered thereafter. Only one request for substitution will be considered on each item of material or equipment.

12. Request for Extension of Time

All extension of time requests shall be made in writing to the Engineer within seven (7) calendar days from the delay occurrence date. In the case of continuing cause of delay, only one claim is necessary.

13. Rights-of-Way

The Contractor shall not be entitled to extra compensation for hardships and increased cost caused by the work being adjacent to telephone-telegraph lines and guy wires, power lines and guy wires, buildings, fences, pipelines, ditches, roadways, sewers, canals and other obstacles which may physically restrict or limit the use of construction equipment. In some cases, such physical confinement may necessitate special methods of construction of the work. If the Contractor desires to utilize additional area, he shall obtain the necessary approvals from the landowner. No additional compensation shall be paid to the Contractor for the cost of obtaining additional right-of-way or for the inability to obtain such.

14. Coordination with Other Work

Other work including but not necessarily restricted to relocation of power and telephone poles, installation of a gas line and relocation of water meters may be in progress near or at the construction site at the time the Contractor is in performance of the work specified herein. The Contractor shall coordinate his work with that of others so that prosecution of all work will proceed smoothly.

15. Closure of Streets

The Contractor will be allowed to temporarily close the streets being paved to vehicular traffic between the hours 7:00 a.m. and 5:00 p.m. on the day the streets are being paved. All street closure dates shall be coordinated with and approved by the Engineer for approval no later than 10 working days prior to the earliest proposed closures and detours.

16. Construction Signs, Barricades, Lights and Flagmen

The Contractor shall furnish, erect and maintain adequate barricades, lights, signs and other devices and take other protective measures to prevent damage to the public. The Contractor shall also furnish adequate warning to the public of dangerous conditions to be encountered. Where one lane of a public road is closed, the Contractor shall furnish flagmen at each end of the closed lane to control traffic in the open lane. The Contractor shall also furnish adequate warning to the public of dangerous conditions to be encountered.

Payment for traffic control and other safety measures shall be included in the Traffic Control Plan lump sum price bid in the Bid Schedule.

17. Traffic Control Plan

It is the Contractor's sole responsibility to establish and implement a Traffic Control Plan conforming to Sections 7-1.08, "Public Convenience" 7-1.09, "Public Safety", and Section 12, "Construction Area Traffic Control Devices", of the Caltrans Standard Specifications and Section 01 55 26 – Traffic Control Plan. Nothing in these Contract Documents shall be construed as relieving the Contractor from his responsibility.

The Traffic Control Plan shall be prepared, stamped and signed by a professional engineer registered in California, and three copies provided to the Engineer before the Contractor is issued a Notice to Proceed.

Payment for the preparation and implementation of the Traffic Control Plan shall be made at the applicable lump sum price bid in the Bid Schedule.

18. Disposal of Waste Materials

Waste material shall be disposed of in accordance with local regulatory requirements. Provide watertight conveyance for liquid, semi-liquid or saturated solids which tend to bleed during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at selected disposal site.

19. Noise Control

Conduct operations to cause least annoyance to residents in vicinity of work, and comply with applicable local ordinances. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.

20. Water Supply

Water will be available to the Contractor in performance of the work without charge from all Owner fire hydrants and as noted in the Technical Provisions/Specifications. Prior to the use of any hydrant the Contractor shall notify the Owner and obtain and install a meter furnished by the Public Works Department on the fire hydrant. It will be the Contractor's responsibility to convey the water to the work site. Regardless of the method of conveyance chosen, it shall not be cause for closure of any streets nor shall it create a nuisance to nearby residents. An air gap shall be maintained between the hose or pipe discharge to prevent possible backflow in the event of distribution system pressure loss. The Contractor shall pay a One Thousand Dollar ($1,000) deposit per meter for the use of the fire hydrant meter. The deposit may be refunded in full if the fire hydrant meter is returned undamaged.

21. Notifications

The Owner will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Owner, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Owner or from the regulatory agency through the Owner, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner 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 a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance**.**

22. Work Not Listed in Proposal

It is the intent of the plans, specifications and contract documents to provide for the construction of completed and finished facilities and works of improvement unless otherwise specifically provided. Except for authorized changes in the work, payment for said complete and finished facilities and works of improvement will be made only on the basis of the contract items of work listed in the proposal. All other work, including the furnishing of plants, labor, materials, tools, equipment, and incidentals, provided for in the plans, specifications and contract documents, or required for the proper completion of the work as a whole, for which no separate payment has been provided shall be a supplementary obligation of the Contractor and payment therefore shall be considered included in the prices paid for the various contract items of work listed in the proposal.

23. Submittals

The Contractor shall submit to the Engineer one electronic copy of the submittals for review and approval in accordance to Section 01 33 00 - Submittal Procedures.

Within 10 calendar days after the effective date of the Agreement and before starting to perform any work, the Contractor shall submit to the Engineer for review and approval:

1. A work schedule indicating the times for starting and completing the various stages of the work. No progress payment shall be made to Contractor until an acceptable schedule has been submitted to the Engineer.
2. A Schedule of Values - a breakdown of each lump sum price to be used to determine deductive change orders, if necessary.
3. A complete list of equipment and materials to be furnished
4. City of Los Banos Business License for Contractor and all subcontractors

If more than TWO submittals for a single item are required because of incorrect or insufficient data, or the submittal is unacceptable, or because the Contractor wishes to change previously approved material, then all costs incurred by the Owner for the additional review shall be deducted from monies due the Contractor.

A revised work schedule shall be submitted within 5 calendar days of request by the Engineer. No future progress payments shall be made to Contractor until an acceptable schedule has been submitted to Engineer.

24. Bid Item Descriptions

See Section 01 22 00 – Explanation of Bid Items

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Technical Provisions/Specifications

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BASIN AND STORMWATER CAPTURE PROJECT

September 2025

100% Design Specifications

FOR BIDDING PURPOSES ONLY

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SECTION 01 00 05

SPECIFICATIONS

PART 1 GENERAL

1.1 GENERAL

A. The Contractor shall keep on the job a copy of the Plans and Specifications and shall at all times give the Owner and Engineer access thereto.

B. Anything mentioned in the Specifications and not shown on the Plans or shown on the Plans and not mentioned in the Specifications shall be of like effect as if shown or mentioned in both.

C. The Contractor shall not take advantage of any errors, discrepancies or omissions which may exist in the Plans and Specifications but shall immediately call them to the attention of the Engineer whose interpretation or correction thereof shall be conclusive.

D. In case of conflict between portions of the Contract Documents, the order of precedence of Contract Documents shall be:

First:	Permits from other agencies as may be required by law.
Second:	Change Orders
Third:	Agreement
Fourth:	Addenda
Fifth:	Contractor's Bid (Bid Form)
Sixth:	Advertisement for Bids
Seventh:	Information for Bidders
Eighth:	Supplementary General Conditions
Ninth:	General Provisions
Tenth:	Special Provisions
Eleventh:	Technical Specifications, Division 2 through Division 48
Twelfth:	Drawings
Thirteenth:	Referenced Standard Specifications

E. Change Orders, supplemental agreements and approved revisions to Plans and Specifications will take precedence over documents listed above. Detailed Plans shall have precedence over general Plans.

F. Whenever any conflict appears in any portions of the Contract Documents, it shall be resolved by application of the order of precedence.

G. If a conflict appears within a specification section, the more restrictive clause shall apply.

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1.2 GENERAL REQUIREMENTS AND TECHNICAL SPECIFICATIONS

A. For definitions of the Specifications categorized as General Requirements (Division 1) and Technical Specifications (Division 2 through Division 48) refer to Section 01 42 13 – Definitions and Abbreviations.

1.3 REFERENCE DOCUMENTS

A. For a definition of Reference Documents and State Standard Specifications refer to Section 01 42 13 – Definitions and Abbreviations.

B. Throughout the following Specification sections, references are made to various widely published, standard and commercial specifications, manuals, or codes of technical societies, organizations, or associations. These specifications are intended to amplify the descriptions of materials, equipment, and construction systems. The Contractor shall caution each of his Subcontractors to become familiar with the contents of the pertinent portions of these Reference Documents. The following Reference Documents are the most widely used, and are cited or referred to in each of the following sections of these Specifications:

1. American Society of Testing Materials (ASTM)
2. American National Standards Institute (ANSI)
3. American Standards Associations (ASA)
4. American Concrete Institute (ACI)
5. Federal Specifications, as applicable.
6. California Building Code
7. California Plumbing Code
8. Caltrans State Standard Specifications
9. National Electric Code
10. Construction Safety Orders of the Division of Industrial Relations latest edition.

C. Each citation of a Reference Document shall be construed to refer to the latest published revision of such specification as of the date of the invitation for bids and to such portions of it that relate and apply directly to the material or installation called for on this job. The Engineer will give no consideration to any claimed ignorance as to what a cited Reference Document contains, since such Subcontractor on a project of this scope is deemed to be experienced and familiar with his own trade to be experienced and familiar with his own trade's generally accepted, published standards of quality.

D. Whenever references are made to any of the above-mentioned Reference Documents or testing methods in the governing Building Codes, the requirements

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of those Reference Documents shall govern, insofar as they are not in contravention with maxima or minima prescribed by documents designated in the Building Code.

1.4 LIST OF DRAWINGS

A. The Work shall conform to the following Drawings:

TITLE	SEQUENTIAL SHEET NUMBERS	SHEET NUMBERS
GENERAL		
COVER	1	G1
LEGEND & ABBREVIATIONS	2	G2
OVERALL SITE PLAN	3	G3
GRADING		
SOUTH CELL GRADING PLAN	4	GR1
CENTER CELL GRAGIN PLAN	5	GR2
NORTH CELL GRADING PLAN	6	GR3
TYPICAL LEVEE SECTIONS	7	GR4
CIVIL		
SAN LUIS CANAL TURNOUT	8	C1
SOUTH TO CENTER INTERBASIN STRUCTURE	9	C2
CENTER TO NORTH INTERBASIN STRUCTURE	10	C3
SAN LUIS CANAL OUTLET	11	C4
CIVIL DETAILS		
DETAILS	12	CD1
DETAILS	13	CD2
DETAILS	14	CD3
DETAILS	15	CD4
STRUCTURAL		
STRUCTURAL NOTES & DETAILS	16	S1
STRUCTURAL PLAN & SECTIONS	17	S2
PUMP SUMP PLAN & SECTIONS	18	S3

1.5 STATE STANDARD SPECIFICATIONS

A. For the purpose of this contract, the following terms or pronouns in place of them, used throughout the State Standard Specifications and defined in Section 1, Definition of Terms, of the State Standard Specifications, shall be as follows:

TERMS	INTERPRETATION
State	City of Los Banos
Department	City of Los Banos

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Director	City of Los Banos Public Works Director
Engineer	City of Los Banos Public Works Director, City of Los Banos, action either directly or through properly authorized agents, such agents actions within the scope of the particular duties entrusted on them
Department of Transportation	City of Los Banos
Contractor	The person or persons, co-partnership or corporation, private or municipal, who have entered into a contract with the City of Los Banos as party or parties of the second part, or his or her legal representative.

1.6 OCCUPATIONAL SAFETY AND HEALTH ACT

A. The applicable standards of the American National Standards Institute and the National Fire Protection Association that have been adopted are hereby made a part of these Specifications as a whole and as mentioned in the various sections.

B. Any errors, ambiguities, or inconsistencies of these standards with either the local codes, the Specifications, or the Drawings shall be brought to the attention of the Engineer.

1.7 COMPLIANCE WITH ALL LAWS AND CODES

A. Contractor shall conform to and abide by all local city, county, state and federal laws, rules, regulations, including industrial safety laws. Such laws shall be considered as essential parts of these Specifications and, in the absence of definite requirements herein, the provisions of such rules and regulations shall be observed by the Contractor. If the Drawings and/or Specifications are at variance therewith, Contractor shall so notify Engineer promptly. Should the Contractor perform any work contrary to such laws, ordinances, rules and regulations he shall bear all costs arising therefrom.

B. Where these Specifications, however, call for or describe materials workmanship or construction of a better quality, higher standard, or larger size than is required by said rules and regulations, the provisions of these Specifications shall take precedence over said rules and regulations. Contractor shall furnish, without any extra charge, all additional labor or materials, or both, when required for compliance with these rules and regulations.

END SECTION

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SECTION 01 11 00

DESCRIPTION OF WORK AND SCHEDULE CONSTRAINTS

PART 1 GENERAL

1.1 WORK INCLUDED

A. The Work consists of furnishing all labor, materials and equipment necessary to construct three (3) basin cells covering approximately 185-acres, 24-inch turnout, two (2) interbasin concrete structures, an outlet structure with 60-inch stand pipe with a 30-inch propeller flow meter, and other miscellaneous items to provide for fully functioning recharge basins, in the County of Merced, in accordance with the Plans and the Specifications.

B. The construction site is located in Merced County near Henry Miller Ave and Santa Fe Grade, California.

C. The primary components are generally described as follows:

1. Construction of basins, keyways, and levees.

2. Construction of interbasin structures.

3. Construction of a basin turnout.

4. Construction of a basin outlet to the San Luis Canal.

1.2 BEGINNING OF WORK

A. The Contractor shall begin work within fourteen (14) calendar days after receipt of official Notice to Proceed from the Owner.

1.3 TIME OF COMPLETION

A. The Contractor shall substantially complete all work within one hundred fifty (150) calendar days unless the period for completion is extended otherwise by the Contract Documents. The Contractor shall diligently prosecute the work to completion on or before the completion date indicated on the Notice to Proceed.

1.4 TIME CONSTRAINTS

A. Contractor shall supervise, inspect, and direct the Work competently and apply such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the specific means, methods, techniques, sequence, or procedure of construction required to complete the project as specified by the Contract Documents. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.

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1.5 ORDER OF WORK

A. Upon issuance of the Notice to Proceed, the Contractor is encouraged to commence all activities necessary to assure that all items identified above are fulfilled. It is imperative that the Contractor's construction schedule be strictly adhered to.

B. The demolition of existing pumps and motors on wells on the Project site shall be the last order of work. Equipment shall remain in place in on-site wells for use by Contractor as a back-up water supply.

END SECTION

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SECTION 01 11 05

ENGINEER'S STATUS DURING CONSTRUCTION

PART 1 GENERAL

1.1 OWNER'S REPRESENTATIVE

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in these Specifications and will not be changed without written consent of Owner and Engineer.

1.2 VISITS TO SITE

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Section 1.5, below. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

C. Review of the Work by the Engineer shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

D. No oral or telephonic agreement or conversation with any officer, agent or employee of the Owner or the Engineer, or with the Engineer, either before or after execution of the Contract, shall affect or modify any of the terms or obligations contained in any of the Contract Documents.

E. The Contractor shall pay the Owner for all overtime review in accordance with existing resolutions or fee schedules of the Owner, unless the charges for such inspection have been specifically waived in the Contract Documents. Overtime charges will be made for all reviews on Saturdays, Sundays and Federal or State holidays, and hours worked by the reviewer other than those of the normal working day.

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1.3 AUTHORIZED VARIATIONS IN WORK

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided within the Contract Documents.

1.4 REJECTING DEFECTIVE WORK

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. Neither this authority nor the Engineer's good faith judgment to reject or not reject any work shall subject the Engineer to any liability or cause of action by the Contractor, subcontractors, or any other suppliers or persons performing work on the Contract.

1.5 LIMITATIONS ON ENGINEER'S AUTHORITY AND RESPONSIBILITIES

A. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

B. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

C. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

The limitations upon authority and responsibility shall also apply to, the Engineer's field representative, known as the Resident Project Representative, if any, and assistants, if any.

END SECTION

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SECTION 01 11 10

COORDINATION OF WORK

PART 1 GENERAL

1.1 RESPONSIBILITY OF CONTRACTOR

A. If any part of the Work depends for proper execution or results upon the work of others, the Contractor shall inspect and promptly report to the Engineer any apparent discrepancies or defects in such work of others that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the work of others as fit and proper except as to defects which may develop in the work of others after execution of the Work by the Contractor.

1.2 WORK INVOLVED WITH EXISTING SYSTEM

A. Existing materials and equipment removed not designated to be salvaged for Owner in the execution of the Work shall become the property of the Contractor and shall be removed from, and disposed of, off the site by the Contractor in an acceptable and lawful manner.

1.3 COORDINATION OF WORK

A. The Contractor shall maintain overall coordination for the execution of the Work. Based on the Construction Schedule prepared in accordance with these Specifications, he shall obtain from each of his subcontractors a similar schedule and shall be responsible for all parties maintaining these schedules or for coordinating required modifications.

1.4 WORK BY OTHERS

A. The City of Los Banos is constructing the Final Kilometer Sewer Trunk Line Replacement Project which includes a 36-inch sewer trunk line, 60-inch pre-cast manholes, temporary bypass systems and associated improvements. The Final Kilometer Sewer Trunk Line Replacement Project traverses the Basin and Stormwater Capture Project Site. The Notice to Proceed was issued on May 14, 2025 with a time of completion of 385 calendar days.

B. Work by others will be shown on the Master Schedule agreed to at the Pre-Construction meeting. Any delay in completion of work by others which affects Contractor’s critical path schedule will be eligible for a claim for additional contract time by Contractor.

C. The Contractor shall responsible to coordinate integration of work by others into the final project, however the Contractor will not be responsible for the quality or completion of the actual work to be performed by others.

D. Contractor may have to work around construction that is occurring for the Final Kilometer Sewer Trunk Link Replacement Project at one or both of the project

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approved crossing locations near the canals on either side of the City property. Access across the City existing and proposed sewer pipelines at the approved locations may be temporarily blocked, be limited or require improvements by Contractor to cross.

E. Work by Others Includes:

1. 36-inch Sewer Trunk Line, Rolfe Construction.

END SECTION

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SECTION 01 20 00

MEASUREMENT & PAYMENT

PART 1 GENERAL

1.1 MEASUREMENT

A. Unless otherwise specified in the Contract Documents, quantities of work shall be determined from measurements or dimensions in a horizontal plane. All measurements shall be made in accordance with United States Standard Measures and shall be measured on the basis of “in-place” quantities.

B. After the work has been completed, the Engineer will make field measurements of unit price items in order to determine the quantities of the various items as a basis for payment. On all unit price items, the contractor will be paid for the actual amount of the work performed in accordance with the contract documents, as computed from field measurements.

C. Work or quantities not listed in the description of bid items are considered incidental to other construction and will not be measured. Compensation for such incidental work is considered to be included in the various items of work bid.

1.2 INCREASED OR DECREASED QUANTITIES

A. Increases or decreases in quantities shall be governed by the General Conditions.

B. All written requests for adjustment shall be made no later than five working days after notification by the Engineer that the item of work is complete.

1.3 FINAL PAY QUANTITIES

A. Final pay quantities shall be in accordance with the General Conditions except as modified below.

B. Final pay quantities will be designated only in the Bid Schedule and in Section 01 22 00 – Explanation of Bid Items and are not shown on the Plans.

C. When an item of work is designated as a Final Pay Quantity on the Bid Schedule and/or in the Explanation of Bid Items, the estimated quantity for that item of work shall be the final pay quantity, unless the dimensions of any portion of that item are revised by the Engineer, or the item or any portion of the item is eliminated.

If the dimensions of any portion of the item are revised, and the revisions result in an increase or decrease in the estimated quantity of that item of work, the final pay quantity for the item will be revised in the amount represented by the changes in the dimensions.

If a final pay item is eliminated, the estimated quantity for the item will be eliminated.

If a portion of a final pay item is eliminated, the final pay quantity will be revised in

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proportion to the bid quantity represented by the eliminated portion of the item of work.

D. The estimated quantity for each item of work designated as a Final Pay Quantity on the Bid Schedule and/or in the Explanation of Bid Items shall be considered as approximate only, and no guarantee is made that the quantity which can be determined by computations, based on the details and dimensions shown on the plans, will equal the estimated quantity. No allowance will be made in the event that the quantity based on computations does not equal the estimated quantity.

E. In case of discrepancy between the quantity shown on the Bid Schedule for a final pay item and the quantity or summation of quantities for the same item shown on the plans, payment will be based on the quantity shown on the Bid Schedule.

1.4 PARTIAL PAYMENT

A. Attention is directed to Section 9-1.16 of the State Standard Specifications which, except as modified herein, shall apply in its entirety.

1. The local agency shall withhold not less than 5 percent of the contract price until final completion and acceptance of the project.

2. Partial payments for materials on hand shall not exceed one hundred percent (100%) of the value of material delivered on site, properly stored in a secured fenced area subject to, or under the control of, the owner and local agency, and unused. Contractor shall submit copies of invoices of materials to support values. Materials stored shall be installed within 60 days of delivery for payment eligibility.

B. Payment shall not relieve the Contractor from its obligations under the Contact; nor shall such payment be construed as acceptance of any of the Work. Payment shall not be construed as transfer of ownership of any equipment or materials to the Owner. Responsibility of ownership shall remain with the Contractor who shall obligated to protect any fully or partially completed work or structure for which payment has been made; or replace any materials or equipment to be provided under the Contract which may be damaged, lost, stolen or otherwise degraded in any way prior to acceptance of the Work.

1.5 FINAL PAYMENT

A. Notice of Completion will be filed in the normal course of business following the first regular meeting of the City of Los Banos City Council Meeting which occurs far enough after Final Completion to allow for agendizing the City of Los Banos City Council Meeting approval of the Notice.

B. Final payment will be due thirty-five (35) days after the recording of the Notice of Completion by the Owner.

C. Upon completion of the project the final contract prices shall be revised by change order, if necessary, to reflect the true quantities used at the stated unit price thereof

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as contained in the Bidder's Proposal hereto attached. Payments on account thereof will be made as set forth in these Specifications.

D. The Contractor shall comply with Section 00 52 21 - Waiver and Release Submittals.

1.6 SECURITIES IN LIEU OF RETENTION AND ESCROW AGREEMENT

A. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with Owner, or with a state or federally chartered bank in California as the escrow agent, who shall then pay those withheld moneys to Contractor. Upon satisfactory completion of the contract, the securities shall be returned to Contractor.

B. Alternatively, Contractor may request and the Owner shall make payment of retentions earned directly to the escrow agent at the expense of Contractor. At the expense of Contractor, Contractor may direct the investment of the payments into securities and Contractor shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by Contractor. Upon satisfactory completion of the contract, Contractor shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from Owner, pursuant to the terms of this section. Contractor shall pay to each subcontractor, not later than 20 days of receipt of the payment, the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to insure the performance of Contractor.

C. Securities eligible for investment under this section shall include those listed in Section 16430 of the Government Code, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by Contractor and Owner.

D. Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

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ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between _____ _____ whose address is _____ _____ herein after called "Owner," _____ _____ whose address is _____ _____ hereinafter called "Contractor" and _____ _____ whose address is _____ _____ hereinafter called "Escrow Agent."

For the consideration hereinafter set forth, the Owner, Contractor, and Escrow Agent agree as follows:

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for _____ in the amount of _____ _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the escrow agent. When the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of _____, and shall designate the Contractor as the beneficial owner.

(2) The Owner shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that the escrow created under this contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

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(7) The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days' written notice to the Escrow Agent from the owner of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

(8) Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:	On behalf of Contractor:	On behalf of Escrow Agent:
_____	_____	_____
Title	Title	Title
_____	_____	_____
Name	Name	Name
_____	_____	_____
Signature	Signature	Signature
_____	_____	_____
Address	Address	Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

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Owner	Contractor
Title	Title
Name	Name
Signature	Signature

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SECTION 01 22 00

EXPLANATION OF BID ITEMS

PART 1 GENERAL

The Contract payment for the specified items of work as set forth in the Bid Schedule shall be full compensation for furnishing all labor, materials, methods or processes, implements, tools, equipment, and incidentals and for doing all work involved as required by the provisions of the Contract Documents for a complete in place and operational system.

A. Unless otherwise specified in the Specifications, quantities of work shall be determined per each, or from measurements or dimensions in a horizontal plane. All materials shall be measured on the basis of “in place” quantities and paid for using the units listed in the bid schedule.

B. Except as noted, the Engineer will make field measurements of unit price items in order to determine the quantities of the various items as a basis for payment. On all unit price items, the contractor will be paid for the actual amount of the work performed in accordance with the contract documents, as computed from field measurements.

1. Work or quantities not listed in the description of bid items are considered incidental to other construction and will not be separately measured or paid for. Compensation for such work and/or material shall be included in the prices paid for other items of work.

1.2 BID ITEMS

Bid Item 1 – Mobilization, Demobilization, Bonds, Insurance, and Permits: Payment for this item shall include full compensation for all labor, materials, tools, equipment, and incidentals making up the cost of mobilization, move-in, move-out, all necessary bonds, insurance, permits, licenses, and fees required during the performance of the work as specified. This item also includes demobilization, including the removal of all equipment, supplies, personnel, and incidentals from the project at the end of construction. Payment shall not exceed 5 percent of the total base bid amount. Payment for mobilization shall be made with the first progress payment and shall not exceed 80 percent of the bid item amount. Payment for demobilization shall be made with the last progress payment and shall not be less than 20 percent of the bid item amount.

Bid Item 2 – Worker & Public Protection:

Payment for this item shall be considered full compensation for all labor, materials, tools, equipment and incidentals required for protection from caving ground in excavations and other hazards that may occur during construction in conformance with 29CFR1926, Subpart P – Excavations, CAL/OSHA requirements, in accordance with the Plans, Contract Documents, and Project Specifications. This bid item will be paid based on percentage of bid item amount. Payment for this item shall not exceed 1 percent of the total base bid amount. This bid item will be paid for by Lump Sum, prorated, based on percentage of contract work completed.

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Bid Item 3 – Miscellaneous Facilities and Operations:

Payment for this bid item shall be considered full compensation for all labor, materials, tools, equipment, and incidentals for de-watering, maintaining drainage, temporary storm and flood water control, construction of staging areas, obtaining a location for water for moisture conditioning and any modifications or approvals and costs for source water facilities, salvaging and stockpiling materials, improvements needed for and maintaining access to the site, coordination of work with other contractors on site and access across the sewer pipeline in approved locations, temporary barricades and other necessary safety requirements to minimize worksite access from minors and other residents at neighboring properties, construction and removal of temporary security fencing as needed, protection of existing facilities, maintaining and providing the record documents and O&M manuals, general project clean up, and all costs for miscellaneous work shown and described in the Contract Documents, not included in other bid items. This bid item also includes Contractor complying with the cultural and biological avoidance, minimization, disturbance-/construction-free buffer and discovery requirements and participate in a biological and cultural resources Worker Environmental Awareness Program, as outlined in Specifications Sections 01 56 32 Threatened and Endangered Species, 01 56 29 Cultural and Archaeological Compliance, and 01 57 19 Environmental Protection Measures. Payment shall not exceed 3 percent of the total base bid amount.

Bid Item 4 – Storm Water Pollution Prevention Plan (SWPPP) and Dust Control Plan (DCP) Implementation:

Payment for this item shall be considered full compensation for all labor, materials, tools, equipment, and incidentals required to implement a Storm Water Pollution Prevention Plan (SWPPP) as specified, and for all necessary sampling and testing, if required, under the State of California Construction General Permit and as set forth in the SWPPP. This bid item also includes worker protection and all labor, materials, tools, equipment, and incidentals required to perform dust control measures for the Project limits in accordance with these Specifications, and as required for DCP and ISR compliance in accordance with the San Joaquin Valley Air Pollution Control District. Payment shall not exceed 1 percent of the total base bid amount.

Bid Item 5 – Clearing and Grubbing (F):

This item includes furnishing all labor, equipment, tools, materials, and incidentals to clear and grub all areas as needed to perform all other tasks at the project site, and for demolition, including the concrete lined canal and appurtenances and other items shown on the demolition plan, and any clearing and grubbing necessary to haul and dispose of unsuitable material that was cleared and grubbed to an approved disposal site selected by the Contractor and approved by the Engineer, as detailed on the Plans and Specifications. This bid item will be paid for as a Final Pay quantity in acres of the project site cleared.

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Bid Item 6 – Construct Basin Levees (F):

This item includes furnishing all labor, equipment, tools, and materials required to construct the proposed basin levee embankments as detailed on the Plans and Specifications. This item includes, clearing and grubbing, subgrade preparation including over-excavation, excavation, scarification, backfill, moisture conditioning, and compaction, and other incidentals required to construct the levee keyways, construction of basin cell corner riprap areas and basin access ramps as detailed in the Plans and Specifications. Fill volume shown based on neat lines of an in-place compacted fill volume of basin levee embankments, over excavation, and keyway with zero consolidation factor applied. Earthwork volumes shall be balanced onsite. No payment will be made for import material unless preauthorized by the City, Engineer, and City's Geotechnical Engineer. Basin finished floor elevation was determined to balance the site earthwork assuming a 25 percent consolidation factor of engineered fill. The contractor shall accommodate variations in the actual consolidation factor of engineered fill during earthwork activities by raising or lowering the basin finished floor elevation. The basin finished floor shall be graded to drain towards the Interbasin structures for the South and Center cells and towards the San Luis Canal Outlet for the North Cell in order to balance the site earthwork. This bid item includes provisions for dewatering, maintaining drainage, construction, and removal of temporary security fencing, construction of staging areas, maintaining and providing the record documents, general project clean up, and all costs for miscellaneous work shown and described in the Contract Documents, not included in other bid items. This bid item will be paid for as a Final Pay quantity in cubic yards.

Bid Item 7 – Construct San Luis Canal Turnout:

Payment for this item shall be considered full compensation for worker protection and all labor, materials, tools, equipment, and incidentals required to construct the San Luis Canal Turnout as shown and detailed in Sheet C1. This bid item includes furnish, weld & install 49 +/- LF 24-inch x 3/8-inch Wall AWWA C200 CMLC Steel Pipe and Appurtenances, furnish, weld & install 9 +/- LF 36-inch x 3/8-inch Wall AWWA C200 CMLC Steel Pipe and Appurtenances, construct reinforced concrete slab, furnish & place rip rap and geotextile fabric to the lines and grades specified, furnish & install stilling well and staff gauge, and construct thrust blocks. This bid item also includes existing utility protection, pressure testing, coating, and lining, placement of compacted engineered fill and sub-grade preparation, including dewatering, excavation, trenching, scarification, backfill, moisture conditioning, compaction, and all other incidentals required to construct the San Luis Canal Turnout to the lines and grades shown and specified as detailed on the Plans and Specifications. This bid item will be paid for on a Lump Sum basis.

Bid Item 8 – Construct South to Center Interbasin Structure:

Payment for this item shall be considered full compensation for worker protection and all labor, materials, tools, equipment, and incidentals required to construct South to Center Interbasin Structure as shown and detailed in Sheet C2. This bid item includes the construction of the reinforced concrete South to Center Interbasin structure as shown on Sheet C2 and as detailed on Sheet S2, furnish & install 205 +/- LF 30-inch HDPE SDR 26 (CL 80 PSI) IPS and appurtenances, furnish & install

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6-inch air vents, furnish & install 6-inch HDPE air vent, furnish & install 30-inch flanged coupler adapter, furnish & install bar grating, furnish & install HDPE pipe anchor, furnish & placing rip rap and geotextile fabric to the lines and grades specified, crossing and protection of (e) 24-inch sewer trunk line, (e) 30-inch sewer trunk, future 36-inch sewer trunk line, and future 8-inch water mainlines via Jack & Bore, furnish & install staff gauge, construction of thrust blocks, and all other incidentals required to complete the work as detailed on the Plans and Specifications. This bid item also includes existing utility protection, pressure testing, coating, and lining, placement of compacted engineered fill and sub-grade preparation, including dewatering, excavation, trenching, scarification, backfill, moisture conditioning, compaction, and all other incidentals required to construct the south to center interbasin structures to the lines and grades shown and specified as detailed on the Plans and Specifications. This bid item will be paid for on a Lump Sum basis.

Bid Item 9 – Construct Center to North Interbasin Structure:

Payment for this item shall be considered full compensation for worker protection and all labor, materials, tools, equipment, and incidentals required to construct Center to North Interbasin Structure as shown and detailed in Sheet C3. This bid item includes the construction of the reinforced concrete Center to North Interbasin structure, furnish & install 200 +/- LF 30-inch HDPE SDR 26 (CL 80 PSI) IPS and appurtenances, furnish & install 6-inch air vent, furnish & install 30-inch flanged coupler adapter, furnish & install HDPE pipe anchor, furnish & install bar grating, furnish & placing rip rap and geotextile fabric to the lines and grades specified, furnish & install two staff gauges, and all other incidentals required to complete the work as detailed on the Plans and Specifications. This bid item also includes existing utility protection, pressure testing, coating, and lining, placement of compacted engineered fill and sub-grade preparation, including dewatering, excavation, trenching, scarification, backfill, moisture conditioning, compaction, and all other incidentals required to construct the center to north interbasin structures to the lines and grades shown and specified as detailed on the Plans and Specifications. This bid item will be paid for on a Lump Sum basis.

Bid Item 10 – Construct San Luis Canal Outlet:

Payment for this item shall be considered full compensation for worker protection and all labor, materials, tools, equipment, and incidentals required to construct the San Luis Canal Outlet as shown and detailed in Sheet C4. This bid item includes the construction of the reinforced concrete SLC Outlet structure, furnish & install 43 +/- LF 30-inch x 3/8-inch AWWA C200 CMLC Steel Pipe and appurtenances, connect to existing outlet facilities, furnish & install 30-inch canal gate, construct flowmeter, remove (e) 30-inch AWWA C207 blind flanges and deliver to Owner, furnish & install 6-inch air vent, furnish & install bar grating, furnish & placing rip rap to the lines and grades specified, furnish & install staff gauge, and all other incidentals required to complete the work as detailed on the Plans and Specifications. This bid item also includes placement of compacted engineered fill and sub-grade preparation, including excavation, trenching, scarification, backfill, moisture conditioning, compaction, and all other incidentals required to construct the San Luis Canal Outlet structure to the lines and grades shown and specified

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as detailed on the Plans and Specifications. This bid item will be paid for on a Lump Sum basis.

1.3 ADDITIVE ALTERNATE BID ITEMS

Bid Item AB1 – F&I Project Sign:

Payment for this item shall be considered full compensation for worker protection and all labor, materials, tools, equipment, and incidentals required to furnish and install the project sign and support as shown in the Plans. This bid item also includes existing utility protection, sub-grade preparation, including excavation, trenching, scarification, backfill, moisture conditioning, compaction, and all other incidentals required to furnish & install Project Sign as detailed on the Plans and Specifications. This bid item will be paid for on a Lump Sum basis.

END SECTION

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SECTION 01 31 19

PROJECT MEETINGS

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

A. Upon receipt of the Notice to Proceed, or at an earlier time if mutually agreeable, the Owner will arrange a preconstruction conference to be attended by the Contractor, Contractor's superintendent, the Owner, the Engineer or his representative, and representatives of utilities, major subcontractors, County of Merced and others involved in the execution of the Work.

B. The purpose of this conference shall be to establish a working understanding between the parties and to discuss the Construction Schedule, Critical Path Method format required, shop drawing submittals and processing, applications for payment and their processing, and such other subjects as may be pertinent for the execution of the Work.

1.2 PROGRESS MEETINGS

A. The Engineer shall arrange and conduct progress meetings. These meetings shall be conducted bi-weekly, unless designated otherwise and shall be attended by the Engineer or his representative, Contractor, Contractor's superintendent and representatives of all subcontractors, utilities, and others, that are active in the execution of the Work. The purpose of these meetings shall be to expedite the work of any subcontractor or other organization that is not up to schedule, resolve conflicts, and in general, coordinate and expedite the execution of the Work.

B. The agenda of progress meetings shall include review of progress and schedule, of payment request, of the latest Construction Schedule update, and of the record documents.

1.3 PROGRESS AND SCHEDULE REVIEW

A. The progress of the Work and the Construction Schedule shall be reviewed to verify:

1. Actual start and finish dates of completed activities since the last progress meeting.

2. Durations and progress of all activities not completed.

3. Reason, time, and cost data for Change Order work that is to be incorporated into the Construction Schedule or payment request form.

4. Payment due to the Contractor based on percentage complete of items in the submitted payment request.

5. Reasons for, and duration of, required revisions in the Construction Schedule.

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6. After each monthly update, the Contractor shall submit to the Engineer three (3) prints of the last accepted Construction Schedule, revised in accordance with the monthly review.

1.4 REVIEW OF PAYMENT REQUEST

A. The Contractor shall have his copy of the payment request and all other data required by the Contract Documents completed prior to the progress meeting. The Engineer will process Contractor's payment request after satisfactory review of the schedule update.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work described in this section includes general requirements and procedures related to the preparation and transmission of submittals to include Shop Drawings, Product Information, Calculations, Test Reports, Certificates, Samples, Manuals, and Record Drawings.

1.2 RELATED WORK

A. General and Special Provisions

B. DIVISION 01 – GENRAL REQUIREMENTS

C. DIVISION 2 TO DIVISION 48 – TECHNICAL SPECIFICATIONS

D. Individual equipment specifications

1.3 GENERAL

A. Contractor shall have completed the following work tasks before a submittal:

1. Reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

2. Determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

3. Determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

4. Determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

1.4 TRANSMITTAL INFORMATION

A. Each submittal document shall have a separate cover or transmittal. Transmittals shall include the following identification data, as applicable:

1. Submittal number

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2. Contract number

3. Project name and location

4. Product identification

5. Applicable contract drawing number, specification section, and paragraph number

6. Stamp Space: Blank space of approximately 2-1/2 inches high by 4 inches wide adjacent to the identification data to receive Engineer's status stamp.

7. Contractor’s certification statement as described below:

a. "Certification Statement: By this submittal, we hereby represent that we have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and pertinent data and we have checked and coordinated each item with other applicable approved drawings and all Contract requirements."

B. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review of each such variation.

C. Furnish neat, legible, and sufficiently explicit detail to enable proper review for Contract compliance.

D. Contractor assumes all risks of error and omission.

E. Work performed before acceptance, or not conforming to accepted submittals, shall be at Contractor's risk.

F. Submittal requirements contained in this specification are in addition to specific submittal requirements contained in individual equipment specification sections.

1.5 LIMITATIONS OF ENGINEER’S REVIEW

A. Engineer’s review is only for the purposes of determining if the items covered by the submittals will conform to the requirements in the Contract Documents.

B. Engineer’s review will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

C. Engineer’s review of a separate item will not indicate acceptance of the assembly in which the item functions.

D. Engineer’s review of a Submittal shall not relieve Contractor from responsibility for any deviation from the requirements of the Contract Documents unless Contractor has given Engineer specific written notice of any deviation per the requirements of

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this Section. Engineer will document any such accepted variation from the requirements of the Contract Documents in a Field Order.

E. Engineer's review of a Submittal, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

1.6 SUBMITTAL PROCESS

A. Submittals shall be sent to the Engineer electronically through email or a file transfer system agreed upon by the Owner, Engineer, and Contractor during the Preconstruction Conference.

B. Engineer will provide timely review of Submittals in accordance with the Schedule of Submittals agreed upon by the Owner, Engineer, and Contractor during the Preconstruction Conference.

C. Submittals will be returned, marked with one of the following classifications:

1. NO EXCEPTION TAKEN: Requires no corrections, no marks.

2. MAKE CORRETIONS NOTED: Requires minor corrections. Items may be fabricated as marked without further resubmission. Resubmit 2 corrected copies to the Engineer.

3. REVISE AND RESUBMIT: Requires corrections. Resubmit entire submittal following original submission with corrections noted. Allow time for checking and Engineer's appropriate action.

4. REJECTED: Submitted information does not comply with the Contract Documents. No items shall be fabricated. Resubmit entire submittal following original submission with corrections noted.

5. INFORMATION ONLY: Items in the submittal are saved in the project file for information only but were not reviewed by the Engineer.

PART 2 SUBMITTAL DOCUMENTS

2.1 SHOP DRAWINGS

A. When requested submit, submit two (2) sets of shop drawings.

2.2 SAMPLES

A. When requested or required by individual specification sections, submit one (1) sample of each item.

B. Samples shall be representative of the actual material proposed for use in the project and of sufficient size to demonstrate design, color, texture, and finish.

C. Permanently attach to each sample

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1. The submittal number

2. The contract number

3. Project name and location

4. Product identification

5. Applicable contract drawing and specification section number

6. Subcontractor's, vendor's and/or manufacturer's name, address, and telephone number.

D. Certain samples may be tested for specific requirements by the Owner and/or Engineer prior to acceptance. Failure of sample to pass tests will be sufficient cause for refusal to consider further samples of the same brand and make.

E. Rejected samples will be returned upon request, and resubmittals shall consist of new samples.

2.3 RECORD DRAWINGS

A. Maintain 1 record copy of Contract Documents at site in good order and annotated to show revisions made during construction. Keep annotations current for possible inspection.

1. Make record drawings available to Engineer at all times during life of Contract.

2. Drawings: Made part of record drawings and to include:

a. Contract Drawings: Annotate or redraft, as required, to show revisions, substitutions, variations, omissions, and discrepancies made or discovered during construction concerning location and depth of utilities, piping, ductbanks, conduits, manholes, pumps, valves, vaults, and other equipment. Make revisions and show on all drawing views with actual dimensions established to permanent points.

b. Working/Layout Drawings: When required as submittals, record actual layouts of conduit runs between various items of electrical equipment for power, control, and instrumentation; wire sizes, numbers, and functions; configuration of conduits; piping layouts; and duct layouts.

3. Before preliminary inspection, furnish reproducible of record drawings. At completion of Contract and before final payment is made, furnish Engineer 1 set of reproducibles of finally accepted record drawings reflecting revisions herein described.

2.4 OPERATION AND MAINTENANCE MANUALS

A. Furnish Operation and Maintenance Manuals for various types of equipment and systems, as required by Contract Documents. Operation and Maintenance Manuals shall be provided for all mechanical and electrical equipment. Unless otherwise

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indicated, furnish separate manual for each piece of equipment and system. If manual contains other items or equipment, indicate where specified items are located in manual. Include in manual complete information necessary to operate, maintain, and repair specific equipment and system furnished under this Contract, and include the following specific requirements;

1. Contents.

    a. Table of Contents and Index.

    b. Brief description of equipment/system and principal components.

    c. Starting and stopping procedures, both normal and emergency.

    d. Installation, maintenance, and overhaul instructions including detailed assembly drawings with parts list and numbers, and recommended spare parts list with recommended quantity, manufacturer's price, supplier's address, and telephone number.

    e. Recommended schedule for servicing, including technical data sheets that indicate weights and types of oil, grease, or other lubricants recommended for use and their application procedures.

    f. One copy of each component wiring diagram and system wiring diagram showing wire size and identification.

    g. One accepted copy of each submittal with changes made during construction properly noted, including test certificates, characteristic curves, factory and field test results.

    h. For electrical systems, include dimensioned installation drawings, single line diagrams, control diagrams, wiring and connection diagrams, list of material for contactors, relays and controls, outline drawings showing relays, meters, controls and indication equipment mounted on equipment or inside cubicles, control and protective schematics, and recommended relay settings.

2. Material:

    a. Preliminary

        1) Submit one (1) electronic copy of the preliminary O&M manuals in searchable PDF format.

    b. Final

        1) Submit one (1) electronic copy of the final O&M manuals in searchable PDF format.

        2) Submit two (2) hard copies of the final O&M Manual as described below:

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a) Covers: Oil, moisture, and wear resistant 9 inches by 11-1/2 inches size.

b) Pages: 60 pound paper 8-1/2 inches by 11 inches size with minimum of 2 punched holes 8-1/2 inches apart reinforced with plastic, cloth, or metal.

c) Fasteners: Metal screw post or Acco metal strap type.

d) Diagrams and Illustrations: Attach foldouts, as required.

PART 3 EXECUTION

NOT USED

END SECTION

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SECTION 01 35 00

MATERIAL SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 GENERAL

A. The materials furnished and used shall be new, except as may be provided elsewhere in these Specifications, or on the Plans.

B. All materials required to complete the work under this contract shall be furnished by the Contractor, unless otherwise stated.

C. It shall be the duty of the Contractor to call the Engineer's attention to apparent errors or omissions and request instruction before proceeding with the Work. The Engineer may, by appropriate instructions, correct said apparent errors and omissions, which instructions shall be as binding upon the Contractor as though contained in the original Contract Documents.

1.2 DEFINITIONS

A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor.

B. Revisions: Changes to Contract Documents requested by Owner or Engineer.

C. Options: Specified options of products and construction methods included in Contract Documents.

1.3 TRADE NAMES AND ALTERNATIVES

A. Wherever an article, or any class of materials, is specified by the trade name or by the name of any particular patentee, manufacturer or dealer, or by reference to the catalog of any such manufacturer or dealer, it shall be taken as intending to mean and specify the article or material described or any other equal thereto in quality, finish and durability, and equally as serviceable for the purpose for which it is or they are intended. The intent of the Plans and Specifications is to specify highest grade standard equipment, and it is not the intent of these Plans and Specifications to exclude or omit the products of any responsible manufacturer, if such products are equal in every practical respect to those mentioned herein, as determined by the Engineer.

1.4 SAMPLES

A. At the option of the Engineer, the source of supply of materials for the Work shall be subject to tests and inspection before the delivery is started and before such materials are used in the Work. Samples representative of the character and quality of materials shall be submitted by the Contractor. Samples shall be of sufficient quantities or amounts for testing or examination.

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B. All tests of materials furnished by the Contractor shall be made in accordance with the commonly recognized standards of national technical organizations, and such special methods and tests as are prescribed in the Contract Documents.

C. The Contractor shall furnish such samples of materials as are requested by the Engineer, without charge. No material shall be used until the Engineer has had the opportunity to test or examine such materials. Samples will be secured and tested whenever necessary to determine the quality of the material. Samples and test specimens prepared at the jobsite, such as concrete test cylinders, shall be taken or prepared by the Engineer, or his designated representative, in the presence and with the assistance of the Contractor.

1.5 SUBMITTALS

A. Material Submittals shall be made in accordance with Section 01 33 00 – Submittals.

1.6 INSPECTION OF MATERIALS BY THE CONTRACTOR

A. Contractor shall make a close inspection of all materials as delivered, and shall promptly return all defective materials without waiting for their rejection by the Engineer.

1.7 CERTIFICATES OF COMPLIANCE

A. A Certificate of Compliance may be required for certain materials and equipment that become final products of the completed Work. Certificates of Compliance shall be furnished prior to the use of any materials for which these Specifications require that such a certificate be furnished. In addition, when so authorized in these Specifications, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance.

B. The Certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the Specifications.

C. A Certificate of Compliance shall be furnished with each lot of material delivered to the Work and the lot so certified shall be clearly identified in the certificate.

D. All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Plans and Specifications and any such material not conforming to such requirements will be subject to rejection whether in place or not.

E. The City of Los Banos reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

1. The form of the Certificate of Compliance and its disposition shall be as directed by the Engineer.

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1.8 MANUFACTURER TESTING

A. At the option of the Engineer, materials and equipment to be supplied under this Contract will be tested and inspected either at their place of origin or at the site of the Work. The Contractor shall give the Engineer written notification well in advance of actual readiness of materials and equipment to be tested and inspected at point of origin.

1. Satisfactory tests and inspections at the point of origin shall not be construed as a final acceptance of the materials and equipment nor shall such tests and inspections preclude retesting or re-inspection at the site of the Work.

2. Materials and equipment which will require testing and inspection at the place of origin shall not be shipped prior to such testing and inspection.

1.9 MANUFACTURERS' RECOMMENDATIONS

A. All equipment specified and used in the project shall be installed in accordance with the approved manufacturer's current written recommendations.

B. All such equipment, material, etc., shall be of the manufacturer's latest system or line.

1.10 SUBSTITUTIONS

A. Conditions: Contractor's substitutions shall be considered when one or more conditions are satisfied, as determined by the Engineer. (The Contractor's submittal and Engineer's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.)

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of the Contract Documents.

3. Request is timely, fully documented and properly submitted.

4. Request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The specified product or method of construction cannot be provided within the Contract Time. The request shall not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by governing authority, and the requested substitution can.

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7. Substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear.

    a. Additional responsibilities for the Owner may include additional compensation to the Engineer for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

    b. Contractor shall provide all data in support of any proposed substitute or “or-equal” at Contractor’s expense.

8. Specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. Specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

10. Specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

1.11 SUBSTITUTION REQUEST FORM

A. Use Substitution Request Form in on page 01 35 00-5.

B. Submit one form (4 copies) for each request.

END SECTION

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SUBSTITUTION REQUEST FORM

TO: _____

PROJECT: _____

We hereby submit for your consideration the following product instead of the specified item for the above project:

SECTION: _____ PARAGRAPH: _____ SPECIFIED ITEM: _____

Proposed Substitution: _____

Attach: 1) Complete technical data, including laboratory tests, if applicable.

2) Complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

A. Does the substitution affect dimensions on Drawings?

B. Will the undersigned pay for changes to the project design, including engineering and detailing costs caused by the requested substitution?

C. What affect does substitution have on other trades?

D. Differences between proposed substitution and specified item?

E. Manufacturer's guarantees of the proposed and specified items are:

____Same _____ Different (explain on attached sheet)

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SUBSTITUTION REQUEST FORM

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Submitted By:

Signature _____

Firm _____

Address _____

Date _____

Telephone _____

For Use by Design Consultant
Accepted Accepted as Noted Not Accepted Received Late By_____ Date_____ Remarks_____

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SECTION 01 42 13

DEFINITIONS AND ABBREVIATIONS

PART 1 GENERAL

1.1 DEFINITIONS AND TERMS

A. Whenever in these Specifications, or in other Contract Documents, the following terms are used, the intent and meaning shall be interpreted as follows:

1. Board: City of Los Banos City Council, City of Los Banos.

2. Calendar Day: Every day shown on the calendar.

3. Contractor: The word “Contractor” means the person, firm or corporation to whom the award is made. Subcontractors as such will not be recognized.

   a. Where pronouns “he”, “his”, or “him” are used in reference to the Contractor, it shall be inferred to be inclusive of all genders.

4. Contract Unit Price: The Contractor’s original bid for a single unit of an item of work in the Proposal.

5. Contract Time: The number of calendar days for completion of the Work, including authorized time extensions. In the event a calendar date is specified for Project completion in lieu of a number of calendar days, the Work shall be completed by that calendar date. The Contract Time shall be computed by excluding the first and including the last day; and if the last day be Sunday or a legal holiday, that shall be excluded.

6. Engineer: See definition in the General Provisions.

7. Equipment: (Construction) - All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of work. (Installed) - All material or articles used in equipping a facility as furnishings or apparatus to fulfill a functional design.

8. Extended Unit Price: The unit price multiplied by the estimated quantity specified in the contract documents.

9. Final Completion: Final completion of construction. The Work must be reliably fulfilling its intended function, and all punch-list items must be resolved.

10. General Conditions: As specified in General Provisions.

11. General Requirements: All specifications contained in Division 1.

12. Notice: Any notice allowed or required to be given by the Owner may be given by the Engineer.

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13. Owner: City of Los Banos, a California General Law City.

14. Person: Any individual, association, partnership, corporation, trust, joint venture or other legal entity.

15. Plans: The drawings, profiles, cross-sections, working drawings and supplemental drawings, or reproduction thereof, approved by the Engineer, which show the location, character, dimensions or details of the work.

16. Proposal: The offer of a Bidder when submitted on the Proposal form; properly signed and guaranteed.

17. Reference Documents: Bulletins, Rules, Methods of Analysis or Test, Codes, Standards, and Specifications of public or private agencies, Engineer Societies, or Industrial Associations. Reference shall be to the latest edition thereof, including Amendments, which are in effect and published at the time the Request for Bids is issued, unless a specific edition is identified, in which case reference shall be to such specific edition. Reference Documents are intended to amplify the descriptions of materials, equipment, and construction systems and are to be considered a part of the Contract Documents insofar as the various sections thereof are referred to hereinafter. Examples of Reference Documents are Federal Specifications, State Standard Specifications, and those of American Society of Testing Materials (ASTM), American National Standards Institute (ANSI), American Standards Associations (ASA), and American Concrete Institute (ACI).

18. Salvage: The protection storage, and/or removal of specified existing equipment, parts or materials during the work for retention and later use by the Owner.

19. Sanitary Sewer: Any conduit and appurtenances intended for the reception and transfer of sewage.

20. State: The State of California.

21. State Standard Plans: See General Provisions, Standards.

22. State Standard Specifications: See General Provisions, Specifications, hereinafter referred to as the State Standard Specifications. These Specifications are to be considered a part of the Contract Documents insofar as they are not superseded by other provisions contained in Divisions 0 through 48 of these Specifications.

23. Storm Sewer: Any conduit and appurtenances intended for the reception and transfer of storm water.

24. Street: Any public road, highway, parkway, freeway, alley, walk or right-of-way.

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25. Substantial Completion: The state of construction when the Work is capable of fulfilling its intended function. There may be punch-list items still outstanding at substantial completion.

26. Surety: Any individual, firm or corporation bound with and for the Contractor for the acceptable performance, execution and completion of the Work, and for the satisfaction of all obligations incurred.

27. Unit Price: The cost per unit of measure specified for materials and labor.

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

29. Water Main: Any conduit and appurtenances intended for the distribution of water.

30. Working Day: Any weekday (Monday through Friday), not a designated national holiday, during which weather allows the Contractor to work four or more hours consecutively, starting no later than 10:00 AM.

1.2 REFERENCED STANDARDS

A. The standards referred to, except as modified, shall have full force and effect as though printed in this Specification, and shall be the latest edition or revision thereof in effect on the bid opening date, unless a particular edition or issue is indicated. Copies of these standards are not available from the Owner. The Engineer will furnish, upon request, information as to how copies may be obtained.

1.3 LIST OF ABBREVIATIONS

A. Abbreviations and terms, or pronouns in place of them, shall be interpreted as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ADC	Air Diffusion Council
AEIC	Association of Edison Illuminating Companies
AFBMA	Antifriction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association

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ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	American Refrigeration Institute
ASA	(now U.S.A.S.I., USA Standards Institute) Association & its Standard Specifications
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gage
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America (formerly SCPI)
CAL/OSHA	California Occupational Safety and Health Administration
CALTRANS	California Department of Transportation
CBC	California Building Code
CCR	California Codes of Regulations
CDA	Copper Development Association
CEC	California Electrical Code
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CISPI	Cast Iron Soil Pipe Institute
CITY	City of Los Banos
CMAA	Crane Manufacturers Association of America
CMC	California Mechanical Code
CPC	California Plumbing Code
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EEI	Edison Electric Institute
EJCDC	Engineers' Joint Contract Documents Committee
EPA	Environmental Protection Agency
FED SPEC	Federal Specification
FCI	Fluid Controls Institute
FGMA	Flat Glass Marketing Association
FIA	Factory Insurance Association
FM	Factory Mutual
FSA	Fluid Sealing Association
FTI	Facing Tile Institute
GWD	Grassland Water District

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HEI	Heat Exchange Institute
HMI	Hoist Manufacturers Institute
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
ICBO	International Conference of Building Officials
I-B-R	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
JIC	Joint International Conference (Hydraulic Institute)
MHI	Materials Handling Institute
MIL	Military Specification
MMA	Monorail Manufacturers Association
MSS	Manufacturers' Standardization Society
NAAMM	National Association of Architectural Metals Manufacturers
NACE	National Association of Corrosion Engineers.
MBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NBHA	National Builders Hardware Association
NCSPA	National Corrugated Steel Pipe Association
NEC	National Electrical Code
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NEMI	National Elevator Manufacturing Industry
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NLA	National Lime Association
NPC	National Plumbing Code
NPT	National Pipe Thread
NRCA	National Roofing Contractors' Association
NRMCA	National Ready Mixed Concrete Association
NSC	National Safety Council
NSF	National Sanitation Foundation
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Administration
P&P	Provost & Pritchard Consulting Group, Inc.
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
PFI	Pipe Fabrication Institute
PS	Product Standard
RTI	Resilient Tile Institute (formerly AVATI)
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SI	International Systems of Units (Metric)
SIGMA	Sealed Insulating Glass Manufacturers Association

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SFPA	Southern Forest Products Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPFA	Steel Plate Fabricators Association
SPI	Society of the Plastics Industry
SPTA	Southern Pressure Treaters Association
SSI	Scaffolding and Shoring Institute
SSPC	Steel Structures Painting Council
SSS	State Standard Specifications
SSPWC	Standard Specifications for Public Works Construction (Greenbook)
UL	Underwriters' Laboratories
UPC	Uniform Plumbing Code
USBR	U.S. Bureau of Reclamation
USGS	United States Geological Survey
WCLA	West Coast Lumbermen's Association (Standard Grading and Dressing Rule)
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

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SECTION 01 43 00

QUALITY CONTROL AND TESTING

PART 1 GENERAL

1.1 NOTICE OF DEFECTS

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

B. All defective Work may be rejected, ordered to be corrected, or accepted, at the discretion of the Owner and Engineer.

1.2 ACCESS TO WORK

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests shall have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith.

1.3 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be subject to the requirements of Section 01 35 00 – Material Substitution Procedures.

1.4 PROJECT SITE TESTING

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Except for specified material suitability tests, all initial routine tests of materials shall be at the expense of the Owner and shall be performed by an independent certified laboratory designated by the Owner. Whenever a specified percent relative compaction test is required and the material or portion thereof so tested fails to meet or exceed the relative compaction specified, all subsequent retesting shall be performed at the expense of the Contractor.

C. All material suitability tests shall be at the expense of the Contractor. Testing shall be by an independent certified laboratory approved by the Engineer.

1.5 TEST STANDARDS

A. All sampling, specimen preparation, and testing of materials shall be in accordance with the standards of nationally recognized technical organizations.

B. The physical characteristics of all materials not particularly specified shall conform to the latest standards published by the ASTM, where applicable.

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1.6 UNCOVERING WORK

A. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without concurrence of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and recovered at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be re-observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall promptly correct said defects, including all work involved in uncovering and recovering the work, at no cost to the Owner.

2. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction.

1.7 CORRECTION OR REMOVAL OF DEFECTIVE OR REJECTED WORK

A. Upon receipt of notice, Contractor shall correct all defective or rejected Work and replace it with Work that is not defective, at no cost to the Owner.

1.8 ACCEPTANCE OF DEFECTIVE WORK

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so.

1. If any such acceptance occurs, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted.

2. Engineer shall determine the reasonableness of the diminished value of Work so accepted and Contractor shall pay all costs involved in making such determination.

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SECTION 01 50 00

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 GENERAL

A. The Contractor shall provide all temporary facilities and utilities required for completion of the Work as well as safety precautions and programs. No attempt is made to set out in detail the Contractor's means or methods necessary to accomplish the tasks involved.

1.2 TEMPORARY UTILITIES

A. Water

1. Construction water is available without cost from the adjoining Grassland Water District San Luis Canal if there is water in the canal. Alternative water sources include the existing well on the project site, or from municipal water from a City hydrant. The Contractor may make arrangements with the Owner to use municipal water where appropriate during construction. See Special Provision 20 – Water Supply of these specifications for details. All improvements required to obtain the water are at Contractor expense.

2. Water used for human consumption shall be kept free from contamination and shall conform to the requirements of the State and local authorities for potable water.

B. Sanitary Facilities

1. The Contractor shall provide suitable and adequate sanitary conveniences for the use his staff at the site of the Work. Such conveniences shall include chemical toilets or water closets and shall be located at appropriate locations at the site of the Work. All sanitary conveniences shall conform to the regulations of the public authority having jurisdiction over such matters. At the completion of the Work, all such sanitary conveniences shall be removed, and the site left in a sanitary condition.

2. With respect to sanitation facilities, the Contractor shall cooperate with and follow directions of representatives of the Public Health Service and the State. State and County Public Health Service representatives shall have access to the Work, whether it is in preparation or progress, and the Contractor shall provide facilities for such access and inspection.

1.3 TEMPORARY CONSTRUCTION FACILITIES

A. Construction hoists, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided.

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B. Temporary supports shall be designed with an adequate safety factor to assure adequate load bearing capability. The Contractor shall submit design calculations prepared by a professional registered engineer for staging and shoring prior to application of loads.

C. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations from one hour before sunset each day to one hour after sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be barricaded in such a manner as to prevent persons from falling, walking, or otherwise entering any excavation in any street, roadway, parking lot, treatment plant, or any other area, public or private.

D. The Contractor shall adequately identify and guard all hazardous areas and conditions by visual warning devices and, where necessary, physical barriers. Such devices shall, as a minimum, conform to the requirements of Cal/OSHA.

E. At such time or times any temporary construction facilities and utilities are no longer required for the work, the Contractor shall notify the Engineer of his intent and schedule for removal of the temporary facilities and utilities and obtain the Engineer's approval before removing the same. As approved, the Contractor shall remove the temporary facilities and utilities from the site as his property and leave the site in such condition as specified, as directed by the Engineer, and/or as indicated on the Plans.

1.4 ACCESS ROADS AND STAGING AREA

A. Site Access

1. Vehicle and equipment access to the project site may only occur only along the US Bureau of Reclamation San Luis Drain westerly embankment from Highway 152. Access is conditional upon Contractor acceptance of all access permit conditions contained in Appendix D.

    a. Contractor shall give SLDMWA staff (Jessie Ixta) a minimum 48 hours' notice prior to use of the San Luis Drain embankment for access.

    b. Contractor shall be responsible for repairing any damage caused by use, as determined by the SLDMWA.

2. With permission of the Engineer, if the siphon in the GWD San Luis Canal constructed as part of the Final Kilometer Sewer Trunk Line Replacement Project is completed, access may be allowed across the San Luis Canal. Contractor shall protect existing facilities.

    a. With permission of the Engineer, access to the GWD San Luis Canal may be allowed from Engineer specified City streets or through the City of Los Banos AG Sports Complex/Dog Park off Mercy Springs Road. At their expense, Contractor shall be required to protect existing facilities, modify access as needed and restore to the original condition

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at the end of the project. Earthwork and grading may be required to go from City property or streets to the San Luis Canal embankment.

3. No access is allowed through the City of Los Banos Wastewater Treatment Plant or across the bridges or facilities over the GWD Santa Fe Canal or the US Bureau of Reclamation San Luis Drain, or along the US Bureau of Reclamation San Luis Drain embankment from Henry Miller Road.

4. The GWD San Luis Canal and USBR San Luis Drain embankments on either side of the Project site shall not be blocked and must remain open for access by the facility owners and operations, the Final Kilometer Sewer Trunk Line Replacement Project contractor and others.

B. Adequate access shall be maintained to all storage areas and other areas to which frequent access is required. The Contractor shall be able to store his own equipment and materials within the Project Site. The Contractor shall be responsible of securing storage of his own equipment and materials that may be required within the Project site and bear all associated costs. The Contractor shall provide any temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials and bear all associated costs.

C. Storage and protection:

1. Materials and equipment shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated in accordance with manufacturer’s recommendations to prevent corrosion.

2. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure materials and equipment are undamaged and are maintained under required conditions.

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SECTION 01 51 36

WATERING

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of furnishing, hauling, and applying water required for compaction of embankments, backfills, subgrade, and base course, and for landscaping, and other construction operation.

1.2 RELATED WORK

A. Section 01 50 00 – Temporary Facilities

B. Section 01 57 27 – Dust Control

1.3 REFERENCES

A. State Standard Specifications Section 10-6, Watering

PART 2 PRODUCTS

2.1 WATER

A. Free of debris, organic matter, and other objectionable substances.

PART 3 EXECUTION

3.1 WATER TRUCK

A. At least 1,000-gallon capacity.

B. Keep at least one water truck on site at all times, unless Engineer approves removal of the truck from the site before final completion.

3.2 APPLICATION

A. Use pressure type distributors or a pipeline equipped with sprinkler system. Provide approved meter devices near points of discharge.

B. Ensure a uniform application of water for optimum moisture content. Avoid excessive runoff and minimize water waste.

C. The Contractor may water excavation areas before excavating. Drill full depth of excavation to make moisture determinations.

D. If over watering occurs, de-water at no additional expense to the Owner.

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3.3 SPECIAL CONTROLS

The Contractor shall take all reasonable means to minimize inconvenience and injury to the public by dust, noise, diversion of storm water, or other agencies under his control.

A. Dust Control

1. As specified in Section 01 57 27, Dust Control

B. Water

1. The Contractor may make arrangements with the Owner to use municipal water where appropriate during construction. See Special Provision 20 – Water Supply and Section 01 50 00 Temporary Facilities of these specifications for details.

2. The Contractor shall pay for and shall construct all facilities necessary to furnish water for his use during construction. The Contractor shall pay for all water used for the Contractor's operations prior to final acceptance. If available, the Contractor may make arrangements with the Owner to use non-potable well water on site, or the adjoining Grassland Water District San Luis Canal for water during construction. The City makes no representation of the availability of flow from any of the noted water sources.

3. Water used for human consumption shall be kept free from contamination and shall conform to the requirements of the State and local authorities for potable water.

4. Full compensation for furnishing all labor, materials, tools and equipment and for doing all work involved in furnishing and applying water as required by the Contract Documents and Specifications, State Standard Specifications, shall be considered as included in the contract unit prices paid for other items of work and no additional allowance will be made therefore.

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SECTION 01 53 00

PERMITS

PART 1 GENERAL

1.1 OWNER OBTAINED PERMITS

A. Permits that have been obtained by the Owner are listed below and shall be incorporated into these Specifications by reference. See the various Appendices of these Specifications for copies of the permits. The Contractor shall be responsible for complying with all permit requirements, including paying any applicable fees, whether or not individual conditions are described in these Specifications.

1. San Luis & Delta-Mendota Water Authority Access Permit P2641024.

    a. Construction related requirements for this permit are listed in permit contained in Appendix D of these Specifications.

2. Regulation VII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review) issued by San Joaquin Valley Air Pollution Control District.

    a. Construction related requirements for this permit are listed in Specification Section 01 57 27 – Dust Control.

3. 2022-0057-DWQ Construction General Permit (SWPPP) issued by State Water Resources Control Board.

    a. Construction related requirements for this permit are listed in Specification Section 01 57 23 – Storm Water Pollution Prevention Plan.

1.2 CONTRACTOR OBTAINED PERMITS

A. The Contractor shall procure all other permits and licenses, pay all charges and fees, as required, and give all notices necessary and incidental to the due and lawful prosecution of the Work.

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SECTION 01 56 29

CULTURAL AND ARCHAEOLOGICAL COMPLIANCE

PART 1 GENERAL

1.1 CULTURAL RESOURCES

A. The California Public Resources Code Chapter 1.7, Section 5097.5 makes it a misdemeanor for anyone to knowingly disturb an archaeological historical feature. California Public Resources Code Sections 5097.98 and 5097.99 require protection of Native American remains which may be found and outlines procedures for handling any burials found.

B. The California Administrative Code, Title 14, Section 4308, requires that no person disfigure any object of historical interest or value. The California Penal Code, Title 14, Part 1, Section 622-1/2 makes it a misdemeanor to destroy anything of historical value within any public place.

C. Should human skeletal material or archaeological remains be found during construction activities, all work must be halted within thirty (30) meters of the find. The Contractor shall notify the Engineer immediately. Construction activities within thirty (30) meters of the find shall remain halted until the Contractor has been notified that construction in the vicinity of the find may resume. If, in the opinion of the Engineer, the Contractor's operations are delayed or interfered with due to investigations made of the archaeological find, the City of Los Banos will compensate the Contractor for such delays to the extent provided in Section 8-1.07, " Delays," of the State Standard Specifications.

D. The Owner has agreed to implement the Mitigation, Monitoring, and Reporting Program (MMRP) contained in these specifications in Appendix E. Work of the Contractor shall conform to the MMRP as described in Section 01 57 19 Environmental Protection Measures of these specifications.

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SECTION 01 56 32

THREATENED AND ENDANGERED SPECIES

PART 1 GENERAL

1.1 GENERAL

A. The City of Los Banos has retained a biological consultant to develop guidelines and precautions for the Contractor to follow during the Work to avoid negative impacts to threatened and endangered species.

1. The biological consultant reviewed the project site in September 2023, and found evidence of threatened, endangered or special concern species on the project site as follows:

a. California Species of Special Concern Burrowing Owl (*Athene cunicularia*) were spotted on the southern edge of the project area, and the Northern Harrier (*Circus cyaneus*) was flying over the project site.

b. California Species of Concern Loggerhead Shrike (*Lanius ludovicianus*) Mountain Plover (*Charadrius montanus*) may forage on the project site.

c. California Threatened species Swainson's Hawk (*Buteo swainsoni*) and Tricolored Blackbird (*Agelaius tricolor*) may forage on the project site.

2. If any evidence of threatened and endangered species are observed during subsequent biological surveys and/or during the course of construction, the Contractor shall comply with any guidelines and precautions developed by the biological consultant during the Work, and coordinate with the biological consultant as needed for compliance.

B. The biological consultant will perform a pre-construction clearance survey for threatened and endangered species, approximately fourteen (14) days prior to the first excavation or ground disturbance on the site, at the Owners' expense. In addition, the biological consultant may be present on-site during the initial ground disturbance by the Contractor. Based on these surveys, the biological consultant may issue guidelines and precautions for the Contractor to follow as a result of the pre-construction clearance survey or his presence during initial ground disturbance.

C. If any threatened or endangered species are observed, the City of Los Banos shall notify the Contractor of the specific guidelines or precautions issued by the City of Los Banos' qualified biologist. The Contractor shall promptly submit a written request to the City of Los Banos if such guidelines or precautions are anticipated to cause any change to the Contractor's Work Schedule or Contract as a result of the Contractor's responsibility for compliance with the biological consultants' guidelines and precautions. If, in the opinion of the Engineer, the Contractor's operations are delayed or interfered with, the City of Los Banos will compensate the Contractor for

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such delays to the extent provided in Section 8-1.07, " Delays," of the State Standard Specifications.

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SECTION 01 57 19

ENVIRONMENTAL PROTECTION MEASURES

PART 1 GENERAL

1.1 GENERAL

A. The Contractor shall implement the environmental protection measures described in the following sections, excepting those measures specifically identified to be completed by the Owner. Contractor shall comply with the cultural and biological avoidance, minimization, disturbance-/construction-free buffer and discovery requirements, and participate in a biological and cultural resources Worker Environmental Awareness Program, as outlined in the measures being implemented by the City as part of their compliance with the Mitigation, Monitoring, and Reporting Program (Appendix E of these specifications).

1.2 NOISE

A. Noise generating equipment used during construction shall be restricted to the hours from 7:00 a.m. to 7:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 p.m. on Saturday and Sunday. Construction outside of these hours shall require written approval by the Owner. Effective mufflers shall be fitted to gas-powered and diesel-powered equipment.

1.3 BIOLOGICAL RESOURCES

A. Requirements:

1. If feasible, all construction activities shall be performed from September 1 through January 31. If at any point in time the Contractor believes construction will be required outside this timeframe the Owner and Engineer shall be informed immediately to discuss further action.

2. The Owner will hire a qualified biologist to conduct preconstruction surveys no less than 14 days prior to the beginning of ground disturbance and/or construction activities as detailed below.

3. If active nests are found, clearing and construction within a specified distance determined by the qualified biologist will be postponed or halted until the nest is vacated and juvenile have fledged and there is no evidence of a subsequent attempt at nesting.

B. Pre-construction Requirements

1. Prior to equipment being brought on site, the staging and work area limits will be delineated by the Owner.

2. All construction workers on site are required to attend a Worker Environmental Awareness Training (WEAP) conducted by a qualified archaeologist and biologist prior to the start of construction. The training will

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detail the measures to be implemented to protect sensitive resources in the project area. The Owner will hire a qualified archaeologist and biologist to conduct said training.

C. Site Maintenance Requirements:

1. Construction equipment shall arrive at the site clean to prevent the potential spread of noxious weeds.

2. Waste and recycling receptacles that discourage foraging by wildlife species adapted to urban environments shall be installed and maintained, by the Contractor, in common areas throughout the project site for the duration of construction.

D. Mitigation Requirements for Specific Species

1. Burrowing Owl

a. The Owner will hire a qualified biologist to conduct a pre-construction "take avoidance" survey for burrowing owl no less than 14 days prior to the onset of construction. The survey area will include all suitable habitat on site and within 200 meters of the Project impact area, where accessible.

b. If Project activities are undertaken during the breeding season (February 1- August 31) and active nest burrows are identified on or within the Project area, a 200-meter disturbance-free buffer will be established around these burrows. The buffers will be enclosed with temporary fencing to prevent construction equipment and workers from entering the setback area. Buffers will remain in place for the duration of the breeding season unless otherwise arranged with CDFW. After breeding season has ended and all young have left the nest, passive relocation of any remaining owls may take place as described below.

c. During the non-breeding season (September 1 – January 31), resident owls occupying burrows in the Project-construction areas will be avoided.

2. Swainson's Hawk

a. If feasible, Project construction will occur entirely outside the Swainson's hawk nesting season, typically defined as March 1 - September 15.

b. If construction activities must occur between March 1 and September 15, then, the Owner will hire a qualified biologist who will conduct surveys for nesting Swainson's hawk during the nesting season of or prior to Project initiation, within the Project area and a ½-mile buffer around the Project area.

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c. Should any active nests be discovered within the survey area, a ½- mile disturbance-free buffer, or lesser buffer distance established in consultation with CDFW, will be established around the nest. Disturbance free buffers will be delineated on the ground with flagging, fencing, or by other easily visible means and will remain in effect until a qualified biologist has determined that the young have fledged and are capable of foraging independently.

3. Nesting Birds

a. If feasible, the Project will be implemented outside of the avian nesting season, typically defined as February 1 to August 31. Ie 9/1 to 1/31

b. If construction is to occur between February 1 and August 31, a qualified biologist will be hired by the Owner to conduct pre-construction surveys for active bird nests within 10 days prior to the start of construction. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e., birds of prey).

c. Should any active nests be discovered in or near proposed construction zones, the Owner's qualified biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

1.4 CULTURAL RESOURCES

A. Discovery of Archaeological and Human Remains:

1. Should archaeological remains or artifacts be unearthed during any stage of project activities, work in the area of discovery shall cease until the area is evaluated by a qualified archaeologist hired by the Owner. If mitigation is warranted, the Contractor shall abide by recommendations of the archaeologist..

2. In the event that any human remains are discovered on the Project site, the Merced County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American.

3. Should paleontological resources be encountered on the Project site, all ground disturbing activities in the area shall stop. A qualified paleontologist shall be contacted and hired by the Owner to assess the discovery. Mitigation

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may include monitoring, recording the fossil locality, data recovery and analysis, and a final report. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the County of Merced for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology.

4. Prior to construction the applicant/contractor shall be required to provide a cultural resources and tribal cultural resources sensitivity and awareness training program (Worker Environmental Awareness Program [WEAP]) for all personnel involved in project construction, including field consultants and construction workers. The WEAP will be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, as well as culturally affiliated Native American tribes. The WEAP shall be conducted before any project-related construction activities begin in the project site. The WEAP will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The WEAP will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The WEAP will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values.

5. In the case of any inadvertent discoveries at any time during the duration of construction or implementation, all work will be stopped within 100 feet of the discovery, and the Owner shall contact the Santa Rosa Rancheria Tachi-Yokut Tribe for further information, investigation, and guidance on the process for handling such discoveries.

END SECTION

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SECTION 01 57 23

STORM WATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.1 WORK INCLUDES

A. The Owner shall apply for and obtain coverage under State of California Construction General Permit Order 2022-0057-DWQ. The Contractor shall provide information to the City's QSD for SWPPP development at least three weeks before starting Work and shall implement storm water pollution prevention measures as prescribed in the Legally Responsible Person approved SWPPP to prevent sediment and/or pollutants from entering storm drains, streams, or water bodies throughout the duration of the Work in compliance with the permit requirements, including CalGreen Building Standards. Work shall be performed in accordance with all Federal, State, and local regulations. It is assumed that the project's total disturbed surface area is greater than 1 acre.

B. The Contractor shall furnish and exercise every reasonable precaution to protect channels, storm drains, and bodies of water from pollution and provide all labor, materials, tools, and equipment necessary to prevent storm water pollution associated with construction activities, including implementation of the Stormwater Pollution Prevention Plan (SWPPP) and providing information for amendments if necessary for CGP Compliance, installation, maintenance and final removal of all temporary and permanent erosion and sediment control measures, in accordance with the requirements of the Contract Documents.

1. The Legally Responsible Person (LRP) is the City of Los Banos.

2. The Approved Signatory for the LRP is Mr. John Doe.

C. **Penalties**: Failure to comply with this Section may result in significant fines and possible imprisonment. The Regional Water Quality Control Board (RWQCB) or other prosecuting authority may assess fines for each violation. Should the District be fined or penalized as a result of the Contractor failing to comply with this Section and applicable permit requirements, the Contractor shall reimburse the District for any and all fines, penalties and related costs.

D. All costs for work required for compliance with this Section shall be included in the price bid for Storm Water Pollution Prevention Plan (SWPPP) and Dust Control Plan (DCP) Implementation.

1.2 REFERENCES

A. California State Water Resources Control Board, Construction General Permit 2022-0057-DWQ, https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2022/wqo_2022-0057-dwq.pdf

B. California Stormwater Quality Association (CASQA), https://www.casqa.org/

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C. Draft Stormwater Pollution Prevention Plan (SWPPP) dated August 2025.

1.3 SUBMITTALS

A. As specified in Section 01 33 00 – Submittal Procedures.

B. Submittals under this section shall be completed and submitted at least three weeks prior to beginning work and within 2 days of issuance of the Notice to Proceed.

1. The contractor shall submit the appropriate information to the City QSD for SWPPP revisions, Dewatering Plan(s), Annual Reports, Sampling and Analysis reports, and all other permit compliance documents to be submitted to the State Water Board via the SMARTS system. All documents shall be kept onsite in either a job trailer or accessible lockbox.

C. Proof of project sign with SWPPP WDID number and the location to be displayed.

D. Proof of installation of rain gauge on project site.

1.4 QUALITY ASSURANCE

At minimum, the following measures shall be taken to help ensure control of storm water and non-storm water pollution. These measures shall not be construed to limit or override the measures set forth and called for in the SWPPP.

A. Develop, submit to the QSD, and obtain approval from the RWQCB for site dewatering. Control the rate and effect of dewatering in such a manner as to avoid all objectionable settlement and subsidence and to assure the integrity of the finished work.

B. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, establish reference points and observe at frequent intervals to detect any settlement that may develop. Conduct the dewatering operation in a manner that protects adjacent natural resources and facilities. Cost of repairing all damage to adjacent resources and facilities shall be the sole responsibility of the Contractor.

C. Before commencing grading, excavation or filling in any part of the site, Contractor shall construct swales, diversion channels, inlet protection barriers, sedimentation traps, and other measures to guide runoff away from the work area and to capture eroded material before it reaches natural water courses. The measures shall be in accordance with the approved storm water pollution prevention plans.

D. Arrange demolition activities to minimize erosion to the maximum practical extent. Clearing, excavation, and grading shall be limited to those areas of the Project site necessary for demolition. Minimize the area exposed and unprotected.

E. Clearly mark and delineate the work limits activities. Equipment shall not be allowed to operate outside the limits of work or to disturb existing vegetation. Excavation and grading shall be completed during the dry season to the maximum extent possible.

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1.5 GENERAL REQUIREMENTS

A. The Contractor shall exercise care in preserving vegetation and protecting property, to avoid disturbing areas beyond the limits of the Work and promptly repair any damage caused by Contractor operations.

B. The Contractor shall provide all necessary water pollution control devices to prevent, control, and abate water pollution, and implement good housekeeping pollution control measures to reduce the discharge of pollutants from the Site to the maximum extent practicable. These water pollution control devices include structural BMPs, drains, gutters, slope protection blankets and retention basins and shall be constructed concurrently with other Work at the earliest practicable time.

C. Stockpiles of earth and other construction-related materials shall be protected from being transported from the Site by wind or water using covers or equivalent.

D. The Contractor shall properly store and handle fuels, oils, solvents, and other toxic materials in a manner not to contaminate the soil or surface waters, enter the groundwater, or be placed where they may enter a live stream, channel, drain, or other water conveyance facilities. All approved toxic storage containers shall be protected from weather. Spills shall be cleaned immediately, and soiled materials shall be properly disposed of. Spills shall not be washed into live streams, channels, drains, storm drains, or other water conveyance facilities.

E. Excess or waste concrete (including concrete decant water) shall not be washed onto bare ground, into the public way or any drainage systems. The concrete wastes shall be retained on-site until they can be appropriately disposed of or recycled. Concrete wastes shall not be washed into live streams, channels, drains, storm drains, other water conveyance facilities, bare ground or unapproved concrete washout containment areas.

F. Non-stormwater runoff from equipment washing, vehicle washing, and any other activities shall be contained at the work site and properly disposed of. Non-stormwater runoff shall not be allowed to enter live streams, channels, drains, storm drains, or other water conveyance facilities.

G. The Contractor shall prevent sediments and other materials to be tracked from the Site by vehicle traffic. Construction entrance roadways shall be stabilized to inhibit sediments from being deposited onto public ways. The Contractor shall immediately sweep up accidental depositions and not allow depositions to be washed away by rain or by any other means.

1.6 REGULATORY REQUIREMENTS

A. The Contractor shall comply with the requirements of the State Water Resources Control Board (SWRCB), RWQCB, California Administrative Code, California Building Code, Owner and any other agencies having jurisdiction in storm water and non-storm water discharges and waste management.

B. General Permit Registration Documents:

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1. The Contractor shall employ or contract with qualified personnel to prepare all compliance documents in accordance with the applicable regulatory requirements.

2. All engineering calculations, reports, and drawings shall be prepared, and signed by a California licensed engineer in accordance with California Business and Professional Code Section 6700, et seq.

3. The LRPs qualified personnel shall file the required documents, as necessary, through the SWRCB's Storm Water Multiple Application and Report Tracking System (SMARTS) website.

4. The Contractor shall mail the appropriate application fee to the SWRCB no later than two (2) days after notification of submittal to the SWRCB via SMARTS. The Contractor shall affix the SWRCB Fee Statement Letter to the application fee. The Contractor shall pay all amendment and/or annual fees for subsequent years as required by the CGP.

5. The Contractor shall not commence any construction work until a Waste Discharger Identification (WDID) number assigned by the SWRCB is received. The Contractor shall retain a copy of the WDID onsite, as evidence of the SWRCB acceptance of the PRDs/SWPPP.

C. The Contractor shall comply with the discharge and effluent prohibitions and limitations listing in the 2022 CGP.

1.7 STORM WATER POLLUTION PREVENTION PLAN IMPLEMENTATION

A. General Requirements:

1. Implementation of all BMPs shall be overseen by trained personnel employed or retained by the Contractor.

2. All erosion and sediment control measures shall be implemented as specified in the SWPPP.

3. A copy of the SWPPP, including working details (fact sheets) for construction site BMPs and applicable amendments, shall be kept and maintained by the Contractor on the construction site and continuously updated in accordance with CGP requirements to reflect current site conditions throughout the duration of the project.

B. The Contractor shall implement all activities required by the CGP for the Risk Level of the project as detailed in the SWPPP in accordance with the CGP. The SWPPP shall Identify applicable best management practices (BMPs). All stormwater or non-stormwater pollution prevention activities specified in the SWPPP shall comply with the guidance provided in the "*Stormwater Best Management Practice Handbook, Construction,*" October 2024 or more current edition, published by the California Stormwater Quality Association (CASQA).

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1. The SWPPP shall detail the placement of physical BMPs required for installation and the methods used to comply with those BMPs. The Contractor's preferred techniques shall show how it will comply with the stated objectives of the SWPPP and the terms of the CGP.

C. Non-Stormwater Management: As specified in the CGP as appropriate to the project Risk Level, the SWPPP shall discuss any non-stormwater sources (i.e., landscaping, irrigation, pipe flushing, street washing and dewatering). In addition, the SWPPP shall include standard observation measures and BMPs, including BCT/BAT practices that are to be implemented in order to reduce the pollutant loading in the discharge waters.

D. Amendments: All SWPPP amendments shall be prepared by the QSD at no additional cost to the Owner.

1. The Contractor shall, at no additional cost to the Owner, provide information to the Owner's QSD to amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of pollutants to stormwater. All fees as determined by the SWRCB will be paid by the Contractor.

2. The Contractor shall, at no additional cost to the Owner, provide information to the Owner's QSD to amend the SWPPP if it is in violation of any conditions of the CGP or has not achieved the general objective of reducing pollutants in stormwater discharges. All fees as determined by the SWRCB will be paid by the Contractor.

E. Annual Reporting: The Contractor shall submit to the Owner's QSD information required to develop an annual report and all required information for SMARTS data entry, no later than July 15th of each year. The LRP shall submit to the SWRCB via the SMARTS system in accordance with the requirements the CGP, including but not limited to: all inspection reports from the QSD and QSP/QSP delegate, training records/certifications from the QSD, QSP, and QSP delegate, a summary and evaluation of all sampling and analysis results, original laboratory reports, chain of custody forms, a summary of all corrective actions taken during the compliance year and identification of any compliance activities or corrective actions that were not implemented, as applicable. The LRP will certify the annual report by September 1st. A project of 90 days or more duration can require more than one Annual Report. See below.

1. An Annual Report is required while the Project is still under construction, if construction begins not later than June 1 of a calendar year and is not completed by September 1 of that same year.

2. An Annual Report is required, without exception, within 90 days of or prior to the September 1 following project completion.

   Example: A project commencing on May 31 and completed on September 2 of the same year would require an annual report both by September 1 of the reporting year, and prior Notice of Termination submittal.

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F. Notice of Termination: Once construction is completed and the Site has been stabilized with final, sustainable cover, the QSP shall prepare a Notice of Termination (NOT), including a final site map, photos, project post-construction long term maintenance plan, final QSP post-construction inspection, and a final project Annual Report, shall obtain necessary signatures from the LRP and shall submit all through the State Water Board's SMARTS website within 80 days after all land disturbing activities end and construction is complete. The LRP will certify the Notice of Termination within 90 days of all land disturbing activities end and construction is complete via SMARTS in accordance with the CGP.

A Notice of Termination is distinct from an Annual Report. Both are required.

PART 2 PRODUCTS

2.1 GENERAL

A. Materials furnished for BMPs shall meet the requirements of the California Stormwater Quality Association*, Stormwater Best Management Practice Handbook, Construction* – October 2024 edition (or most current version) unless otherwise indicated.

B. Before the work begins, sufficient equipment shall be available on the site to assure that the operation and adequacy of the erosion control plans can be continuously maintained.

C. If Silt fencing is to be used, product must be 36" high, wire backed fencing.

D. If Fiber Rolls are to be used, sterile, hemp/burlap covered rolls are allowed. Plastic Mesh encased Fiber Rolls are not allowed.

PART 3 EXECUTION

3.1 GENERAL DESCRIPTION

A. The Contractor shall install and maintain all pollution, erosion, and sediment control measures and carry out inspections in accordance the approved SWPPP.

B. Sediment transport and erosion from working stockpiles shall be controlled and restricted from moving beyond the immediately stockpile area by implementing applicable BMPs, including but not limited to construction of temporary toe-of-slope ditches and accompanying silt fences as necessary. If the BMPs proposed in the SWPPP prove inadequate to control sediment transport and erosion on the Site, the Contractor shall without delay implement additional provisions to obtain effective control. The SWPPP shall be updated to reflect the necessary changes as discussed in paragraph 1.7 above.

C. The Contractor shall be responsible for taking the proper actions to prevent contaminants and sediments from leaving the project Site. The Contractor shall take immediate action if directed by the QSD, QSP, Construction Manager, LRP, or if the

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Contractor observes contaminants and/or sediments entering the storm drainage system, to prevent further stormwater from entering the system.

3.2 NOTIFICATION AND REPORTING

A. If non-stormwater pollution occurs in the work area for any reason or when the Contractor becomes aware of any violation of this Section, the Contractor shall correct the problem and shall follow the requirements of the SWPPP for monitoring, control and reporting of non-stormwater discharges.

3.3 FIELD QUALITY CONTROL

A. The Contractor shall maintain the BMPs and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures.

Should the QSP note any deficiencies in necessary BMPs during the course of QSP's inspections and reporting, Contractor shall immediately repair or replace the defective BMPs as required by the QSP.

3.4 INSPECTIONS

A. The City's QSP shall inspect disturbed areas of the construction site, areas that have not been finally stabilized, areas used for storage of materials exposed to precipitation, stabilization practices, structural practices, other controls, and area where vehicles are stored and/or exit the Site at least weekly, and in accordance with CGP precipitation event inspection requirements. The QSP shall perform quarterly inspections per CGP requirements.

B. The City's QSP shall inspect discharge locations or points to ascertain whether BMPs are effective in preventing significant impacts to receiving waters. Inspect locations where vehicles exit the Site for evidence of offsite sediment tracking.

C. Inspection Reports shall be in compliance with the requirements of the CGP for the specified Risk Level. Furnish the report to the Construction Manager, QSD, Engineer, and LRP within 24 hours of the inspection.

D. The Contractor's trained personnel shall be responsible for site discharge sampling and reporting as required under the CGP. Sample analysis reporting shall be submitted to the LRP and QSD within 24 hours of receipt from the field sampler and/or the laboratory along with sampling locations (latitude/longitude) and other requirements listed in the SWPPP.

E. A copy of the QSP's inspection report shall be maintained on Site.

3.5 RECORDS

A. The Contractor shall retain records/copies of data used to complete the PRDs; the SWPPP and all attachments and amendments; compliance certifications; notifications of non-compliance; training; incidents such as spills or other releases,

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including photographs as available; sampling and analysis of discharges discovered through visual monitoring; all reports required by the CGP; BMP inspections and checklists, and maintenance and repair activities; and activity-based BMPs, such as good housekeeping, that have been implemented.

B. After the work is complete and accepted by the Owner, submit to the Engineer and Owner all records/copies of documents required by the CGP, including, but not limited to, the records/copies of the documents noted above, and all documents uploaded to the SMARTS system.

3.6 MAINTENANCE OF TEMPORARY FACILITIES

A. Inspect erosion and sediment control structures daily, including site exit locations, and as specified in the SWPPP.

B. Sediment shall be removed from behind run off control structures after each storm, or as directed by the Engineer, LRP, QSD or QSP.

C. If areas are seeded, Contractor shall examine those areas during and after major storms to check that grass is becoming established.

3.7 DISPOSAL OF SEDIMENT FROM STORM WATER POLLUTION CONTROL STRUCTURES

A. Sediment excavated from temporary sediment control structures shall be disposed on the site with general fill or with topsoil. Sediment shall be allowed to dry out as required before reuse. All trash shall be removed before reuse.

B. Contractor shall place the sediment removed from traps and other structures where it will not enter a storm drain or water course and where it will not immediately reenter the basin.

3.8 REMOVAL OF TEMPORARY STORM WATER POLLUTION CONTROL MEASURES

A. In accordance with SWPPP requirements, temporary control measures shall be removed once all drainage area ground disturbance is completed, permanent drainage works have been constructed and full stabilization is achieved. The contractor shall not breach any temporary control structures until the associated catchment area is complete unless approved by the Engineer.

END SECTION

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SECTION 01 57 27

DUST CONTROL

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of implementing measures to prevent air pollution during construction activities, in accordance with Federal, State, and local regulations, and in accordance with the Dust Control Plan (DCP). The DCP can be amended, by the Owner and/or Contractor, as needed should revisions be determined necessary during construction activities.

1.2 RELATED WORK

A. Section 01 50 00 – Temporary Facilities

B. Section 01 51 36 – Watering

C. Division 2 – Existing Conditions

D. Division 31 – Earthwork

1.3 REFERENCES

A. San Joaquin Air Pollution Control District (SJVAPCD) Regulation VIII.

B. Dust Control Plan Fee, Pursuant to the adoption of Rule 3135, Adopted October 20, 2005 and subsequent revisions, compliance assistance bulletins and editions regarding Rule 3135 and PM 10 regulations.

C. Draft/For Bidding Purposes Only: Dust Control Plan dated August 2025, included in Appendix B of these Specification.

1.4 SUBMITTALS

A. As specified in Section 01 33 00 – Submittal Procedures.

B. Submit, prior to beginning work and within 15 days of issuance of the Notice to Proceed a revised DCP.

1. The revised DCP shall show proposed arrangements and methods for dust control. Show that the plans satisfy all SJVAPCD, State, and Federal Requirements.

2. Provide proof that the revised DCP has been submitted to the SJVAPCD for review and approval.

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1.5 QUALITY ASSURANCE

A. Control the rate and effect of watering in such a manner as to avoid all objectionable settlement and subsidence as approved by the Engineer and to assure the integrity of the finished work.

B. Before commencing grading, excavation or filling in any part of the site, Contractor shall construct the required measures specified in the DCP.

C. Arrange demolition activities to minimize dust to the maximum practical extent. Clearing, excavation, and grading shall be limited to those areas of the Project site necessary for construction. Minimize the area exposed and unprotected.

D. Clearly mark and delineate the work limits activities. Equipment shall not be allowed to operate outside the limits of work or to disturb existing vegetation.

1.6 REGULATORY REQUIREMENTS

A. Contractor shall comply with all provisions of the SJVAPCD regulations, as well as Federal and State regulations.

B. The requirements of the Dust Control Plan shall apply continuously through the duration of the Contract.

PART 2 PRODUCTS

2.1 EQUIPMENT

A. Before the work begins, sufficient equipment and resources shall be available on the site to assure that the operation and adequacy of the dust control measures can be continuously maintained.

2.2 DUST CONTROL MEASURES

A. Water shall be available to the contractor for dust control as specified in section 01 50 00 – Temporary Facilities.

B. Dust Suppressants shall be polymer emulsions or hygroscopic suppressants. Petroleum emulsions and bituminous materials will not be allowed.

1. If dust suppressants other than water are utilized, Contractor shall submit SDS, Manufacturer's Usage Instructions, and certification by the manufacturer that the product is safe for ground application.

2. If dust suppressants other than water are utilized, contractor shall notify owner 15 days prior to use for notification to the SJVAPCD.

C. Gravel used for Gravel Pads shall be washed gravel, a minimum of one inch in diameter, and shall be placed a minimum of three inches deep.

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PART 3 EXECUTION

3.1 GENERAL DESCRIPTION

A. Dust control measures shall include, but may not be limited to: Water application, dust suppressant application, physical barriers limiting site access, reduction of vehicle speed on site, utilization of gravel pads, utilization of grizzlies, and wheel washers. If physical barriers are utilized, the Engineer shall approve the location, size, and type. Physical barriers shall be removed upon project completion.

B. Furnish, install, maintain, and operate necessary control measures and other equipment necessary to prevent dust. Temporary measures shall be to Contractor's own design and Contractor shall be solely responsible for risks related to the management of dust control during construction.

3.2 METHODS

A. As described in the DCP and approved by the Engineer.

3.3 MAINTENANCE OF TEMPORARY FACILITIES

A. Inspect dust control facilities daily and as specified in the DCP.

B. Sediment shall be removed from grizzlies, gravel pads, and/or paved surfaces as required by the DCP, or as directed by the Engineer.

C. If areas are seeded, contractor shall examine those areas during or after major storms to check that grass is becoming established.

3.4 DISPOSAL OF SOIL FROM PAVED SURFACES AND DUST CONTROL DEVICES

A. Soil excavated from temporary dust control structures shall be disposed on the site with general fill or with topsoil. Soil shall be allowed to dry out as required before reuse. Any trash shall be removed before reuse.

B. Contractor shall place the sediment removed from traps and other structures where it will not enter immediately reenter the device or paved area.

3.5 REMOVAL OF TEMPORARY DUST CONTROL MEASURES

A. Temporary control measures shall be removed once grading is completed and soils have stabilized.

3.6 RECORD KEEPING

A. Contractor shall keep accurate records as required by the SJVAPCD of dust control methods utilized during the course of construction. The Contractor shall utilize the forms provided by the SJVAPCD, available on the SJVAPCD website.

B. Contractor shall keep a copy of the approved DCP, any approved revisions, and all dust control records at the site.

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C. Contractor shall furnish upon request by the Owner, Engineer, or SJVAPCD Inspector the approved DCP, approved revisions, and dust control records.

D. Contractor shall maintain dust control records for one year after project completion.

3.7 DUST CONTROL

A. The Contractor shall take whatever steps, procedures, or means as are required to limit dust generated by his operations during the Work, including Saturdays, Sundays, and Holidays. Dust shall be controlled to the standards of the local governing agency or, in the absence of local standards, to the satisfaction of the Engineer. Dust control shall extend to any unpaved road which the Contractor or any of his subcontractors are using, to excavation or fill areas, to demolition operations, and to other activities. Control shall be by sprinkling, use of dust palliatives, modification of operations, or any other means acceptable to the local governing agency or, in the absence of same, the Engineer.

B. If the dust control is not adequate in the opinion of the Engineer, this work may be done by others, and the cost shall be deducted from the total payment due the Contractor.

END SECTION

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SECTION 01 57 50

CONSTRUCTION STAKES, LINES, AND GRADES

PART 1 GENERAL

1.1 LINES AND GRADE

A. The Work shall be executed in accordance with the lines and grades indicated in the Contract Documents. Distances and measurements, except elevations and structural dimensions, shall be made on horizontal planes.

1.2 OWNER SURVEY SERVICES

A. Engineer or Engineer's representative will provide project control monuments as shown on the Plans (vertical and horizontal) at the Owner's expense. The Engineer will provide one set of grade control stakes as shown in table below. Additional detail staking layout will be the responsibility of the Contractor. Staking shall be limited to a two trips to the site.

Description	**Interval**
Top outside hinge point of levee embankment (rough & finish grade)	100' (straight) 50' (curves)
Pipelines	100' (straight) 50' (curves)
Structures (rough & finish grade)	Minimum of 4 stakes per structure

B. The Contractor shall be responsible for preserving construction survey stakes, permanent survey monuments and benchmarks for the duration of their usefulness. If any construction survey stakes permanent survey monuments or benchmarks are lost or disturbed and need to be replaced, such replacement shall be made by the Engineer at the expense of the Contractor.

C. The Contractor shall notify the Engineer at least three (3) working days before he will require survey services in connection with laying out of any portion of the Work. The Contractor at his own expense shall dig all holes necessary for line and grade stakes prior to requesting survey services that depend on such digging.

1.3 CONSTRUCTION STAKING

A. The Contractor's Request for Construction Staking form is included in the Project Specification Appendices

B. Engineer or Engineer's representative will provide one set of project control monuments as shown on the Plans (vertical and horizontal) at the Owner's expense.

C. All other construction staking necessary for the work shall be done by Contractor.

END SECTION

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SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 GENERAL

A. It is the intent of these Contract Documents that the Contractor shall deliver a complete and operable facility capable of performing its intended functions and ready for use.

1.2 CLEANING

A. Throughout the period of construction the Contractor shall keep the Work site free and clean of all rubbish and debris, and shall promptly remove from the site, or from property adjacent to the site of the Work, all unused and rejected materials, surplus earth, concrete, plaster, and debris, excepting select material which may be required for refilling or grading.

1.3 FINAL SITE CLEAN-UP

A. Upon completion of the Work, and prior to final acceptance, the Contractor shall remove from the vicinity of the Work all paint, surplus material, and equipment belonging to him or used under his direction during construction.

B. The Contractor shall restore to original condition all property not designated for alteration by these Contract Documents.

1.4 WASTE DISPOSAL

A. The Contractor shall dispose of surplus materials, waste products, demolition materials, and debris. The Contractor shall transport and dispose of waste materials in accordance with applicable laws and regulations.

1.5 PROJECT RECORD DOCUMENTS

A. The Contractor shall maintain at the site, available to the Owner and Engineer, one copy of the Contract Documents, Drawings, Shop Drawings, Change Orders, and other modifications in good order and annotated to show all changes made during construction. These Documents shall be delivered to the Engineer for the Owner upon completion of the Work.

B. Record documents shall be reviewed during progress meetings to ascertain that all changes have been recorded.

C. Store Record Documents separate from documents used for construction.

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1.6 TOUCH-UP AND REPAIR

A. The Contractor shall touch-up or repair finished surfaces on structures, equipment, fixtures, or installations that have been damaged prior to final acceptance. Surfaces on which such touch-up or repair cannot be successfully accomplished shall be completely refinished or in the case of hardware and similar small items, the item shall be replaced. Such items shall include, but not be limited to, the following:

1. Road surfaces

2. Exposed structure surfaces

3. Exposed equipment surfaces

4. Exposed piping surfaces

1.7 EQUIPMENT START-UP

A. After all acceptance tests have been completed by the Contractor and Owner but prior to final acceptance, the Contractor shall recheck all equipment for proper alignment and adjustment, check oil levels, re-lubricate all bearings and wearing points, and in general assure that all equipment is in proper condition for continuous operation.

1.8 FINAL EQUIPMENT CHECK

A. After testing and before acceptance, all equipment shall be test run by the Owner for a minimum of 7 days to ensure proper operation. At the end of the test run each piece of machinery shall be lubricated and all components and couplings checked for proper alignment and adjustment.

B. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

C. Provide submittals to the Owner required by other governing authorities.

1.9 MANUFACTURER'S CERTIFICATES OF PROPER INSTALLATION

1. The Contractor shall submit manufacturers' certificates of proper installation for all items of equipment.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

END SECTION

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SECTION 02 01 20

PROTECTION OF UNDERGROUND FACILITIES AND SURVEY MONUMENTS

PART 1 GENERAL

1.1 UNDERGROUND FACILITIES

A. Shown or Indicated*:* The information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such underground facilities, including Owner, or by others.

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. Reviewing and checking all such information and data,

b. Locating all Underground Facilities shown or indicated in the Contract Documents, including but not limited to Sanitary Sewer Pipelines,

c. Coordination of the Work with the owners of such underground facilities, including Owner, during construction, and

d. The safety and protection of all such underground facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated: If an underground facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated with reasonable accuracy in the Contract Documents, the following shall apply.

1. Contractor shall develop and execute a work-plan, subject to Engineer's approval to protect underground facilities.

2. The Contractor shall expose, prior to staking and trenching, all existing utilities and existing facilities which may control proposed facility grades, and alignment. Two working days notice shall be given to the Engineer prior to commencing this work.

3. Full compensation for all costs involved in locating, verifying, protecting, exposing, and otherwise providing for utilities shall be included in the amounts bid for the various items of work, and no separate payment shall be made therefore.

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1.2 PROTECTION

A. The Contractor shall not interrupt the service function or disturb the supporting base of any Utility by disrupting any facility identified in the Plans and Specifications without authority from the Owner or order from the Engineer. Where protection of such facilities is required to ensure support of utilities, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at the Contractor's expense.

B. The Contractor shall be prepared at all times with labor, equipment and materials to make repair on damaged mains or Utility facilities. The Contractor shall immediately notify the Engineer and the Utility owner if he disturbs, disconnects or damages any Utility. The Contractor shall bear the costs of repair or replacement of any Utility facility described with reasonable accuracy in the Plans and Specifications that is damaged by the Contractor. No extra compensation will be made for the repair of any services or mains damaged by the Contractor, nor for any damage incurred if the neglect or failure of providing protective barriers, lights and other devices or means required to protect such existing utilities or facilities described with reasonable accuracy in the Plans and Specifications.

1.3 SURVEY MARKERS AND PERMANENT REFERENCE POINTS

A. Surveying and Permanent Survey Markers

The Engineer will take measurements to assure the preservation of survey markers (monuments and bench marks). The Contractor shall not disturb permanent survey markers without the consent of Engineer and shall bear the expense of replacing any that may be disturbed without permission.

1. Replacement of survey markers shall be done only by the Engineer.

2. If disturbing of markers cannot be avoided, the Owner shall pay the cost of replacing said markers.

B. Lot Corner Monuments

The Contractor shall preserve property line and corner survey markers except where their destruction is unavoidable and the Contractor is proceeding in accordance with accepted practice. Markers that are lost or disturbed by his operations shall be replaced at the Contractor's expense by the Engineer.

END SECTION

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SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 DESCRIPTION

A. The work of this section consists of demolition of concrete lined irrigation channel, steel pump discharges, concrete pump sump and salvage existing motors, pumps, flow meters, valves, flanges, pipe couplers, and appurtenances.

B. Definitions:

1. Portland Cement Concrete: A mixture of Portland cement, fine aggregate, coarse aggregate, admixtures (if used) and water, proportioned and mixed. Also, included is rebar.

1.2 WORK INCLUDED

A. Repair and restoration of areas damaged due to demolition work.

B. Salvaging equipment and delivering to Owner.

C. Removal of demolished materials from site.

D. Remove existing piping and other existing structures as shown on the Plans to be removed.

E. Properly dispose of all removed materials.

F. Dewatering as needed in order to complete the proposed demolition.

1.3 RELATED WORK

A. Section 01 57 23 – Storm Water Pollution Prevention Plan

B. Section 01 57 27 – Dust Control

C. Section 03 33 00 – Cast In Place Concrete

D. Section 31 11 00 – Clearing and Grubbing

E. Section 31 05 00 – Common Work Results for Earthwork

1.4 SEQUENCING

A. Sequence all work to minimize interference with the construction of the City of Los Banos – Final Kilometer Sewer Trunk Line Replacement Project and ongoing operations of the City and Grassland Water District (GWD). City operations may include, but are not limited to, wastewater treatment plant facilities. GWD operations may include, but are not limited to, delivery of water to agricultural fields and

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wetlands. All City and GWD facilities (Santa Fe Canal and San Luis Canal) shall remain operational throughout the duration of the Project. Prior to that time, work shall be limited to mobilization, selective demolition, and exploratory excavation to the extent that it does not disrupt City or GWD operations.

1.5 REGULATORY REQUIREMENTS

A. Dispose of removed materials in an approved disposal or salvage facility.

1.6 REFERENCES

A. Section 17-2 – Clearing and Grubbing, State Standard Specifications

B. Section 19 – Earthwork, State Standard Specifications

1.7 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Demolition plan including sequence of operations. The plan shall specifically address methods of demolition, schedule, sequence of demolition, and procedures for archeological monitoring. Demolition shall not proceed until the plan has been approved.

1.8 QUALITY ASSURANCE

A. General: Take all necessary precautions with regard to safety in carrying out the demolition and site work. Erect suitable barriers around open excavations and fulfill all appropriate requirements of CAL/OSHA. Comply with safety requirements for demolition, ANSI A10.6-90.

1.9 PROJECT CONDITIONS

A. Underground utilities exist at this site. Contractor shall take all necessary precautions to protect said utilities. Notify Engineer of any deviation in utility location from that which is shown on the drawings.

B. Keep dust to a minimum at removal site and on haul roads. Use sprinklers or water trucks as necessary or as directed by the Engineer.

C. Ensure safety of persons in demolition area. Provide temporary barricades as required.

D. Excavations may encounter groundwater and require dewatering depending on the time of year and amount of seasonal run-off. Loose sands exposed in excavation sidewalls may be unstable and require shoring or lying back in accordance with OSHA requirements. Flowing sands may also be encountered in excavations below groundwater levels.

1.10 CLOSEOUT SUBMITTALS

A. As specified in Section 01 77 00 – Contract Closeout.

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B. Show all capped and abandoned utility terminations and location of remaining facilities on project Record Drawings.

PART 2 PRODUCTS

2.1 REPAIR AND RESTORATION MATERIALS

A. Concrete shall be as specified in Section 03 33 00 – Cast In Place Concrete.

B. Backfill materials shall be as required by Section 19 – Earthwork, State Standard Specifications.

2.2 MATERIALS

A. Salvaged Materials: Materials to be salvaged shall remain the property of the Owner and shall be stockpiled as directed by the Engineer. Contractor shall inventory all salvaged materials. Stockpiled materials shall be free of hazardous substances. Salvage materials include:

1. Motors
2. Pumps
3. Flow Meters
4. Flanges
5. Pipe Couplers

B. Materials and items demolished and not designated for reuse, salvage or transfer to the Owner, as well as all debris, rubbish and other materials resulting from the demolition operations, shall become the property of the Contractor and shall be removed from the site within 48 hours of demolition.

C. Storage or sale of the removed items will not be permitted at the site.

D. As directed by the Engineer, concrete rubble from demolition of existing concrete lined irrigation channel may be used as substitute for rip rap inside the basin as shown and described on the plans. Any additional and usable concrete rubble shall be stockpiled within the Project Site as shown in the Plans. Contractor shall not use concrete rubble within Grasslands Water District Right of Way.

PART 3 EXECUTION

3.1 INSPECTION

A. Prior to demolition, inspect the site conditions, verifying all governing dimensions, notes and specification. Notify the Engineer of any errors or omissions in the contract documents.

B. Make such explorations and probes as are necessary to ascertain any required protection measures before proceeding with the demolition and removal work.

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3.2 PREPARATION

A. Protect existing, appurtenances, structures, which are not to be demolished.

B. Prior to demolition work, all soil erosion control measures specified in Section 01 57 23 – Storm Water Pollution Prevention Plan and inlet protection barriers shall be in place. Contractor shall provide appropriate measures to prohibit demolition debris and/or soil from entering any watercourse.

1. Protect all structures, and utilities to remain.

3.3 DEMOLITION REQUIREMENTS

A. Conduct demolition to protect and minimize damage to structures and existing improvements.

B. Conduct salvaging to protect and minimize damage to salvaged equipment.

C. Execute the work in a careful, orderly and safe manner, with the least possible disturbance to the public. Cease operations immediately if adjacent work appears to be endangered. Do not resume operations until corrective measures have been taken.

D. Concrete and Masonry Structures: Remove structure to a minimum of 3 feet below grade. Break remaining portions to permit drainage. Remove completely if under proposed structures or roadways.

E. Items to be Salvaged: Remove as directed by the Engineer. Remove carefully. All salvaged material remains the property of the Owner. Store where directed by the Engineer.

F. Abandoned Utilities: Remove above ground utilities and terminate as approved by the utility company and the Engineer. Remove necessary portions of underground utilities to within 24 inches of excavation or final grade. Plug abandoned pipes and conduits with concrete plugs. Plugs shall be 6 inches or 2 times the pipe diameter in length, whichever is greater.

1. Water lines shall be capped as close as possible to active mains.

3.4 SALVAGE EQUIPMENT

A. Salvaged equipment shall be delivered to the Owner at a designated site within the City of Los Banos. Salvaged equipment shall be placed on wood or concrete blocks so the equipment will be 4 inches minimum above ground elevation.

1. Motors

2. Pumps

3. Flow Meters

4. Flanges

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5. Pipe Couplers

3.5 ORDER OF WORK

A. Sequence all work to minimize interference with the construction of the City of Los Banos – Final Kilometer Sewer Trunk Line Replacement Project and ongoing operations of the City and Grassland Water District (GWD). City operations may include, but are not limited to, wastewater treatment plant facilities. GWD operations may include, but are not limited to, delivery of water to agricultural fields and wetlands. All City and GWD facilities shall remain operational throughout the duration of the Project. Prior to that time, work shall be limited to mobilization, selective demolition, and exploratory excavation to the extent that it does not disrupt City or GWD operations.

B. The demolition of existing pumps and motors on wells on the Project site shall be the last order of work. Equipment shall remain in place in on-site wells for use by Contractor as a back-up water supply.

3.6 PRESERVATION

A. NOT USED

3.7 RESTORATION

A. All demolition areas, staging/stockpiling, and open excavations shall be filled in accordance with the Earthwork Sections. Fill all open excavations deeper than one foot to an elevation to match the surrounding topography.

1. New Construction Areas: As shown on drawings.

3.8 DISPOSAL

A. As specified in General and Special Provisions.

END SECTION

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SECTION 03 11 00

CONCRETE FORMWORK

PART 1 GENERAL

1.1 WORK INCLUDED

A. Work required under this section consists of furnishing all materials, supplies, equipment, tools, transportation, and facilities, and performing all labor and services incidental to furnishing and installing concrete formwork as described in this section of the Specifications, shown on the accompanying Plans, or reasonably implied therefrom. The work shall include, but is not necessarily limited to:

B. Scope:

1. Design of formwork, shoring and reshoring.

2. Furnishing, erection, and removal of forms.

3. Shoring, bracing, and anchorage of formwork.

4. Openings for other work.

1.2 RELATED SECTIONS

A. Section 03 15 00 – Concrete Accessories

B. Section 03 15 20 – Anchor Bolts & Post-Installed Anchors

C. Section 03 20 00 – Concrete Reinforcing

D. Section 03 30 00 – Cast-In-Place Concrete

E. Section 03 39 00 – Concrete Curing

1.3 REFERENCES

A. Industry Codes and Standards

1. American Concrete Institute (ACI) Manual of Concrete Practice

ACI 117	Standard Tolerances for Concrete Construction and Materials and Commentary
ACI 301	Specifications for Structural Concrete for Buildings
ACI 318	Building Code Requirements for Structural Concrete
ACI 347	Guide to Formwork for Concrete

2. Voluntary Product Standard

a. PS-1 – Construction and Industrial Plywood

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B. Western Wood Products Association (WWPA)

C. American Plywood Association Design and Construction Guide

D. Government Regulations

1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Regulations

a. OSHA 29 CFR Part 1926.701 Safety and Health Regulations for Construction

2. Cal/OSHA Standards, Division of Industrial Safety, Construction Safety Orders, Article 29 Erection and Construction

a. Section 1717 Falsework and Vertical Shoring

E. Air Quality Management District – Local AQMD

F. Where reference is made to one of the above, the revision in effect at the time of bid opening shall apply.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Provide concrete construction joints types and locations indicated. Submit for approval shop drawings showing proposed location and type of required construction for any joints not shown on the Drawings, and sequence of forming and concrete placing operations.

C. Provide formwork, shoring and reshoring calculations for information only.

1.5 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to ACI 318 Section 26.11. Resultant concrete to conform to required shape, line and dimension. Design of formwork is Contractor's responsibility.

B. The formwork shall be designed for the loads and lateral pressures outlined in Chapter 2 of ACI 347R, and lateral forces as specified by the CBC.

C. Above grade forms for elevated slabs and for walls exceeding 4 ft. in height shall be designed by a professional Civil or Structural engineer registered in the State of California.

D. Foundation concrete may be placed directly into neat excavations, provided foundation trench walls are sufficiently stable [subject to approval of DSA]. Otherwise, minimum formwork is mandatory to ensure clean excavations and properly formed surfaces immediately prior to and during placing of concrete.

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1.6 COORDINATION

A. Coordinate this Section with other Sections of work that require attachment of components to formwork.

B. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, Contractor shall adjust reinforcement positioning to accomplish required cover or otherwise request instructions from Architect before proceeding.

1.7 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies. The requirements of California Division of Occupational Safety and Health, Construction Safety Orders Section 1717 and OSHA Part 1926, Section 1926.701 apply to the Work of this Section, and the Contractor shall prepare and maintain at least one (1) copy of the required drawings at the site. Design of the structures shown on the Drawings does not include any allowance or consideration for imposed construction loads. Provide forms, shoring and falsework adequate for imposed live and dead loads, including equipment, height of concrete drop, concrete and foundation pressures, stresses, lateral stability, and other safety factors during construction.

B. Standards and Tolerances. Employ formwork complying with ACI 347 Guide to Formwork for Concrete, except as exceeded by the requirements of regulatory agencies or as otherwise indicated or specified. Design and construct formwork to produce finished concrete conforming to tolerances given in ACI 117

1. Form offset shall meet the requirements of Class C.

PART 2 PRODUCTS

2.1 FORM COATING

A. Form coating compounds shall be biodegradable with a VOC level less than 50 grams/liter. Non-grain raising and non-staining resin or polymer type that will not leave residual matter on surface of concrete or adversely affect bonding to concrete of paint, plaster, mortar, protective coatings, waterproofing or other applied materials. Coatings containing mineral oils, paraffin, waxes, or other non-drying ingredients are not permitted. For concrete surfaces contacting potable stored water, use only coatings and form-release agents that are completely non-toxic.

2.2 LUMBER

A. WWPA Structural Light Framing No. 1 or Structural Joists and Planks No. 1, or equal. Board forms, if used, shall be No. 2 Common or better, T&G or shiplap, S1S2E, or better.

B. Plywood. APA - MDO (Medium Density Overlay) Plyform, Group 1, Exterior, PS-1, for exposed surfaces. APA - BB (No-overlay) Plyform, Class 1, Exterior, PS-1 for unexposed surfaces.

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2.3 METAL FORM TIES

A. Provide commercially manufactured, prefabricated rod, snap-off, or threaded internal disconnecting type of tensile strength to resist all imposed loads. Use only ties that leave no metal within 1½-inch of concrete surfaces after removal. Employ snap-off type ties having integral washer spreaders of diameter to fully close tie holes in forms.

PART 3 EXECUTIONS

3.1 FORM TYPES

A. Smooth Surface Concrete. Use specified plywood or metal forms, as approved, for interior and exterior exposed above-grade concrete and all formed concrete in contact with liquids, waterproofing and protective coatings.

B. General Concrete. Use either plywood or board forms for concealed surfaces, or form as specified for smooth surface concrete.

3.2 SHORING AND FALSE WORK

A. Distribute loads properly over base area on which shoring is erected, either concrete slabs or ground; if on ground, protect against undermining or settlement, particularly against wetting of soils.

B. Alignment. Construct forms to produce in finished structure all lines, grades, and camber, as required.

3.3 FORM CONSTRUCTION

A. Erect formwork, shoring and bracing to achieve design requirements in accordance with requirements of ACI 318 Section 26.11.

B. Build forms to exact shapes, sizes, lines, and dimensions as required to obtain accurate alignment, location and grades, and level and plumb work in finished structures. Provide for openings, offsets, keyways, recesses, moldings, chamfers, blocking, joint screeds, bulkheads, anchorages, and other required features. Make forms easily removable without hammering or prying against concrete. Use approved metal spreaders to provide accurate spreading of forms. Construct forms so that no sagging, leakage, or displacement occurs during and after pouring of concrete.

C. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shoring. Conform to Title 8, Subchapter 4, Construction Safety Orders, CCR.

E. Align joints and make watertight. Keep form joints to a minimum.

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F. Obtain approval before framing openings in structural members that are not indicated on Drawings.

G. Form Joints and Tie Holes. Seal joints between form panels with specified calking compound. Unless form tie spreaders fully seal tie holes in forms, seal around ties with specified materials and prevent leakage of concrete mortar.

H. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

I. Reuse. Clean and recondition form material before each reuse. Fill all holes, cracks and defects. Unsatisfactory material (in the opinion of the Construction Manager) shall be rejected and removed from the site.

J. Provide ¾" inch chamfers at all exposed outside corners in the maximum lengths possible. Use mill run chamfer strips surfaced all sides. Provide rounded top edges of sidewalks, walkways, and where directed.

3.4 ALLOWABLE VARIATIONS FOR FORMED SURFACES

A. Tolerances: Per ACI 117 requirements.

B. Surface irregularities, ACI 347R Class A, gradual or abrupt irregularities of 1/8 inch for exposed to view concrete. Class B, 1/4 inch for plaster cement finish.

3.5 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.6 EMBEDDED PARTS, OPENINGS AND HARDWARE

A. Provide formed openings where required for items to be embedded in or passing through concrete work. No openings or embedded items permitted in structural slabs within 18 inches of columns. Conform to ACI 318 Section 26.11.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate work of other Sections in forming and placing openings, slots, reglets, recesses, chases, sleeves, bolts, anchors and other inserts, whether indicated on the structural drawings or not.

D. Install accessories in accordance with manufacturer's instructions, straight, level and plumb. Ensure items are not disturbed during concrete placement.

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E. Install electrical conduits per the direction of the electrical contractor as not to reduce the strength of the construction. Support embedded pipes and conduits independently from reinforcing steel in a manner to prevent metallic contact and thereby prevent electrolytic deterioration. Place embedded pipes and conduits as nearly as possible to the centerline of the concrete section. Submit all conduit, piping and other wall penetrations, reinforcements and anchor bolt sizing and locations to Owner's review and approval.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

G. Close temporary openings with tight fitting panels, flush with inside face of forms and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.7 FIELD QUALITY

A. Inspection of Forms: Check forms prior to placement of any concrete for grade and alignment.

B. Control during Concrete Placement: Check forms during concrete placement and to promptly seal all mortar leaks and to correct all form movement or misalignment.

3.8 REMOVAL OF FORMS AND SHORING

A. Do not remove forms or shoring until concrete has attained sufficient strength to support its own weight and all imposed construction and permanent loads.

B. Form Removal. Minimum times for removal after concrete placement are as follows:

Beam sides but not shoring	3 days
Column forms and wall forms	2 days
Forms for supported slabs but not shoring	14 days

C. Shoring and Falsework Removal. Do not remove shoring and falsework until 21 days after concrete placement, or until concrete has attained at least 90 percent of the 28 day design compressive strength as demonstrated by control test cylinders, but in no event, not sooner than 14 days.

D. All form materials, during stripping of forms below finish grade, shall be removed and deposed of unless otherwise approved by the Engineer.

E. Restriction. Do not impose construction, equipment, or permanent loads on columns, supported slabs, or supported beams until concrete has attained the 28-day design compressive strength.

F. Concrete Curing During Removals. Refer to Section 03 39 00 of these Specifications.

END SECTION

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SECTION 03 15 00

CONCRETE ACCESSORIES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish all materials, supplies, and performing all labor to furnish and install concrete accessories as described in this section of the Specifications, shown on the Plans. The work shall include, but is not necessarily limited to

1. Polyvinyl chloride waterstop.

2. Hydrophilic waterstop

3. Bentonite strip waterstop

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

2. D570 - Standard Test Method for Water Absorption of Plastics

3. D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

4. D638 - Standard Test Method for Tensile Properties of Plastics

5. D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

6. D747 - Standard Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam

7. D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

8. D2240 - Standard Test Method for Rubber Property—Durometer Hardness

B. U. S. Army Corps of Engineers (USACE):

1. CRD-C-572, Specification for Polyvinyl Chloride Waterstop.

1.3 RELATED WORK

A. Section 03 30 00 – Cast in Place Concrete

B. Section 07 92 00 – Caulking and Sealants

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1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Product Data:

1. Waterstops Material: Sufficient information on each type of material for review to determine conformance of material to requirements specified.

C. Provide material certificates, shop fabrication and placement drawings, and schedule.

D. Samples: Provide samples of each product to be supplied under this section.

E. Manufacturer's Installation Instructions: For all materials specified under this section

F. Quality Control Submittals:

1. Certificates of Compliance:
   a. Written certificates that waterstops material supplied meet or exceed physical property requirements of this section.

1.5 QUALITY ASSURANCE

A. Mock-Ups:

1. 1. Welding Demonstration:

   a. Demonstrate ability to weld acceptable joints in polyvinyl chloride waterstop before installation of waterstop begins.

B. Field Joints:

1. Polyvinyl Chloride Waterstop Field Joints: Shall be free of misalignment, bubbles, inadequate bond, porosity, cracks, offsets and other defects which would reduce the potential resistance of the material to water pressure at any point. Replace defective joints, remove faulty material from the site.

C. Inspections:

1. Quality of welded joints will be subject to acceptance of the Engineer.

2. Polyvinyl Chloride Waterstop: The following defects that represent a partial list that will be grounds for rejection.

   a. Any combination of offset or crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16-inch or 15 percent of the material thickness, at any point, whichever is less.

   b. Misalignment of the joint, which will result in misalignment of the waterstop in excess of 1/2-inch in 10 feet.

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c. Porosity in the welded joint as evidenced by visual inspection.

d. Bubbles or inadequate bonding.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Waterstops:

1. Polyvinyl Chloride Waterstops:

a. One of the following or Engineer approved equivalent:

1) Vinylex Corporation, Kwik-Tie.

2) Greenstreak Plastic Products Company, Inc.

b. Type: Ribbed Waterstop. Unless otherwise specified, joints shall be constructed as follows:

1) Construction Joints: ribbed type, width to be 6 inches unless otherwise specified or shown on the plans, without center bulb.

2) Expansion Joints: ribbed type, width to be 6 inches unless otherwise specified or shown on the plans, with hollow center bulb.

c. Provide polyvinyl chloride waterstops complying with following requirements:

Property	**Test Method**	**Required Limits**
Water absorption	ASTM D570	0.15% max
Tear Resistance	ASTM D624	200 lb/in (35 kN/m) min.
Ultimate Elongation	ASTM D638	350% min.
Tensile Strength	ASTM D638	2000 psi (13.78 Mpa) min.
Low Temperature Brittleness	ASTM D746	No Failure @ -35^{o} F (-37^{o} C)
Stiffness in Flexure	ASTM D747	600 psi (4.13 Mpa) min.
Specific Gravity	ASTM D792	1.45 max.
Hardness, Shore A	ASTM D2240	79 $\pm$3
Tensile Strength after accelerated extraction	CRD-C 572	1850 psi (11.03 Mpa) min.
Elongation after accelerated extraction	CRD-C572	300% min.
Effect of Alkalies after 7 days: Weight Change Hardness Change	CRD-C572	 between -0.10% / +0.25% +/- 5 points

2. Hydrophilic waterstop

a. One of the following or Engineer approved equivalent:

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1) W. R. Grace and Company, Adcor ES

2) Greenstreak Plastic Products Company, Inc., Hydrotite

b. Performance Requirements as follows:

Chloroprene Rubber

Property	Test Method	Required Limits
Tensile Strength	ASTM D412	1300 PSI min.
Ultimate Elongation	ASTM D412	400% min.
Hardness (Shore A)	ASTM D2240	50 +/- 5
Tear Resistance	ASTM D624	100 lb/inch min.

Modified Chloroprene (Hydrophilic) Rubber

Property	Test Method	Required Limits
Tensile Strength	ASTM D412	350 PSI min.
Ultimate Elongation	ASTM D412	600% min.
Hardness (Shore A)	ASTM D2240	52 +/- 5
Tear Resistance	ASTM D624	50 lb/inch
Expansion Ratio	Volumetric Change - Distilled Water @ 70^{o} F	3 to 1 min.

3. Bentonite Strip Waterstop

a. One of the following or Engineer approved equivalent:

1) Cetco, Waterstop, RX.

2) Green Streak, Swell Stop

2.2 ACCESSORIES

A. Adhesives and sealants:

1. Provide as recommended by product supplier.

PART 3 EXECUTION

3.1 INSTALLATION

A. Waterstops - General:

1. Waterstops shall be stored so as to permit free circulation of air around the waterstop material and to prevent direct exposure to sunlight.

2. Install waterstops in concrete joints where indicated on the Drawings.

3. Carry waterstops in walls into lower slabs and join to waterstops in slabs with appropriate types of fittings.

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4. In Water bearing Structures: Provide all joints with waterstops, whether indicated on the Drawings or not.

5. Provide waterstops that are continuous.

6. Set waterstops accurately to position and line as indicated on the Drawings.

7. Hold and securely fix edges in position at intervals of not more than 24-inches so that they do not move during placing of concrete.

8. Position the waterstop so that the center axis of the waterstop shall be coincident with the centerline of the joint, unless detailed otherwise.

9. Do not drive nails, screws, or other fasteners through waterstops in vicinity of construction joints.

10. Secure waterstop against movement at not more than 24-inches on centers.

11. Terminate waterstops 3-inches from top of finish surfaces of walls and slabs unless otherwise specified or indicated on the Drawings.

12. When any waterstop is installed in the concrete on one side of a joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than two days, suitable precautions shall be taken to shade and protect the exposed waterstop from direct rays of sunlight during the entire exposure and until the exposed portion is embedded in concrete.

13. Use specific type in applications as indicated on the Drawings.

14. No scrap or recycled material shall be used.

B. Polyvinyl Chloride Waterstops:

1. Install waterstops so that joints are watertight.

2. Weld joints such as unions, crosses, ells, and tees, with thermostatically controlled equipment recommended by waterstop manufacturer.

   a. The material shall not be damaged by heat sealing.

   b. Make joints by overlapping then simultaneously cut the ends of the sections to be spliced so they will form a smooth even joint.

   c. The continuity of the waterstop ribs and tubular center axis shall be maintained.

   d. The splices shall have a tensile strength of not less than 60 percent of the unspliced materials tensile strength.

3. Butt joints of the ends of two identical waterstop sections may be made while the material is in the forms.

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4. All joints with waterstops involving more than two ends to be joined together, and all joints that involve an angle cut, alignment change, or the joining of two dissimilar waterstop sections shall be prefabricated prior to placement in the forms, providing not less than 24-inch long strips of waterstop material beyond the joint.

5. Vertical crosses and tees shall be prefabricated by the manufacturer. Horizontal crosses or tees may be field or factory welded.

6. Split type waterstop will not be permitted except where specifically indicated on the Plans.

C. Hydrophillic Waterstops

1. Apply adhesive recommended by the manufacturer for the given application.

2. Cut coil ends square or at proper angle for mitered corners with a sharp blade to fit splices together without overlaps.

3. Splices and exposed cells shall be sealed using adhesives recommended by the manufacturer.

4. Provide minimum concrete cover per manufacturer's recommendations and in no instance less than 2 inches.

5. Surfaces shall be even, smooth, clean and dry.

6. Do not use when the head exceeds 150 feet.

D. Bentonite Waterstops

1. Apply adhesive recommended by the manufacturer for the given application.

2. Maintain the minimum clear cover recommended by the manufacturer but in no instance less than 2 inches.

3. Butt splice by pressing ends together to ensure no separation or air pockets. Do not overlap the ends of the waterstops.

4. Remove release paper immediately prior to the second concrete pour.

5. Replace waterstop showing signs of premature swelling, discontinuity or debris contamination.

E. Joints:

1. Install construction joints as indicated on the Plans.

END SECTION

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SECTION 03 15 20

ANCHOR BOLTS AND POST-INSTALLED ANCHORS

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of furnishing and installing all materials and equipment and providing all labor necessary to complete the work shown on the drawings and/or listed below and all other work and miscellaneous items not specifically mentioned but reasonably inferred for a complete installation, including all accessories and appurtenances required for a completed system.

B. Cast-in-Place anchor bolts, anchor bolts and threaded rod anchors for epoxy grouting.

C. Expansion anchors to be installed in hardened concrete.

1.2 RELATED WORK

A. Section 03 30 00 – Cast-in-Place Concrete

B. Section 03 60 00 - Grout

C. Section 05 50 00 – Fabricated Metal

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit anchor bolt layout plans, including type, size and manufacture.

1.4 GENERAL

A. Unless otherwise specified or indicated on the drawings, all anchor bolts shall be cast-in-place bolts, shall have a diameter of at least 3/4 inch, and shall be headed and shall include a square washer a minimum of 1/4 inch thick and 2 inches square.

B. Expansion anchors and threaded rod anchors indicated or accepted in lieu of cast-in-place anchor bolts for equipment or structural framing shall have a diameter of at least 3/4 inch and shall be ICC Evaluation Service Report listed.

1. Unless otherwise specified or indicated on the drawings, or approved by the Engineer, all other expansion anchors shall have a diameter of at least 1/2 inch.

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1.5 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

PART 2 MATERIALS

2.1 MATERIALS

A. Nuts and washers for anchor bolts and expansion anchors shall be the same material as the bolts or anchors they are used with.

Application	Reference
A. Anchor Bolts and Nuts	
1. Carbon Steel	ASTM A307
2. Stainless Steel	IFI-104, Grade 304 or 316
3. Galvanized Steel	Carbon steel bolts and nuts; hot-dip galvanized, ASTM A153 and A385.
B. Threaded Rod Anchors and Nuts	
1. Carbon Steel	ASTM F1554, Grade 55 with ASTM A563 nuts
2. Stainless Steel	ASTM 593 with ASTM F594 nuts
3. Galvanized Steel	Carbon steel bolts and nuts; hot-dip galvanized, ASTM A153 and A385
C. Flat Washers	ANSI B18.22.1; of the same material as anchor bolts and nuts.
D. Expansion Anchors	
1. For Concrete	Fed Spec FF-S-325; wedge type, Group II, Type 4, Class 1 or 2; self-drilling type, Group III, Type 1; or nondrilling type, Group VIII, Type 1 or 2; Hilti Kwik Bolt TZ2 ICC ESR-4266, Simpson Strong-Bolt 2 ICC ESR 3037, or ICC approved equivalent.
E. Adhesive Anchors	Hilti HIT RE-500 V3 ICC ESR 3814, ITW Red Head A7+ICC ESR 3903 or ICC approved equivalent.

A. Anchor bolts, threaded rod anchors, expansion bolts and adhesive anchors for buried service, splash zones, and immersion service shall be stainless steel. Anchor bolts, threaded rods and adhesive anchors for exterior use shall be hot dipped galvanized. Zinc coated expansion anchors shall not be used for buried, splash zone, immersion or exterior service.

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PART 3 EXECUTION

3.1 ANCHOR BOLTS

A. Anchor bolts shall be delivered in time to permit setting before the structural concrete is placed. Anchor bolts which are cast in place in concrete shall be provided with sufficient threads to permit a nut to be installed on the concrete side of the concrete form or supporting template.

B. Anchor bolts and threaded rod anchors which are to be epoxy grouted shall be clean and free of coatings that would weaken the bond with epoxy.

C. Two nuts, a jam nut, and a washer shall be furnished for anchor bolts and threaded rod anchors indicated on the drawings to have locknuts; two nuts and a washer shall be furnished for all other anchor bolts.

D. Anti-seize thread lubricant shall be liberally applied to projecting, threaded portions of stainless steel anchor bolts and threaded rod anchors immediately before final installation and tightening of the nuts.

3.2 EXPANSION ANCHORS

A. Expansion anchors shall be installed in conformity with the manufacturer's instructions and ICC Evaluation Service Report recommendations for maximum holding power, but in no case shall the depth of hold be less than four (4) bolt-hole diameters. The minimum distance between the center of any expansion anchor and an edge or exterior corner of concrete shall be at least four and one half (4-1/2) times the diameter of the hole in which the anchor is installed. Unless otherwise indicated on the Plans, the minimum distance between the centers of the expansion anchors shall be at least eight (8) times the diameter of the hole in which the anchors are installed.

B. Anti-seize thread lubricant shall be liberally applied to threaded stainless steel components immediately before assembly.

3.3 ADHESIVE ANCHORS

A. Adhesive anchors shall be installed in conformity with the manufacturer's instructions and ICC Evaluation Service Report recommendations. Anchors must be installed in holes drilled using carbide-tipped drill bits or diamond core drill bits. Should diamond core drill bits be used, the manufacturer’s roughening tool must be used in conjunction with the bit.

END SECTION

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SECTION 03 20 00

CONCRETE REINFORCING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Work required under this section consists of furnishing all materials, supplies, equipment, tools, transportation, and facilities, and performing all labor and services incidental to furnishing and installing concrete reinforcing work as described in this section of the Specifications, shown on the accompanying Plans, or reasonably implied therefrom, except as hereinafter specifically excluded. The work shall include, but is not necessarily limited to:

1. Provide reinforcing work, complete as indicated, specified and required.

2. Furnishing and placing bar and wire reinforcement for cast-in-place concrete.

1.2 RELATED WORK

A. Section 03 11 00 – Concrete Formwork

B. Section 03 30 00 – Cast-In-Place Concrete

1.3 REFERENCES

A. Industry Codes and Standards

1. American Society for Testing and Materials (ASTM)

a. A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

b. A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

c. ASTM A706 - Specification for Deformed and Plain Low-Alloy Steel Deformed Bars for Concrete Reinforcement.

2. California Building Code (CBC)

3. Concrete Reinforcing Steel Institute (CRSI)

a. Manual of Standard Practice (CRSI Manual)

4. American Concrete Institute (ACI)

a. ACI 301 Specification for Structural Concrete

b. ACI 315 - Details and Detailing of Concrete Reinforcing.

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c. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Provide material certificates, shop fabrication and placement drawings, and schedule for all reinforcing steel, imbedded items, form release and curing compounds.

1. Shop Drawings. Submit shop drawings for reinforcing steel prepared in accordance with ACI Details and Detailing Reinforcing. Show layouts, bending diagrams, assembly diagrams, dimensioned types and locations of all bar laps and splices, and shapes, dimensions, and details of bar reinforcing and accessories. Include layout plans for bar supports and chairs, with typical details. Dimensions and quantities shown on the shop drawings are the responsibility of the Contractor and Owner's approval of shop drawings shall not constitute approval of dimensions and quantities thereon.

1.5 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

1.6 QUALITY ASSURANCE

A. Code Requirements: Unless otherwise specified all work specified herein and as shown on the drawings shall conform to the applicable requirements of the California Building Code (CBC), and the State Standard Specifications.

B. Standard**:** Reinforcing steel installations shall conform to the current specification requirements of the Concrete Reinforcing Steel Institute "Manual of Standard Practice" (herein referred to as the CRSI Manual) except as otherwise indicated or specified.

C. Shop Quality Control:

1. Provide Testing Laboratory with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

D. Field Quality Control: All continuous inspections shall be performed by "Special Inspectors" qualified and approved by Governing Building Code Authority or inspector as otherwise qualified and approved by the Owner. Reports as required by Code shall be prepared and submitted to Owner, Building Department, Design Professional in Responsible Charge and Contractor.

1. Inspection of Reinforcing. Provide 48-hour advance notice to permit inspection of in-place reinforcement prior to closing forms, and refer to applicable requirements of Section 03 30 00 of these Specifications.

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2. Concreting Operations. During concrete placing, assign construction personnel to inspect reinforcement and maintain bars in correct positions at each pour location.

E. COORDINATION

1. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCING

A. Deformed bars conforming to ASTM A615, Type “S”, in the grades as follows, and conforming to ACI 318 Chapter 20 and Section 26.6.

1. For No.4 and larger bars, use 60 ksi yield grade.

2. For ties and stirrups, and No. 3 and smaller bars, use 40 or 60 ksi yield grade.

2.2 WELDED WIRE REINFORCEMENT

A. Conform to ASTM A1064 in flat sheets, uncoated finish. 6 x 6 - W4.0 x W4.0 unless otherwise noted on drawings.

2.3 TIE WIRE

A. Annealed steel, 16-gage minimum.

2.4 REINFORCING SUPPORT

A. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

B. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type; size and shape as required.

C. Concrete Blocks: Approximately 3 inches dimension each side.

2.5 COUPLER SPLICE DEVICES

A. Reinforcing bar coupler/splice devices which bear current ICC Evaluation Report Number, and which develop at least 125 percent of bar yield strength in tension may be used with Owner’s approval in lieu of lapped bar-type splices. Submit for Owner’s approval in each instance.

2.6 DOWELS

A. Where and as designated on Drawings, provide reinforcing bar dowels in new work and for anchorage to existing concrete. For anchorage where shown or required to existing construction, use non-shrink epoxy type grout or deferred bolting devices

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as approved in each instance and conforming to “Product” Article requirements of this Specification.

2.7 FABRICATION AND DELIVERY

A. Conform to CRSI Manual Chapters 6 and 7 except as otherwise indicated or specified and ACI 315 and 318. Bundle reinforcement and tag with suitable identification to facilitate sorting and placing, and transport and store at site so as not to damage material. Keep a sufficient supply of tested, approved, and proper reinforcement at site to avoid delays.

B. Bending and Forming. Fabricate bars of indicated size and accurately form to shapes and lengths indicated and required by methods not injurious to materials. Do not heat reinforcement for bending. Bars with kinks or bends not scheduled will be rejected. Rebending of bars in prohibited.

PART 3 EXECUTION

3.1 PLACING

A. General: Comply with CBC and CRSI's "Manual of Standard Practice" for placing reinforcement, except no reduction of concrete cover is allowable for bars at concrete surfaces exposed in liquid or water-containing structures.

B. Cleaning. Before placing reinforcing, and again before concrete is placed, clean reinforcement of loose mill scale, oil, or other coating that might destroy or reduce bond. Do not allow form coatings, release agents, bond breaker, or curing compound to contact reinforcement.

C. Concrete coverage over reinforcing bars shall be in accordance with ACI 318 Section 20.5.1.3 unless otherwise shown on the Drawings. Measure the coverage to the outer edge of ties, stirrups, bar spacers, hangers, and like items, and detail and fabricate the reinforcing accordingly.

1. Where fire protective cover is specified exceeding the ACI and structural drawing specification, the fire protective cover shall apply.

D. Do not displace or damage vapor barrier where vapor barrier is specified or indicated on drawings. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

E. Accommodate placement of formed openings.

F. Securing in Place. Accurately place reinforcement and securely wire tie in precise position at all points where bars cross. Tie stirrups to bars at both top and bottom. Bend ends of binding wires inward, allowing no encroachment on the concrete cover; exercise special care at surfaces to remain exposed and unpainted. Support bars in accordance with CRSI Manual Chapter 3, Specifications for Placing Bar Supports, using approved chairs and supports.

G. Splices. Provide wired contact lap splices unless otherwise indicated or approved. Provide lap lengths as indicated on the Drawings.

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1. Tie reinforcement splices and intersections per CBC and CRSI, Chapter 10-General Principles for Placing, Splicing and Tying Reinforcing Bars, unless otherwise shown on the Drawings.

H. Welding. Welding of reinforcing bars may be permitted on case-by-case basis. All welding of reinforcing bars will be approved by the Engineer.

I. Additional Reinforcing. Provide additional reinforcing bars at sleeves and openings as indicated on the Drawings.

J. Welded Wire Reinforcement. Install necessary supports and chairs to hold in place during concrete pours. Straighten reinforcement to lay in flat plane and bend reinforcement as shown or required to fit work. Provide laps of no less than one complete mesh unless otherwise detailed. Tie every other wire at laps. Welded wire reinforcement rolls are not acceptable.

K. During placing of structural concrete slabs, provide a full-time reinforcing steel placer to repair and replace reinforcing to its proper location. Provide additional chairs of the proper size available to place under bars displaced during the concrete pouring operation.

END SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 WORK INCLUDED

A. Work required under this section consists of furnishing all materials, supplies, equipment, tools, transportation, and facilities, and performing all labor and services incidental to furnishing and installing concrete work as described in this section of the Specifications, shown on the accompanying Plans, or reasonably implied therefrom, except as hereinafter specifically excluded. The work shall include, but is not necessarily limited to:

1. All concrete placement and finishing.

2. Installation of all reglets, bolts, anchors, sleeves, etc., whether furnished under this section or by others.

3. The furnishing of all items required to be or shown on the Plans as embedded in concrete, which are not specifically required under other sections.

4. Setting headers and screeds for finishing and protecting concrete.

B. Where prior inspection and test of materials are required, documentary evidence, in the form of test reports, shall be furnished prior to the time the material is incorporated into the work. All rejected material shall be promptly removed from the premises.

1.2 RELATED WORK

A. DIVISION 03 – CONCRETE

B. Section 05 50 00 – Fabricated Metal

C. Section 07 92 00 – Caulking and Sealants

D. Section 09 90 00 – Painting

1.3 REFERENCES

A. American Concrete Institute (ACI)

B. American Society for Testing and Materials (ASTM)

C. State Standard Specifications

D. California Building Code (CBC)

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1.4 DEFECTIVE WORK

A. Work considered to be defective may be ordered, by the Engineer, to be replaced in which case the Contractor shall remove and replace the defective work at his expense. Work considered to be defective shall include, but not be limited to, the following:

1. Concrete incorrectly formed, or not conforming to details and dimensions on the Plans or with the intent of these documents or concrete the surfaces of which are out of plumb or level.

2. Concrete in which defective or inadequate reinforcing steel has been placed.

3. Concrete containing wood, cloth, or other foreign matter, rock pockets, voids, honeycombs, cracks or cold joints not scheduled or indicated on the Plans.

4. Concrete below specified strength.

1.5 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Provide material certificates, mix designs including laboratory tests, shop fabrication and placement drawings, and schedule for all reinforcing steel, embedded items, form release and curing compounds.

C. The Contractor shall provide a proposed concrete placement plan (to minimize the effects of cracking and differential settlement) to the Engineer, and gain approval of said plan, prior to ordering of reinforcing steel. As a minimum this plan shall contain the layout of horizontal and vertical construction joints, spaced no greater than 30 feet apart (unless specifically approved otherwise by the Engineer), and a pour schedule for the individual slab and wall pours. All construction joints shall be sized in conformance with the Typical Longitudinal Keys Detail and shall contain water stops as shown on the Construction Joint with Waterstop Detail.

PART 2 PRODUCTS

2.1 CONCRETE

A. Concrete shall conform to Section 90 of the State Standard Specifications. Portland cement shall be Type II/V or Type V. Unless otherwise shown on the concrete note sheet or specified in other sections, all concrete shall conform to the following table:

Location	28-day Compressive Strength (psi)	Type of Cement	Minimum Cement + Flyash Content	Maximum W/C	Slump	Air Content
Structural Concrete	4,000	II/V	611	0.50	4 inches +/- 1 inch	4% +/- 1%

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Thrust Blocks	4,000	II/V	611	0.50	4 inches +/- 1 inch	4% +/- 1%

B. Slurry cement backfill used in lieu of compacted soil shall contain not less than 188-pounds of Type II Portland Cement per cubic yard of concrete (2 sack) and shall comply with Section 19 of the State Standard Specifications.

C. Concrete mixtures shall conform to the minimum requirements of the following exposure classes in accordance with ACI 318-19 section 19.3:

1. Thrust blocks, foundations and other concrete exposed to soil – F0, S1, W1, C1

2. Concrete exposed to raw sewage – F0, S1, W2, C1

D. Manufacture and Delivery: Measurement of materials, batching, mixing, transporting, and delivery shall be as specified in ASTM C94. Discharge concrete into forms within 1-1/2 hours after introduction of water to cement. When temperature of concrete is 85 degrees F or above, the time between introduction of water to cement and complete discharge of concrete into forms shall not exceed 45 minutes.

2.2 AGGREGATE

A. Aggregate for normal weight concrete shall conform to Section 90-1.02C, “Aggregates” of the State Standard Specifications. Aggregates shall be free of dirt, clay balls, roots, bark and other deleterious substances and shall be thoroughly washed before use.

B. The combined aggregates for concrete shall conform to the grading limits for the one-inch, maximum size specified in Section 90-1.02C(4)(d), “Aggregate Gradation” of the State Standard Specifications, Combined Aggregate Gradings.

2.3 WATER

A. Water shall be clean and free from injurious amounts of acids, alkalis, salts, oils, organic materials or other deleterious substances.

2.4 FLYASH

A. Fly Ash: ASTM C618, Class F

1. Type of fly ash shall be compatible with the type of cement and the intended use of the concrete.

B. The weight of fly ash conforming to ASTM C618 shall be 15 percent of the total cementitious material.

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2.5 ADMIXTURES

A. Air Entraining: ASTM C260

B. Water Reducing: ASTM C494, Type A or D

C. Accelerating: ASTM C494, Type C or E

1. No admixture containing any chloride ions is acceptable.

D. Retarding: ASTM C494, Type B or D

PART 3 EXECUTION

3.1 REINFORCING STEEL

A. Reinforcing shall comply with Section 03 20 00 – Concrete Reinforcement.

3.2 FORMS

A. Formwork shall conform with Section 03 11 00 Concrete Formwork.

3.3 PLACING

A. All concrete shall be placed before it has taken its initial set and shall be placed in horizontal layers and in such a manner as to avoid segregation. The concrete adjacent to the forms and joints shall be thoroughly consolidated per ACI 309.

1. Pumping equipment shall be of suitable type, without Y-sections, and with adequate pumping capacity.

2. Loss of slump in pumping shall not exceed $1^1/_2$ ".

3. Concrete shall not be placed through reinforcing that may cause separation of aggregates.

B. The concrete shall be deposited as nearly as possible in its final position. Drop chutes and elephant trunks shall be used on drops greater than 5 feet. Concrete shall be placed at such a rate that all concrete in the same lift will be deposited on plastic concrete. The concrete comprising each unit of work shall be placed in a continuous lift.

C. The Contractor shall notify the Engineer 24 hours (1 working day) prior to concrete placement.

1. The form work and reinforcing steel placement shall be approved by the Engineer prior to ordering concrete.

D. Form Removal. Minimum times for removal after concrete placement shall conform to 03 11 00 Concrete Formwork.

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E. Construction Joints

1. At ends of the first concrete pour, provide forms that positively locate any waterstop. Ensure the end forms of walls are removable without releasing the side forms. Provide seals around reinforcement and water stop to prevent mortar leaks.

2. Overlap the hardened concrete of the first pour with forms for the second pour. Brace the ends of the forms against the hardened concrete to prevent joint offsets and mortar leakage. Align any exterior features required on the finished surface.

3.4 CONCRETE JOINTS

A. General

1. Provide joints:

a. As shown on the Drawings and as noted below in these Specifications.

b. As required for constructability, if approved by the Engineer.

c. After favorable review of layout, sequence and concrete placement program.

2. Provide minimum curing times before the second placement:

a. 2 days after the first concrete placement at the joint.

b. 10 days after each adjacent concrete placement, for infill pours or checkerboard placement pattern.

B. Control Joints:

1. Space typical control joints in slabs on grade or suspended slabs not exceeding 10 feet, or as shown on the Drawings. Control joints shall not be provided in water containment structures.

2. If cast-in with the concrete, positively locate the preformed joint filler and hold rigidly in place during concreting.

3. If saw-cut, use a wheeled power saw as soon as the concrete surface is firm enough. Saw-cut control joints must be constructed within 8-hours after concrete placement. Fill the groove with sealant over a backer rod.

C. Construction Joints:

1. Produce quality concrete, with full continuity of reinforcing and water tightness across the joints.

2. Space typical slab joints not exceeding 30 feet in the direction of the transverse or secondary reinforcing, typically the smaller reinforcing nearer to the center

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of the slab thickness. Space typical vertical wall joints no more than 30 feet apart.

3. Provide all joints in walls and slabs, retaining liquids, or earth with 6-inch waterstops. Continue all reinforcing through the joint unless otherwise noted.

4. After the first concrete placement at the joint, do not walk on or disturb any reinforcing extending into the second placement area for at least 48 hours.

5. Before depositing new concrete on or against concrete that has hardened, clean and roughen the entire surface of the joint exposing clean coarse aggregate solidly embedded in mortar matrix. Provide typically 1/4-inch roughness or amplitude of the concrete surface measured from the top of the exposed aggregate to the bottom of pockets between stones.

6. Drench the prepared joint with clean water and remove prior to the concrete pour.

7. Use special care in vibrating adjacent to construction joints to ensure thorough consolidation of the concrete around the waterstops and against the hardened portion of the joint. Additional hand tamping may be required.

8. For joints that are shown on architectural drawings as having a continuous reveal or recess, leave the wood form or pour strip used to create the reveal or recess in place or re-insert before roughening. Prevent the next concrete placement from filling the reveal or recess.

D. Bonding to Pre-existing Concrete: Mechanically roughen the old surface to a 1/4-inch amplitude, as defined in construction joint paragraph above. Apply epoxy bonding material prior to concreting, as recommended by the manufacturer.

E. Waterstop

1. Restrict field splices to butt joints in straight runs. For PVC type, make by heat welding, using a splicing iron. For rubber, provide sleeve joints and glue. Follow the manufacturer's specifications.

2. Positively locate and support in the forms so that concrete may be placed, consolidated, and vibrated on both sides of the embedded portion without displacement of the waterstop and without causing voids in the concrete. Protect the outstanding portion from damage during the first concrete pour and clean and positively support prior to the second pour. Place, consolidate and vibrate the second pour without displacement of the waterstop and without causing voids in the concrete.

3.5 CONCRETE CURING

A. Exposed concrete surfaces shall be protected from premature drying in accordance with Section 03 39 00 Concrete Curing.

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3.6 FINISHING

A. Defective and honeycombed surfaces shall be chipped back to such a depth to expose solid concrete. The surface shall be dampened and coated with a bonding agent and packed with non-shrink mortar.

B. Concrete Finishes for Vertical Wall Surfaces:

1. Form facing material shall produce a smooth, hard, uniform texture.

a. Use forms specified for surfaces exposed to view in accordance with the Plans and other Specification Sections.

2. At a minimum, repair the following surface defects:

a. Tie holes

b. Honeycombs deeper than ¼”

c. Air pockets deeper than ¼”

d. Rock holes deeper than ¼”

e. Scabbing

3. Chip or rub off fins exceeding 1/8” in height.

4. Provide SF/ESF-3.0 finish and a smooth-rubbed finish for:

a. Walls being waterproofed, painted, coated with some other material.

b. Use at all exposed surfaces not specified to receive another finish.

C. Related Uniform Surfaces (Except Slabs):

1. Strike smooth tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces after concrete is placed.

2. Float surface to a texture consistent with that of formed surfaces.

3. Continue treatment uniformly across unformed surfaces.

D. Concrete Finishes for Horizontal Slab Surfaces:

1. General: Tamp concrete to force coarse aggregate down from surface. Screed with straightedge, eliminate high and low places, bring surface to required finish elevations; slope uniformly to drains. Dusting of surface with dry cement or sand during finishing processes not permitted.

2. Slab Finish shall be as follows:

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a. Surfaces intended to receive damp proofing or water proofing membranes: Float finish.

b. Floors intended to receive floor coverings and interior rooms: Trowel finish.

c. Sidewalks, garage floors, drive-throughs and ramps: Broom finish.

d. Exterior slabs, platforms, steps and landings, exterior and interior pedestrian ramps and interior stairs and all process equipment areas, not covered by other finish materials: Broom finish.

3. Tolerance for finished surface shall not exceed SO F_F=35, SO F_L = 25.

4. No tolerance will be allowed that will result in the maximum running, or cross, slope exceeding the requirements of the Americans with Disabilities Act.

3.7 TESTING

A. Testing of concrete shall be as required by the Engineer and in accordance with ACI 301, Chapter 1.7.

1. All costs of initial testing will be paid by the Owner unless otherwise noted.

2. All costs involved, including those required by the Engineer, in retesting of concrete required because of a failure to meet these Specifications shall be at the expense of the Contractor.

3.8 WATERTIGHTNESS OF CONCRETE WORK

A. It is the intent of this Specification to obtain concrete and grout with homogenous structure, which when hardened will have the required strength, is watertight, and resistance to weathering.

END SECTION

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SECTION 03 39 00

CONCRETE CURING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Work required under this section consists of furnishing all materials, supplies, equipment, tools, transportation, and facilities, and performing all labor and services incidental to concrete curing.

1.2 RELATED WORK

A. Division 3 – Concrete

1.3 REFERENCES

A. State Standard Specifications, latest edition with amendments.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

PART 2 PRODUCTS

2.1 METHODS OF CURING

A. Newly placed concrete shall be cured by the methods specified in Section 90-1.03B of the State Standard Specifications (SSS).

1. 90-1.03B(2), Water Method
2. 90-1.03B(3), Curing Compound Method
3. 90-1.03B(4), Waterproof Membrane Method
4. 90-1.03B(5), Forms-In-Place Method

PART 3 EXECUTION

3.1 CURING

A. Exposed concrete surfaces shall be protected from premature drying by covering as soon as possible with canvas, plastic sheets with sealed joints, burlap, sand or other satisfactory materials and kept continuously moist; or, if the surfaces are not covered, they shall be kept continuously moist by flushing or sprinkling. Curing shall continue for a period of not less than 7 days after placing the concrete.

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B. If curing compound is used, it must be nontoxic and taste and odor free, and provide a paintable concrete surface. Curing compound shall include a dye and two (2) applications shall be made to insure coverage. Curing materials and methods require approval by the Engineer prior to use.

3.2 CURING PAVEMENT

A. The entire exposed area of the pavement, including edges, shall be cured by the waterproof membrane method, or curing compound method using curing compound (1) or (2) as the Contractor may elect. Should the side forms be removed before the expiration of 72 hours following the start of curing, the exposed pavement edges shall also be cured. If the pavement is cured by means of the curing compound method, the saw-cut and all portions of the curing compound that have been disturbed by sawing operations shall be restored by spraying with additional curing compound.

B. Curing shall commence as soon as the finishing process provided in Section 40-1.H(3), "Final Finishing," has been completed. The method selected shall conform to the provisions in SSS Section 90-1.03B, " Curing Concrete."

C. When the curing compound method is used, the compound shall be applied to the entire pavement surface by mechanical sprayers. Spraying equipment shall be of the fully atomizing type equipped with a tank agitator that provides for continual agitation of the curing compound during the time of application. The spray shall be adequately protected against wind, and the nozzles shall be so oriented or moved mechanically transversely as to result in the minimum specified rate of coverage being applied uniformly on exposed faces. Hand spraying of small and irregular areas, and areas inaccessible to mechanical spraying equipment, in the opinion of the Engineer, will be permitted. When the ambient air temperature is above 60°F (15°C), the Contractor shall fog the surface of the concrete with a fine spray of water as specified in SSS Section 90-1.03B(2), "Water Method." The surface of the pavement shall be kept moist between the hours of 10:00 a.m. and 4:30 p.m. on the day the concrete is placed. However, the fogging done after the curing compound has been applied shall not begin until the compound has set sufficiently to prevent displacement. Fogging shall be discontinued if ordered in writing by the Engineer.

3.3 CURING STRUCTURES

A. Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in SSS Section 90-1.03B, "Curing Concrete."

B. The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only Ordinary Surface Finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1), pigmented, Type 2, Class B.

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C. The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1), pigmented, Type 2, Class B.

D. Concrete surfaces of minor structures, as defined in SSS Section 51-7, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.

E. When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in SSS Section 00 63 44 – Changes to the Work.

3.4 CURING MISCELLANEOUS CONCRETE WORK

A. Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in SSS Section 90-1.03B(3), "Curing Compound Method."

B. Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in SSS Section 90-1.03B, "Curing Concrete."

C. Shotcrete shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in SSS Section 90-1.03B, "Curing Concrete."

D. Mortar and grout shall be cured by keeping the surface damp for 3 days.

E. After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in SSS Section 90-1.03B, "Curing Concrete."

END SECTION

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SECTION 03 60 00

GROUT

PART 1 GENERAL

1.1 WORK INCLUDED

A. Epoxy grouting of anchor bolts and reinforcing bars to be installed in hardened concrete.

B. Adhesive bonding of fresh concrete to existing hardened concrete surfaces.

C. Installation of pipe and sleeve into existing concrete.

D. Structure and Equipment leveling pads.

1.2 RELATED WORK

A. Section 03 15 20 - Anchor Bolts and Expansion Anchors

B. Section 03 30 00 - Cast-in-Place Concrete

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

PART 2 PRODUCTS

Material Type	Approved Product
1. Non-shrinking Grout	L&M Chemical "Crystex", Gifford-Hill "Supreme", Master Builders "Masterflow 713 Grout" Sauereisen Cements "F-100 Level Fill Grout", U.S. Grout "Five Star Grout", UPCO "Upcon High Flow" or "Upcon Super Flow", or equal.
2. Epoxy Grout	
a. Adhesive, Moisture insensitive	
For floors and horizontal surfaces	Adhesive Engineering "Concresive 1539", Rescon "Concrete Bonder R616", or equal
For vertical walls or overhead applications, non-sagging consistency	Adhesive engineering "Concressive 1440" Rescon "Concrete Bonder R616" or equal
b. Aggregate	As recommended by the epoxy grout manufacturer
3. Epoxy Bonding Adhesive	Sikadur 32, Hi-Mod Master Builders Concresive Standard Liquid or equal.
4. Water	Clean and free from deleterious substances.

A. Non-shrinking grout shall be furnished factory premixed, so only water is added at jobsite. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout.

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1. Cured grout shall have a minimum compressive strength of 3500 psi.

B. Epoxy grout shall consist of a two component liquid epoxy adhesive of appropriate viscosity for the application and location and an inert aggregate filler component. Components shall be packaged separately at the factory and field mixed. All proportioning and mixing of the components shall be in accordance with the manufacturer's recommendations.

1. Cured grout shall have a minimum compressive strength of 3500 psi.

PART 3 EXECUTION

3.1 PREPARATION

A. The concrete surface to receive non-shrinking grout shall be saturated with water for 24 hours prior to grouting.

B. Where indicated on the drawings, dowels shall be epoxy grouted in holes drilled into hardened concrete. Hole diameter shall be as recommended by the manufacturer. The embedment depth for epoxy grouted dowels shall be as indicated on the Plans.

C. Holes shall be prepared for grouting as recommended by the grout manufacturer.

D. The existing concrete surface to receive fresh concrete shall be clean and sound. The existing surface may be dry or damp, but free of standing water, free of dust, laitance, grease, airing compounds, and disintegrated materials. The existing concrete surface and rebar shall be sand blasted or cleaned by approved mechanical methods.

3.2 INSTALLATION

A. Non-shrinking Grout

1. Placement - Unless otherwise specified or indicated on the Plans, the thickness of grout shall be 1-1/2 inches. Grout shall be placed in strict accordance with the directions of the manufacturer.

2. Edge Finishing - The grout shall be finished smooth in all locations where the edge of the grout will be exposed to view after it has reached its initial set. Except where indicated to be finished on a slope, the edges of grout shall be cut off flush at the base plate, bedplate, member, or piece of equipment.

3. Curing – Non-shrinking grout shall be protected against rapid loss of moisture by covering with wet rags or polyethylene sheets. After edge finishing is complete, the grout shall be wet cured for at least 7 days.

4. Epoxy Grout - Dowels shall be clean, dry, and free of grease and other foreign matter at time of installation. The bars shall be set and positioned and the epoxy grout shall be placed and finished in accordance with the recommendations of the grout manufacturer. Particular care shall be taken

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to ensure that all spaces and cavities are filled with epoxy grout, without voids.

B. Epoxy Bonding Adhesive: Pre-mix each component as specified by manufacturer. Mix only that quantity that can be applied within its pot life. Apply as specified by manufacturer.

END SECTION

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SECTION 05 05 20

BOLTS, WASHERS, ANCHORS AND EYEBOLTS

PART 1 GENERAL

1.1 WORK INCLUDED

A. This section describes materials and installation of anchor bolts, connecting bolts, washers, drilled anchors, epoxy anchors, screw anchors, eyebolts, and stainless steel fasteners.

1.2 DESIGN CRITERIA

A. Structural Connections: AISC Specification for Structural Steel Buildings (June 22, 2010), except connection details are shown in the Drawings.

1.3 REFERENCES

A. American Institute of Steel Construction (AISC)

B. American Society for Testing and Materials (ASTM)

C. Research Council on Structural Connections (RCSC)

1.4 SUBMITTALS

A. Shop drawings submittals shall be in accordance with the General and Special Provisions

B. Submit manufacturer's catalog data and ICC Evaluation Service Reports for bolts, washers, and concrete anchors. Show dimensions and reference materials of construction by ASTM designation and grade.

C. Submit anchor bolt layout drawings.

1.5 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

PART 2 PRODUCTS

2.1 GENERAL

A. Anchor bolts, drilled anchors and epoxy anchors for buried service, immersion service and in splash zones shall be stainless steel. All other anchor bolts, drilled anchors and epoxy anchors shall be galvanized steel unless otherwise specified on the Plans.

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2.2 ANCHOR BOLTS

A. Steel anchor bolts shall conform to ASTM F1554, Grade 36, Class 1A or 2A unless otherwise indicated. Size, length and thread length shall be as shown on the Drawings.

B. Bolts shall be provided with a head and two washers of a minimum of ¼ inch thick and 2 inches square. One washer shall be embedded in the concrete at the head of the bolt.

C. Anchor bolts, nuts and washers shall be galvanized per ASTM F2329.

2.3 CONNECTION BOLTS

A. Steel connection bolts shall conform to ASTM A325, Type 1 with the threads included in the shear plane.

B. Provide galvanized bolts where shown in Drawings. Galvanizing of bolts, nuts, and washers shall be in accordance with ASTM F2329.

2.4 STAINLESS STEEL BOLTS

A. Stainless steel bolts shall be ASTM A193, Grade B8 or ASTM F593, Type 316. Nuts shall be ASTM A194, Grade 316 or ASTM F594, Type 316. Use ASTM A194 nuts with ASTM A193 bolts; use ASTM F594 nuts with ASTM F593 bolts. Provide washer for each nut and bolthead. Washers shall be of the same material as the nuts.

2.5 LUBRICANT FOR STAINLESS STEEL BOLTS AND NUTS

A. Lubricant shall be chloride free and shall be RAMCO TG-50, Anti-Seize by RAMCO, Huskey™ Lube-O-Seal by HUSK-ITT Corporation, or equal.

2.6 WASHERS

A. Washers for bolts conforming to ASTM F1554 shall conform to ASTM F436, Type 1.

B. Washers for bolts conforming to ASTM A307 shall conform to ASTM F844.

C. Washers for bolts conforming to ASTM A325 shall be square or rectangular, tapered in thickness, smooth, hot-dipped galvanized, conforming to ASTM F436.

D. Stainless steel washers shall be Type 316.

2.7 DRILLED ANCHORS

A. Unless otherwise indicated in the Drawings, drilled anchors shall be 316 stainless steel wedge anchors as manufactured by ITW Red Head Trubolt+, Kwik Bolt TZ by Hilti, or equal. Anchors shall have ICC-approved testing.

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2.8 EPOXY ANCHORS

A. Epoxy anchors in concrete shall be 316 stainless steel threaded rod adhesive anchors. Adhesive shall be ITW Red Head Epcon S7, Hilti HIT RE 500-SD, or equal. Epoxy anchor assemblies shall be ICC approved.

B. Epoxy anchors in grouted concrete masonry walls shall be 316 stainless threaded rods. Epoxy adhesive shall be Hilti HIT HY 70, Simpson ET-HP, or equal.

PART 3 EXECUTION

3.1 STORAGE OF MATERIALS

A. Store material, either plain or fabricated, above ground on platforms, skids, or other supports. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

3.2 GALVANIZING

A. Zinc coating for bolts, anchor bolts, and threaded parts shall be in accordance with ASTM F2329.

3.3 INSTALLING CONNECTION BOLTS

A. Use steel bolts to connect structural steel members. Use stainless steel bolts to connect structural aluminum members.

B. Install ASTM A325 bolts and washers per the RCSC "Specification for Structural Joints Using High Strength Bolts".

C. Bolt holes in structural members shall be 1/16 inch in diameter larger than bolt size. Measure cast-in-place bolt locations in the field before drilling companion holes in structural steel beam or assembly.

D. Slotted holes, if required in the Drawings, shall conform to AISC 360-10, Chapter J, Section J3, Table J3.3.

E. Drive bolts accurately into the holes without damaging the thread. Protect boltheads from damage during driving. Boltheads and nuts or washers shall rest squarely against the metal. Where bolts are to be used on beveled surfaces having slopes greater than 1 in 20 with a plane normal to the bolt axis, provide beveled washers to give full bearing to the head or nut. Where self-locking nuts are not furnished, bolt threads shall be upset to prevent the nuts from backing off.

F. Bolts shall be of the length that will extend entirely through but not more than 1/4 inch beyond the nuts. Draw boltheads and nuts tight against the work.

3.4 INSTALLATION OF STAINLESS STEEL BOLTS AND NUTS

A. Prior to assembly, coat threaded portions of stainless steel bolts and nuts with lubricant.

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3.5 INSTALLING ANCHOR BOLTS

A. Anchor bolts shall be delivered in time to permit setting before the structural concrete is placed. Anchor bolts which are cast in place in concrete shall be provided with sufficient threads to permit a nut to be installed on the concrete side of the concrete form or supporting template.

B. Preset bolts and anchors by the use of templates. Do not use concrete anchors set in holes drilled in the concrete after the concrete is placed for mechanical equipment. Anchor bolts and threaded rod anchors which are to be epoxy grouted shall be clean and free of coatings that would weaken the bond with epoxy.

C. Two nuts, a jam nut, and a washer shall be furnished for anchor bolts and threaded rod anchors indicated on the drawings to have locknuts; two nuts and a washer shall be furnished for all other anchor bolts.

D. Anti-seize thread lubricant shall be liberally applied to projecting, threaded portions of stainless steel anchor bolts and threaded rod anchors immediately before final installation and tightening of the nuts.

E. For static items such as storage tanks, use preset anchor bolts or drilled anchors with ICC report data.

F. After anchor bolts have been embedded, protect projecting threads by applying grease and having the nuts installed until the time of installation of the equipment or metalwork.

3.6 INSTALLING DRILLED ANCHORS

A. Minimum depth of embedment of drilled mechanical anchors shall be as recommended by the manufacturer, but no less than that shown in the Drawings.

B. Prepare holes for drilled anchors in accordance with the anchor manufacturer’s recommendations prior to installation.

3.7 INSTALLING EXPOXY ANCHORS

A. Epoxy anchors shall be clean and free of coatings that would weaken the bond with epoxy.

B. Minimum depth of embedment of epoxy anchors shall be as recommended by the manufacturer, but no less than that shown in the Drawings.

C. Prepare holes for epoxy anchors in accordance with the anchor manufacturer’s recommendations prior to installation.

END SECTION

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SECTION 05 50 00

FABRICATED METAL

PART 1 GENERAL

1.1 WORK INCLUDED

A. Provide metals work for trash rack, bar grating, stand lid cover, and other miscellaneous metal works, complete as indicated, specified and required.

1. Steel channel and/or angle frames and thresholds with anchors

2. Miscellaneous iron and steel items indicated, specified, or required for completion of the Work, unless included under other Sections of the Specification

3. Miscellaneous connections, anchors, bolts, clips, spacers, nuts, washers, shapes and inserts, as required.

1.2 RELATED WORK

A. Section 03 15 20 – Anchor Bolts and Post-Installed Anchors

B. Section 03 30 00 – Cast-In-Place Concrete

C. Section 09 90 00 – Painting and Coating

1.3 REFERENCES

A. Industry Codes and Standards

American Institute of Steel Construction (AISC)

Specification for the Design, Fabrication and Erection of Steel for Buildings

Code of Standard Practice for Steel Buildings and Bridges

American Society for Testing and Materials (ASTM)

American Welding Society (AWS)

AWS D 1.1 Structural Welding Code Steel

B. Government Regulations

U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

Cal/OSHA Standards

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1.4 QUALITY ASSURANCE

A. Unless otherwise specified all work specified herein and shown on the Drawings shall conform to the applicable requirements of the following specifications and codes:

1. Fabricate and erect miscellaneous metal work in accordance with the latest edition of the AISC “Specification for the Design, Fabrication and Erection of Steel for Buildings,” and “Code of Standard Practice for Steel Buildings and Bridges.”

2. Inspections. Perform all field welding and field high strength bolting of structural steel assemblies under the inspection of the Engineer. Notify the Engineer at least 48 hours in advance of needed inspections. Provide copies of testing and inspection reports to the Engineer.

1.5 SUBMITTALS

A. Furnish submittals, samples and material data shall be in accordance with the General and Special Provisions.

1. Shop Drawings and Erection Drawings. Show materials and specification list, construction and fabrication details, layout and erection diagrams and method of anchorage to adjacent construction. Give location, type, size and extent of welding and bolted connections and clearly distinguish between shop and field connections. Coordinate shop drawings with related trades to ensure proper mating of assemblies.

   a. Catalog work sheets showing illustrated cuts of item to be furnished, scale details and dimensions may be submitted for standard manufactured items.

   b. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from Drawings. Where concrete, masonry or other materials must be set to exact locations to receive work, furnish assistance and direction necessary to permit other trades to properly locate their work. Where welded connectors, concrete, or masonry inserts are required to receive work, show on shop drawings exact locations required.

2. Shop Painting Data. Submit product list with product data sheets of intended shop coats. These products shall be compatible with the products and manufacturers with those systems Specified in Section 09 90 00 - Painting.

PART 2 PRODUCTS

2.1 MATERIALS – GENERAL

A. Provide materials that are new, sound and conforming to the following:

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Item	ASTM Standard No.	Class, Grade Type or Alloy No.
Cast Iron		
Cast Iron	A48	Class 40B
Steel		
Galvanized sheet iron or steel	A653	Coating G90
Black steel, sheet or strip	A569 A570	--
Coil (plate)	A635	--
Structural plate, bars, rolled shapes, and miscellaneous items (except W and HSS shapes)	A36	--
Rolled W shapes	A992	Grade 50
HSS Shapes	A500	Grade B
Standard bolts, nuts and washers	A307	--
High strength bolts, nuts and hardened flat washers	A325 A490	--
Eyebolts	A489	Type 1
Tubing, cold-formed	A500	--
Tubing, hot-formed	A501	--
Steel pipe	A53	Grade B
Stainless steel		
Plate, sheet and strip	A240	Type 304* or 316**
Bars and shapes	A276	Type 304* or 316**

Aluminum		
Flashing sheet aluminum	B209	Alloy 5005-H-14, 0.032 inches minimum thickness
Structural sheet aluminum	B209	Alloy 6061-T6
Structural aluminum	B209 B308	Alloy 6061-T6
Extruded aluminum	B221	Alloy 6063-T52
*Use Type 304L if material will be welded **Use Type 316L if material will be welded		

1. Anchor bolts and Post-Installed Anchors

   a. Anchor bolts and post-Installed anchors shall conform to Section 03 15 20.

2. Welding Electrodes. Use welding electrodes conforming to AWS D1.1.

3. Shop Prime Paint. To assure compatibility with deferred field-applied paint or coating systems, for ferrous metals other than stainless steel, galvanized steel and cast iron, provide surface preparations and use shop prime paint

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product and manufacturer as painting or protective coating system intended for field application specified in Section 09 90 00 - Painting.

a. Do not shop prime portions of work immediately adjacent to intended field welds, or portions intended for embedment.

PART 3 EXECUTION

3.1 GENERAL FABRICATION AND INSTALLATION REQUIREMENTS

A. Standards: Thoroughly clean ferrous metals of all loose scale and rust before being fabricated. Provide finished members free of twists, bends or open joints, and that present a neat workmanlike appearance when completed. Perform steel work conforming to the best practices set forth in the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.

1. Perform aluminum work conforming to the applicable requirements of "Specifications for Aluminum Structures, Aluminum Construction Manual" of the Aluminum Association.

B. Welding: Perform all welding in accordance with the "Structural Welding Code-Steel," AWS D1.1.

1. Use only welders qualified by tests in accordance with AWS B 3.0.

C. General Fabrication and Installation

1. Using new stock of sizes specified or detailed, fabricate in shop producing high grade metal work. Form and fabricate to meet required conditions. Include clips, straps, bolts, screws, and other fastenings necessary to secure the work. Accurately make and tightly fit joining and intersections in true planes with adequate secure fastenings. Erect all metal work plumb, true on line and in its designated location. Grind and finish smooth field welds on exposed surface. Bolt or weld connections as indicated on Drawings. After installation, leave all work in a neat and clean condition, ready for field painting or coating.

a. The maximum misalignment tolerance for railing shall be 1/8 inch in 12 feet. Bent, deformed or otherwise damaged railings shall be replaced.

2. Coordinate work of this Section with related trades. Particular attention is required for items to be embedded in concrete work. Provide all punching and drillings indicated or required for attachment of other work to that of this Section.

3. Compliance with Safety Requirements: Dimensions required for the fabrication and installation of handrails, ladders, grating, plate, pipe hangers and etc. which are not shown on the Drawings, shall conform to the requirements of the Division of Occupational Health and Safety.

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D. Protection

1. Provide protection and repair of adjacent surfaces and areas which may become damaged as a result of work of this Section. Protect work performed hereunder until completion and final acceptance of project by the Owner. Repair or replace all damaged or defective work to original specified condition, at no additional cost to the Owner.

E. Painting

1. Apply all products in strict conformance with manufacturer's printed instructions.

2. Provide one or more shop coats of paint on all ferrous metals, except cast-iron, ductile iron, stainless steel and galvanized metals. Before priming, thoroughly clean surfaces. Allow shop coats to dry before materials are loaded for delivery to the job site. After erection, paint all areas where the shop coats have been rubbed off or omitted.

   a. See Section 09 90 00 – Painting and Coating of these specifications for surface preparation, prime coatings, finish painting and coatings.

3. Isolate aluminum members from contact with dissimilar metals, concrete and masonry to provide protection from electrolytic deterioration. Use non-absorptive tape or gaskets, heavy brush coat of approved zinc chromate primer made with a synthetic resin vehicle; or apply a heavy coat of approved alkali-resistant bituminous paint.

END SECTION

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SECTION 07 92 00

CAULKING AND SEALANTS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Sealing and caulking at locations specified and indicated on the Plans.

B. All labor, materials, equipment, tools and incidentals necessary and required for the completion of the work.

1.2 RELATED WORK

A. Section 03 30 00 – Cast-in-Place Concrete

B. Section 09 90 00 – Painting

1.3 REFERENCES

A. American National Standards Institute/National Sanitation Foundation.
1. ANSI/NSF Standard 61 - Drinking Water System Components - Health Effects.

B. American Society for Testing Materials (ASTM):
1. C 920 - Specification for Elastomeric Joint Sealants.

C. Federal Specification (FS):
1. FS TT-S-00227e - Sealing Compound, Elastomeric Type, Multi-Component.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Shop Drawings:

1. Shop Drawings, Product Data, and Samples.

2. Applicator’s qualifications.

3. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer’s installation instructions.

c. Manufacturer’s recommendations for joint cleaner, primer, backer rod, tooling and bond breaker.

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4. Certification from sealant manufacturer stating product being used is recommended for and is best suited for joint in which it is being applied.

5. Warranty.

C. Samples:

1. Cured sample of each color for Engineer's color selection. Color chart not acceptable.

PART 2 PRODUCTS

2.1 MATERIALS

A. POLYURETHANE COMPOUNDS

1. Exterior Applications: One or two component polysulfide liquid polymer base rubber compounds, which cure at normal temperature to a flexible firm rubber, tack-free, paintable, in gun grade or knife or trowel consistency, conforming to ASTM C920-11, Type S, Grade NS, Class 35 for use in types T_1, T_2, NT, M, O, G, I, A..

a. DAP "Premium Polyurethane Construction Adhesive Sealant", Sika "Sikaflex 1a" or "Sikaflex 2c NS", WR Meadows "Pourthane NS", or Engineer approved equivalent.

2. Color of caulking and sealants shall match color of adjacent work.

3. Interior Applications: Butyl based compound, smooth flowing, single component, architectural grade, synthetic, general purpose caulking compound, composed of 80-100% solids, butyl, non-oily, non-hardening, curing to a tack-free surface, paintable, in gun grade or knife or trowel consistency.

a. DAP Butyl-Flex, Sika Sikaflex 1a or Engineer approved equivalent.

4. Horizontal Applications. Elastomeric, one-component, self-leveling polyurethane sealant conforming to ASTM C920-11, Type S, Grade P, Class 25 for use in types T_1, T_2, NT, M, O, G.

a. "Pourthane SL" WR Meadows, "Sikaflex+ Self-Leveling Sealant" or Engineer approved equivalent

5. Color of caulking and sealants shall match color of adjacent work.

B. SILICONE SEALANTS

1. Where silicone sealant is shown or noted on Plans or noted in the Specifications, it shall be a one part, type S, in gun grade consistency.

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a. General Electrical 1200 Series, Dow Corning Number 795. or Engineer approved equivalent.

2. Color of sealant shall match the color of adjacent work.

C. ACRYLIC-LATEX SEALANTS

1. Permanently flexible, non-staining, and non-bleeding latex modified acrylic sealant compound.

a. Tremco Mono, Pecora Corp. Number AC-20, Sonneborn Sonolac or Engineer approved equivalent.

2. Color of sealant shall match the color of adjacent work.

D. PRIMERS

1. Primers shall be quick drying, colorless, non-staining sealer of type and consistency recommended by the manufacturer of the sealant material for the surfaces to be caulked and sealed.

E. PACKING AND FILLERS

1. Closed-cell expanded sponge rubber manufactured from synthetic polymer neoprene base, or resilient polyethylene foam backer rod, compatible with the caulking compound used.

a. WR Meadows “Kool-Rod”, Rubatex Corp. Rubatex-Cord or Engineer approved equivalent.

2. Size: Minimum 25 percent greater than nominal joint width.

PART 3 EXECUTION

3.1 EXECUTION

A. SCHEDULE

1. Synthetic Rubber Sealing Compound (Polyurethane), Non-Sag:

a. Use where indicated on the Drawings.

b. Water-bearing and earth-bearing concrete structures.

c. Joints in masonry, concrete vertical surfaces, and metal-faced panels in vertical surfaces.

d. Joints between sheet metal flashing and trim.

e. Joints between sheet metal flashing and trim, and vertical wall surfaces.

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f. Small voids between materials requiring filling for weather tight performance in vertical surfaces.

g. Surfaces in contact with bituminous materials in vertical surfaces.

h. Perimeters of frames of doors, windows, louvers, pipe penetrations.

2. Synthetic Rubber Sealing Compound (Polyurethane), Self-Leveling:

a. Use where indicated on the Drawings

b. Expansion and control joints in masonry, concrete horizontal surfaces, and metal panels in horizontal surfaces

c. Small voids between materials requiring filling for weather tight performance in horizontal surfaces

d. Surfaces in contact with bituminous materials

e. Perimeters of frames, louvers, pipe penetrations in horizontal surfaces.

3. Silicone:

a. Use where indicated on the Drawings.

b. Joints and recesses formed where window, door, louver and vent frames, and sill adjoin masonry, concrete, stucco, or metal surfaces.

c. Door threshold bedding.

d. Moist or wet locations, including joints around plumbing fixtures.

e. Plenum joints.

4. Acrylic Latex:

a. Use where indicated on the Drawings.

b. Interior joints with movement less than 7.5 percent and not subject to wet conditions.

B. STORAGE AND HANDLING

1. Deliver, store, and handle products in accordance with manufacturer's recommendations.

2. Do not use material older than 6 months old. Store materials at temperatures lower than 80 degrees Fahrenheit

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C. APPLICATION AND WORKMANSHIP

1. Surface Preparation:

a. Allow concrete to cure at least 14 days prior to applying caulking

b. Joints and spaces to be caulked or sealed shall be completely cleaned of all dirt, dust, mortar, oil and other foreign materials which might adversely affect the caulking work. Where necessary, degrease with an approved solvent or commercial degreasing agent. Surfaces shall be thoroughly dry before application of caulking compounds.

1) Preparation of surfaces to receive caulking compound shall conform to the caulking manufacturer's specifications.

c. All joints shall be enclosed on three sides. Where adequate grooves for caulking have not been provided, suitable grooves shall be provided to the depth required or as indicated on Drawings and without damage to the adjoining work. No grinding shall be required on metal surfaces.

2. Application:

a. General: Do not apply sealant on wet or frosty surfaces or when surface temperature is higher than 120 degrees Fahrenheit or lower than recommended by the manufacturer. Caulking and sealants shall be applied by experienced mechanics using specified materials and proper tools.

b. Priming: Concrete, masonry, and other porous surfaces, and any other surfaces if recommended by the manufacturer, shall be primed before applying caulking and sealants.

c. Packing: Joints and spaces deeper than ½-inch shall be filled with packing to within ½-inch of the surface. Then the joints shall be filed with caulking compound. There shall be a minimum of 3/8-inch in depth of caulking compound in all joints ½-inch in depth or deeper.

d. Caulking and Sealant Compounds: Compounds shall not be used when they become too jelled to be discharged in a continuous flow from the gun. Modification of compounds by addition of liquids, solvents, or powders will not be permitted.

e. Tools and Workmanship: Compounds shall be applied with guns, knives or trowels as required. Fill all voids and joints solid. Caulk around entire perimeter of each opening, unless shown or specified otherwise.

f. Finishing: Caulked and sealed joints shall be neatly pointed on flush surfaces, and internal corners. Excess material shall be cleanly removed. Caulking where exposed, shall be free of wrinkles and

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uniformly smooth. Caulking and sealing shall be complete before final coats of paint are applied.

3. Cleaning: Clean surfaces of all materials adjoining caulked and sealed joints of any smears of compound or other soiling due to caulking applications.

D. Miscellaneous Caulking and Sealing Work: The entire extent of caulking and sealing work is not necessarily fully or individually described here. Caulking shall be provided wherever required to prevent light leakage as well as moisture leakage.

END SECTION

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SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Field painting including surface preparation, surface protection, clean up, and/or other appurtenant work as indicated in the Contract Documents.

B. All labor, materials, tools and equipment, and incidentals necessary and required for their completion.

C. All pipe, fittings, equipment, and structures are to be field coated except for those specific exceptions contained in this specification or identified on the drawings. The painting schedule included at the end of this specification summarizes the surfaces to be coated, the required surface preparation, and the coating systems to be applied. Coating notes on the drawings are used to show exceptions to the schedules, to extend the limits of coating systems, or to clarify or show details for application of the coating systems.

D. All coatings for potable water service shall be ANSI-NSF Standard 61 certified.

1.2 RELATED WORK

A. Section 03 33 00 – Cast-in-Place Concrete

B. DIVISION 11 - EQUIPMENT

C. DIVISION 33 – UTILITIES

D. Section 35 20 16 – Water Control Gate

E. DIVISION 40 – PROCESS INTEGRATION

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

1. Product technical data including:

a. Acknowledgement that products submitted meet the requirements of standards referenced.

b. Performance criteria as required by the Engineer to determine quality.

c. Manufacturer’s installation instructions and environmental parameters.

d. Material Safety Data Sheets.

e. Color samples.

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1.4 AIR QUALITY REGULATORY COMPLIANCE

A. All paint shall conform to the applicable air quality regulations at the point of application. Any paint material which cannot be guaranteed by the manufacturer to comply, whether specified by product designation or not, shall not be used.

B. The volatile organic compound (VOC) of coatings materials limits set forth in Rule 460.1 of the San Joaquin Valley Unified Air Pollution Control District shall apply to this project. The manufacturers' products listed in paragraphs 3.01 and 3.02 of this section have been selected on the basis of their apparent compliance with Rule 460.1; however, it shall remain the Contractor's responsibility to ensure that all coatings materials furnished are in compliance with all regulatory agencies.

C. The product listed may meet the VOC requirement in the unthinned (as shipped) condition, but may exceed the VOC requirement if thinned to the manufacturer's allowable recommendations. In this situation, the product is not to be thinned beyond the limit indicated in Rule 460.1, and if the product cannot be suitably thinned for the intended application method or temperature requirements, it will be necessary to use another manufacturer's product subject to acceptance by the Engineer.

D. It shall be the responsibility of the Contractor to ensure the compatibility of the field painting products which will be in contact with each other, or which will be applied over shop painted or previously painted surfaces and that these prior coatings are suitable for the intended exposure. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop or field primed surfaces, or previously painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint.

E. Paint shall be lead-free and mercury-free.

1.5 QUALITY OF WORK

A. All finishes shall be applied by skilled workmen in accordance with the best practices and standards of the painting trade. Brushes, rollers, all equipment, and the techniques used in applying finishes shall be of sufficient quality to assure the specified results. Work not conforming to this Specification shall be corrected by touching up or refinishing as directed by the Engineer.

B. It is the purpose and intent of this Specification to cover the complete paint finishing of all exterior and interior surfaces as scheduled or specified and all surfaces which normally require a paint finish for corrosion resistance, weather protection, finished appearance or utility. Finished surfaces shall be of the type of finish, color sheen film thickness and quality specified.

1.6 DELIVERY AND STORAGE

A. Painting materials shall be delivered to site in manufacturer's original containers with labels intact and seals unbroken. Painting materials and equipment shall be stored and protected against freezing and mixed in rooms assigned for that purpose. No chemicals, unauthorized thinners, or other materials, not included in the paint

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formulation shall be added to the paint for any purpose. All necessary precautions shall be taken to prevent fire. Rags or waste soiled with paint shall be removed from premises at end of each day's work, or shall be stored in covered metal containers.

1.7 EQUIVALENT PRODUCTS

A. Whenever a coating is specified using the name of a proprietary product or the name of a particular manufacturer or vendor, the specified coating shall be understood as establishing the type and quality of coating desired.

B. Other manufacturers' products will be accepted provided sufficient information is submitted to allow the Engineer to determine that the coatings proposed are equivalent to those named. To simplify review, substitution requests shall include a side-by-side spreadsheet of each product's test results from industry consensus tests. Proposed coatings shall be submitted for review in accordance with the Section 01 30 00 – Submittals.

C. Requests for review of equivalency will not be accepted from anyone except the Contractor, and such requests will not be considered until after the contract has been awarded.

D. Specific products for various applications shall be as specified in Part 2. In addition to the products named in Part 2, equivalent products of the following manufacturers will also generally be acceptable:

Ameron
Carboline
Devoe
PPG (Pittsburgh)
Sherwin Williams Co.
Sinclair
Tnemec
Valspar

E. Contractor shall provide verification in the form of a side-by-side comparison of test results to verify that equivalent products are equivalent and are acceptable for the desired application.

1.8 REFERENCE STANDARDS

A. AMPP – Association for Materials and Performance

B. ASTM – American Society for Testing and Materials, West Conshohocken, PA

C. NAPF – National Association of Pipe Fabricators

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PART 2 PRODUCTS

2.1 GENERAL

A. All paint shall be the product of a recognized manufacturer exclusively engaged in the manufacture of painting material. All paints for wood and metal surfaces shall be well-ground and shall not skin, liver, curdle, or body excessively in the containers.

B. The paint shall not show laps or unevenness of color or texture. When applied to vertical surfaces, it shall not sag.

C. All exposed surfaces, including sides and edges, shall be painted. Hangers, brackets, fastenings and other miscellaneous items shall be painted with the same system as the adjacent material. Paint systems shall be in addition to shop primers.

D. Paint shall be stored inside and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the paint formation shall be added to the paint for any purpose.

E. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop painted or previously painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint. Any paint system shall be the product of a single manufacturer.

F. All paint used for intermediate and finish coats shall be guaranteed by the paint manufacturer to be lead-free, mercury-free, and fume-proof. Where paint materials are referenced to Federal or military specifications, the reference shall define general type and quality required but is not intended to limit acceptable materials to an exact formulation.

G. For each paint, the Contractor shall follow the paint manufacturer's specific application instructions. Upon the Engineer's request, the Contractor shall furnish the following application instructions.

1. Surface preparation recommendations.

2. Type of primer to be used.

3. Maximum dry and wet mil thickness per coat.

4. Minimum and maximum curing times between coats.

5. Thinner to be used with each paint.

6. Ventilation requirements.

7. Atmospheric conditions during which the paint shall not be applied.

8. Allowable methods of application.

9. Maximum allowable moisture content and minimum age of plaster, concrete and wood surfaces at time of paint application.

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10. Curing time before submergence in water.

H. The minimum number of coats and minimum total dry mil thickness of the system for each surface shall be as specified in the paint schedule.

2.2 PAINTING SCHEDULE

A. A schedule is appended to this section listing the surface preparation, primer, finish and dry mil thickness to be used on each surface to be coated.

2.3 PRIMERS AND PRETREATMENT

A. P-1 Epoxy Primer – Minimum dry thickness 4 mils DFT. Devoe "Bar Rust 235H", Sherwin-Williams “Macropoxy 646”, , Tnemec “Series L69 Hi-Build Expoxoline II or Engineer approved equivalent.P-2 Rust Inhibitive, non-submerged – Minimum dry thickness 4 mils DFT. Devoe "Devran 203 Waterborne Epoxy Primer", Sherwin-Williams “Macropoxy 646” or Tnemec “Series L69 Hi-Build Expoxoline II” or Engineer approved equivalent.

B. P-3 Rust inhibitive, submerged – Minimum dry thickness 4.0 mils DFT. Devoe "Bar Rust 235H", Sherwin-Williams “Macropoxy 646” or Tnemec “Series L69 Hi-Build Expoxoline II” or Engineer approved equivalent.

C. P-4 Primer for Wood – Maximum of 400 sq. ft/gal. Devoe 2010-1200 "Ultra- Hide Durus Exterior Acrylic Primecoat", Sherwin-Williams “PrepRite ProBlock” Tnemec Series151-1051 “Elaso-Grip FC” or Engineer approved equivalent.

D. P-5 Wallboard Primer – Maximum of 400 sq. ft/gal. Devoe1060-1200 "Ultra- Hide Latex Primer- Sealer", Sherwin-Williams “ProMar 200 Zero VOC”, or Tnemec Series 51-792 "PVA Sealer” or Engineer approved equivalent.

E. P-6 High Build Acrylic – Maximum of 100 sq. ft/gal., Sherwin-Williams “Heavy Duty Block Filler”, Tnemec “Series 180 WB Tneme-Crete” or Engineer approved equivalent.

2.4 INTERMEDIATE AND FINISH PAINTS

A. F-1 Epoxy Resin - Minimum dry thickness 6 mils DFT. Devoe "Bar Rust 235H", Sherwin-Williams “Macropoxy 646”, Tnemec “Series L69 Hi-Build Expoxoline II” or Engineer approved equivalent.

B. F-2 Gloss Acrylic Emulsion - Minimum dry thickness 2.5 mils DFT. Devoe “ Devflex 4208 Waterbone Acrylic Enamel”, Sherwin-Williams “Sher-Cryl High Performance Acrylic”, Tnemec “Series1028 Enduratone” or Engineer approved equivalent.

C. F-3 Semi-gloss Acrylic Emulsion - Minimum dry thickness 2.5 mils DFT. Devoe “Devvflex 4216 HP Waterborne”, Sherwin-Williams “Sher-Cryl High Performance Acrylic”, Tnemec “Series1029 Enduratone” or Engineer approved equivalent.”

D. F-4 High Build Epoxy (Substitute for Coal Tar) - Minimum dry thickness 6 mils. Devoe “Devtar 5A HS”, Sherwin-Williams “Targuard”, Tnemec “Series L69 Hi-Build Expoxoline II” or Engineer approved equivalent.

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E. F-5 Polyurethane O - Minimum dry thickness 2.5 mils. Devoe “Devthane 379H Aliphatic Urethane Gloss Enamel”, Sherwin-Williams “Hi-Solids Polyurethane 250”, Tnemec “Series 1095 "Endura-Shield" or Engineer approved equivalent.

F. F-6 Acrylic Epoxy – Minimum dry film thickness 4 mils., Sherwin-Williams “Waterbased Catalyzed Epoxy”, Tnemec “Series 289 Enviro-Pox” or Engineer approved equivalent.

G. F-7 High Build Acrylic – Maximum of 100 sq. ft./gal., , Sherwin-Williams “Heavy Duty Block Filler”, Tnemec Series “180 WB Tneme-Crete” or Engineer approved equivalent.

2.5 FUSION BONDED EPOXY LINING AND COATING

A. Fusion bonded epoxy linings and coatings shall conform to the requirements of Specification Section 09 97 61.

2.6 ALUMINUM SURFACES

A. All aluminum in contact with steel or concrete. Minimum dry film thickness 6 mils DFT per coat, 2 coats are required. Sherwin Williams “Macropoxy 646”, Tnemec “Series L69 Hi-Build Expoxoline II” or Engineer approved equivalent.

2.7 SURFACES NOT TO BE PAINTED

A. Except as otherwise required or directed, the following surfaces are to be left unpainted:

1. Exposed surfaces of aluminum (aluminum in contact with concrete is to be coated).

2. Polished or finished stainless steel. Unfinished stainless steel shall be painted.

3. Nickel or chromium.

4. Galvanized surfaces, except piping, conduit, electrical conduit, pipe supports, fasteners, hangers, bracing, brackets, and accessories.

5. Rubber and plastics, including fiberglass reinforced plastics.

6. Precast concrete.

2.8 SYSTEM IDENTIFICATION

A. Above Grade Piping: Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, either by preprinted marker or stenciled marking, and include arrows to show the direction of flow. Comply with ANSI A13.1 for colors. Locate markers at ends of lines, near major branches and other interruptions including equipment in the line, where lines pass through floor, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum

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intervals along exposed portion of lines. Marking of short branches and repetitive branches for equipment connections is not required.

B. Equipment: All equipment shall be identified with a plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g. AC-4). Provide ½-inch high lettering, white on black background. Nameplates shall be permanently secured to the unit.

C. Valves: Provide valve tags on all valves of each piping system, excluding check valves, valves within equipment, faucets, stops and shut-off valves at fixtures and other repetitive terminal units. Provide brass tags or plastic laminate tags. Prepare and submit a tagged valve schedule, listing each valve by tag number, location and piping service. Mount in glazed frame where directed.

2.9 PIPING IDENTIFICATION

A. Pipe shall be color coded according to the following schedule. Bands shall be 6 inches wide spaced along the pipe at 5-foot intervals. Depth of water gauges shall be painted as indicated on the Plans.

LETTERS	COLOR OF PIPE	COLOR OF LETTERS
Potable water	Light Blue	Black
Non-Potable water	Light Blue with Black Bands	Black
Grit	Dark Blue with Orange Bands	White
Air	Light Green	Black
Sludge	Light Brown	White
Scum	Dark Brown	White
Drain	Dark Gray	White
Reclaimed water	Purple	Black

B. Electrical conduit shall be painted to match adjacent ceiling or wall surfaces as directed by the Engineer.

C.

Item	Paint Color
Valve handwheels and levers	Red

PART 3 EXECUTION

3.1 PRELIMINARY EXAMINIATION

A. Notify the Engineer in writing of any uncorrected defects in surfaces to be painted. Do not proceed with the finishing of surfaces in question until any discrepancies are corrected. No work on any surface shall be started, unless the surface has been inspected and approved for painting by the Engineer.

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3.2 SURFACE PREPARATION

A. The Contractor shall prepare the surfaces to be coated as specified under the paint schedule. Any surfaces to be coated which are not listed under the paint schedule shall be prepared in accordance with the manufacturer's instructions for the material to be applied. The submittal shall list the expected exposure and the required surface preparation.

B. All grease, oil, dirt, and other contaminants which may affect the bond between the coating and the surface shall be removed by a cleaning agent which will leave the surface clean and dry.

C. Cleaning and painting operations shall be performed in a manner which will prevent dust or other contaminants from getting on freshly painted surfaces.

D. Surfaces shall be free of cracks, pits, projections, or other imperfections which would prevent the formation of smooth, unbroken paint film, except for concrete block construction where a rough surface is an inherent characteristic.

E. When applying touch-up paint, or repairing previously painted surfaces, the surfaces to be painted shall be cleaned and sanded or wire brushed in such a manner that the edges of adjacent paint are feathered or otherwise smoothed so that they will not be noticeable when painted. All paint made brittle or otherwise damaged by heat or welding shall be completely removed.

F. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to painting if there is no evidence of dirt, corrosion, or foreign material.

G. All galvanized surfaces shall be prepared according to the manufacturer’s recommendations for the intended exposure and specified coating system. Exterior galvanized or galvanized surfaces in wet environments shall be prepared to meet the end condition as specified in SSPC-16.

H. All surfaces to be finished shall be clean and dry before any materials are applied. Use a moisture meter to determine moisture content as follows. The moisture content shall be less than 18% for wood; 8% for concrete or plaster.

1. Metal Surfaces – Where noted, the surface preparation for steel and other metals refer to the specifications for surface preparation by the latest revision of the AMPP (SSPC/NACE) surface preparation standard. All metal work shall be cleaned by one of the following referenced standards:

a. Method SP-1 (SSPC-SP-1 Solvent Clean) Both before and after mechanical surface preparation methods. Do not use hydrocarbon-based solvents for cleaning prior to use of acrylic materials.

b. Method SP-2: (SSPC-SP-2 Hand Tool Clean) Surface shall be wire brushed where required to remove loose rust and dirt, etc.

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c. Method SP-3: (SSPC-SP-3 Power Tool Clean) Removal of loose rust, loose mill scale and other detrimental foreign matter to degree specified by power wire brushing, power impact tools or power sanders.

d. Method SSPC-SP-11 (Power Tool Clean to Bare Metal) Similar end condition to that of SSPC-SP 10/Nace No 2.

e. Method AAPC-SP-15 (Commercial Grade Power Tool Clean) Similar end condition to that of SSPC-SP6/ NACE No 3.

f. Method SSPC-SP-6/NACE No 3 (Commercial Blast Clean) Blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.

g. Method SSPC-SP-7/NACE No 4 (Brush-Off Blast Clean) For ferrous metals and previously painted surfaces.

Method SSPC-SP-16 (Brush Off-Blast Clean) For coated and uncoated galvanized steel stainless steels and non-ferrous metal.

h. Method SSPC-SP-10/NACE No 2 (Near White Blast Clean) Sandblast to near white condition. This method shall remove all rust and scale, but streaks and shadows in the metal will be acceptable

2. Wood Surfaces

a. Method W-1: All unprimed millwork delivered to the jobsite shall be given the specified first coat on all surfaces immediately upon arrival. Give all unprimed woodwork the specified first coat as soon as possible following installation. Prime any wood surface that is to be in contact with concrete, or a caulking material, with the specified first coat material before installation. Unless specified otherwise, all casings and trim, and all woodwork shall be free of oil, dirt, loose fibers, etc., sealed with a sanding sealer recommended by the coating manufacturer, and sanded smooth and dusted thoroughly before application of the priming coat. Give all knots, pitch pockets and sappy areas a preliminary coat of Dutch Boy Knot Sealer, or approved equivalent, prior to application of the prime coat.

3. Galvanized Surfaces

a. Method G-1: All galvanized surfaces shall be prepared for painting in strict conformity with the instructions of the manufacturer. At a minimum, all galvanized surfaces shall be cleaned per SSPC-SP16.

4. PVC Pipe

a. Method V-1: All wax and oil shall be removed from PVC plastic surfaces by wiping with a solvent as specified in SSPC-SP-- (Com Surface Preparation Commentary).

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3.3 PAINT APPLICATION

A. Apply all finishes evenly, free from sags, runs, crawls, brush marks, skips or other defects. Apply products at the proper consistency and do not thin or otherwise alter them except in accordance with the manufacturer's printed directions. All coats shall be applied in such manner as to produce an even film of uniform thickness completely coating all corners and crevices. All painting shall be done by thoroughly experienced workmen.

B. Care shall be exercised during spraying to hold the nozzle sufficiently close to the surfaces being painted to avoid excessive evaporation of the volatile constituents and loss of material into the air, or the bridging over of crevices and corners. Spray equipment shall be equipped with mechanical agitators, pressure gauges, and pressure regulators. Nozzles shall be of proper size. Floors, roofs, and other adjacent areas and installations shall be satisfactorily protected by drop cloths or other precautionary measures. All over-spray shall be removed by approved methods or the affected surface repainted. Care shall be exercised to avoid lapping of paint on hardware of other unscheduled surfaces.

C. Each coat of material shall be thoroughly dry before the application of a succeeding coat. In no case shall paint be applied at a rate of coverage per gallon which is greater than the maximum rate recommended by the manufacturer. Paint films showing sags, checks, blisters, teardrops, or fat edges will not be accepted. Paint containing any of these defects shall be entirely removed and the surface repainted.

D. Sandpaper enamels and varnishes lightly between coats and dust thoroughly before the application of a succeeding coat.

E. If the finish coat is to be colored, the prime coat and the intermediate coat shall be tinted to have a slight variation in color from each other and from the finish coat.

3.4 PRIMING

A. Prior to spot or touch-up painting of metal surfaces, edges, corners, crevices, welds, and bolts shall be given a brush coat of primeras specified in SSPC-PA guide No 11 (Protecting Corners, Edges, Crevices and Irregular Steel geometries by Stripe Coating) . Special attention shall be given to filling all crevices with paint or the manufacturer’s recommended filler.

B. Abraded and otherwise damaged portions of shop applied paint shall be repainted. Welded seams and other uncoated surfaces, heads and nuts of field installed bolts, and surfaces where paint has been damaged by heat, shall be prepared to restore, or create, the recommended surface preparation standard specified and a coat of the specified primer shell then be applied. This patch, spot, or touch-up painting shall be completed, and shall be dry and hard, before additional paint is applied.

3.5 FILM THICKNESS FOR FERROUS METALS

A. It is intended that the dry film thickness and the continuity of painted ferrous metal surfaces be subject to continual field check by the Engineer. Dry film thickness shall be measured by the Contractor, using an approved Thickness Gauge, at locations

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selected by Engineer. Testing equipment provided shall be provided by Contractor and kept on site.

B. Measurement of dry coating thickness shall conform with paint application Standard SSPC-PA2 (Procedure for Determining Conformance to Dry Coating Thickness Requirements).

C. Continuity of coated surfaces shall be tested with an approved holiday detection device operated by a certified coating inspector, in the presence of the Engineer, and shall be in accordance with NACE SPO 188 (Discontinuity/Holiday Testing of New Protective Coatings on Conductive Substrates). Contractor shall perform continuity tests as required by the Engineer on surfaces that will be submerged.

3.6 ATMOSPHERIC CONDITIONS

A. Apply all material to dry and properly prepared surfaces when weather conditions are favorable for painting. Except as recommended by the manufacturer, no materials shall be applied when the temperature of the materials is below 50º F, or when the temperature of the air, surface to be painted or substrate, is below (or likely to fall below) 50º F. Final ruling on the favorability of weather conditions shall be in accordance with the recommendations of the manufacturer and/or the Engineer.

B. Except as recommended by the manufacturer, no coating or paint shall be applied to wet or damp surfaces, in rain, snow, fog, or mist, when the steel temperature or surrounding air temperature is less than five degrees above the dew point, nor in conditions not recommended by the manufacturer.

3.7 REPAIRING DAMAGED PAINT ON EQUIPMENT

A. Painted surfaces on equipment, which have become damaged prior to acceptance by the Owner, shall be repainted with the same or equivalent paint used in the original application.

3.8 PROTECTION OF SURFACES

A. Throughout the work the Contractor shall use drop cloths, masking tapes, and other suitable measures to protect all surfaces from accidental spraying, splattering, or spilling of paint. Contractor shall be liable for and shall correct and repair any damaged condition resulting from its operations or from the operations of all those who are responsible to the Contractor during the time its work is in progress and until the work is accepted. In case bituminous paints are spilled or dropped on any material except metals, the spots shall, after surface cleaning, be spot painted with aluminum paint prior to applying the specified paint. Any exposed concrete or masonry not specified to be painted which is damaged by paint shall be either removed and rebuilt or, where so authorized by the Owner, painted with two coats of masonry paint.

3.9 CLEANUP

A. All cloths and cotton waste which might constitute a fire hazard shall be placed in metal containers or destroyed at the end of each work day. Upon completion of the

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work all staging, scaffolding and containers shall be removed from the site or destroyed in a manner approved by the Engineer.

3.10 PAINTING SCHEDULE

		FINISH			
SYSTEM	SURFACE	SURF. PREP.	PRIME COAT	2ND COAT	3RD COAT
1.	New ferrous metal in submerged or damp environment including all submerged mechanical components.	SP-10	P-1	F-1	F-1
2.	All exterior exposed new structural and miscellaneous steel. All exterior exposed surfaces of new piping, pumps, motors, electrical equipment and other unsubmerged mechanical and structural items.	SP-2 or 3	P-2	F-1	F-5
3.	All surfaces of new structural and miscellaneous steel pipe, pumps, motors and electrical equipment panels exposed inside building.	SP-6	P-2	F-3	F-3
4.	All interior exposed new galvanized metalwork including electrical conduit inside buildings, including fittings, boxes, supports and accessories.	G-1	P-3	F-3	F-3
5.	All exterior exposed new galvanized metalwork including roof flashings ad other architectural items.	G-1	P-3	F-2	F-2
6.	Exposed new PVC piping	V-1	F-5	F-5	

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		FINISH			
SYSTEM	SURFACE	SURF. PREP.	PRIME COAT	2ND COAT	3RD COAT
7.	All new buried valves and flanged joints and other buried miscellaneous ferrous piping and metal surfaces (excluding cast iron pipe). All exterior surfaces of new cast iron and steel piping exposed in manholes, wet wells and similar locations, including valves, fittings, flanges, bolts, supports, and accessories. Miscellaneous new castings, including manhole rings and covers and manhole steps. (One coat, if not foundry dipped.)	SP-10	F-4	F-4	
8.	Interior wood	P-4	F-2	F-2	
9.	Exterior wood	P-4	F-3	F-3	
10.	Interior dry wall	P-5	F-6		
11.	Exterior concrete block	P-6	F-7		
12.	Concrete	P-6	F-7		

3.11 CONFLICTS

A. When conflicting painting specifications or requirements are encountered in the contract documents, the more restrictive specifications or requirements shall be required.

END SECTION

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SECTION 09 97 61

FUSION-BONDED EPOXY LININGS AND COATINGS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section includes materials, application, and testing of one-part, fusion-bonded, heat-cured, thermosetting, 100 percent solids epoxy linings and coatings on steel, cast-iron, and ductile-iron equipment, such as valves, flexible pipe couplings, and steel pipe.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 09 90 00 – Painting and Coating

B. Section 40 05 00 – Pipe and Fittings

C. Section 40 05 14 – Fabricated Steel Specials

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit manufacturer's catalog literature and product data sheets, describing the physical and chemical properties of the epoxy coating. Describe application and curing procedure.

C. Submit coating application test records for measuring coating thickness and holiday detection for each item or pipe section and fitting. Describe repair procedures used.

PART 2 MATERIALS

2.1 PIPING AND EQUIPMENT SURFACES

A. The Contractor shall require the equipment suppliers to provide equipment that is free of salts, oil, and grease to the coating applicator.

B. The Contractor shall require pipe suppliers to provide bare pipe that is free of salts, oil, and grease to the coating applicator.

2.2 SHOP-APPLIED EPOXY LINING AND COATING

A. Lining and coating shall be 100 percent solids, thermosetting, fusion-bonded, dry powder epoxy resin: Scotchkote 134 or 206N, Valspar "Pipeclad 1500 Red," or equal. Epoxy lining and coating shall meet or exceed the following requirements:

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Hardness (minimum)	Barcol 17 (ASTM D2583) Rockwell 50 ("M" scale)
Abrasion resistance (maximum value)	1,000 cycles: 0.05 gram removed
	5,000 cycles: 0.115 gram removed
	ASTM D1044, Tabor CS 17 wheel, 1,000-gram weight
Adhesion (minimum)	3,000 psi (Elcometer)
Tensile strength	7,300 psi (ASTM D2370)
Penetration	0 mil (ASTM G17)
Adhesion overlap shear, 1/8-inch steel panel, 0.010 glue line	4,300 psi, ASTM D1002
Impact (minimum value)	100 inch-pounds (Gardner 5/8-inch diameter tup)

2.3 FIELD-APPLIED EPOXY COATING FOR PATCHING

A. Use a minimum 80 percent solids liquid epoxy resin, such as Scotchkote 306 or 323.

2.4 PAINTING AND COATING OF GROOVED-END AND FLEXIBLE PIPE COUPLINGS

A. Line and coat couplings the same as the pipe. Color shall match the color of the pipe fusion epoxy coating.

PART 3 EXECUTION

3.1 SHOP APPLICATION OF FUSION-BONDED EPOXY LINING AND COATING - GENERAL

A. Grind surface irregularities, welds, and weld spatter smooth before applying the epoxy. The allowable grind area shall not exceed 0.25 square foot per location, and the maximum total grind area shall not exceed 1 square foot per item or piece of equipment. Do not use any item, pipe, or piece of equipment in which these requirements cannot be met.

B. Remove surface imperfections, such as slivers, scales, burrs, weld spatter, and gouges. Grind outside sharp corners, such as the outside edges of flanges, to a minimum radius of 1/4 inch.

C. Uniformly preheat the pipe, item, or piece of equipment prior to blast cleaning to remove moisture from the surface. The preheat shall be sufficient to ensure that the surface temperature is at least 5 degree Fahrenheit above the dew point temperature during blast cleaning and inspection.

D. Sandblast surfaces per SSPC SP-5. Protect beveled pipe ends from the abrasive blast cleaning.

E. Apply lining and coating by the electrostatic spray or fluidized bed process. Minimum thickness of lining or coating shall be 15 mils. Heat and cure per the epoxy

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manufacturer's recommendations. The heat source shall not leave a residue or contaminant on the metal surface. Do not allow oxidation of surfaces to occur prior to coating. Do not permit surfaces to flash rust before coating.

3.2 SHOP APPLICATION OF FUSION-BONDED EPOXY LINING AND COATING TO PIPE-ADDITIONAL REQUIREMENTS

A. Apply lining and coating per AWWA C213 except as modified herein.

B. Grind 0.020 inch (minimum) off the weld caps on the pipe weld seams before beginning the surface preparation and heating of the pipe.

3.3 SHOP APPLICATION OF FUSION-BONDED EPOXY LINING AND COATING TO JOINT AREAS OF DUCTILE -IRON AND CAST-IRON FITTINGS - ADDITIONAL REQUIREMENTS

A. Limit the protective coating thickness in the joints of ductile-iron and cast-iron fittings to maintain a leak-proof joint. However, the coating thickness in the joint area shall not be less than 4 mils.

3.4 QUALITY OF LINING AND COATING APPLICATIONS

A. The cured lining or coating shall be smooth and glossy, with no graininess or roughness. The lining or coating shall have no blisters, cracks, bubbles, underfilm voids, mechanical damage, discontinuities, or holidays.

3.5 FACTORY TESTING OF COATING - GENERAL

A. Test linings and coatings with a low-voltage wet sponge holiday detector. Test pipe linings and coatings per AWWA C213, Section 5.3.3. If the number of holidays or pinholes is fewer than one per 20 square feet of coating surface, repair the holidays and pinholes by applying the coating manufacturer's recommended patching compound to each holiday or pinhole and retest. If the number of pinholes and holidays exceeds one per 20 square feet of coating surface, remove the entire lining or coating and recoat the item or pipe.

B. Measure the coating thickness at three locations on each item or piece of equipment or pipe section using a coating thickness gauge calibrated at least once per eight-hour shift. Record each measured thickness value. Where individual measured thickness values are less than the specified minimum thickness, measure the coating thickness at three additional points around the defective area. The average of these measurements shall exceed the specified minimum thickness value, and no individual thickness value shall be more than 2 mils below or 3 mils above the specified minimum value. If a section of the pipe, item, or piece of equipment does not meet these criteria, remove the entire lining or coating and recoat the entire item or piece of equipment.

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3.6 FACTORY INSPECTION OF LINING AND COATING OF PIPE-ADDITIONAL REQUIREMENTS

A. Check for coating defects on the weld seam centerlines. There shall be no porous blisters, craters, or pimples lying along the peak of the weld crown.

3.7 SHIPPING, STORAGE, AND HANDLING

A. When loading piping, fittings, couplings, or other coated items for shipment to the project site, use spacers and other protective devices to separate pipes or other coated items to prevent damaging the coated surfaces during transit and unloading. If wood spacers are used, remove wood splinters and particles from the coated surfaces after separation. Use padded chains or ribbon binders to secure the loaded pipe or other coated items and minimize damage.

B. Do not load or unload pipe, fittings, couplings, or other coated items by inserting forklift tines or lifting chains inside the pipe or item. Use nonmetallic slings, padded chains, or padded forklift tines to lift pipe or other coated items.

C. Cover piping or other coated items 100 percent with protective coverings or tarpaulins to prevent deposition of road salts, fuel residue, and other contaminants in transit.

D. Provide stulls, braces, and supports for piping during shipping and storage such that out-of-roundness or deflection does not exceed 0.5 percent of the pipe diameter.

E. Handle piping and other coated items with care during the unloading, installation, and erection operations to minimize damage. Do not place or store pipe or other coated items on the ground or on top of other work unless ground or work is covered with a protective covering or tarpaulin. Place pipe or other coated items above the ground upon platforms, skids, or other supports.

F. Store piping or other coated items at the site on pallets to prevent direct contact with ground or floor. Cover pipe or coated items during storage with protective coverings or tarpaulins to prevent deposition of rainwater, salt air, dirt, dust, and other contaminants.

G. Do not allow piping or other coated items to contact metal, concrete, or other surfaces during storage, handling, or installation and erection at the site that could damage or scratch the coating.

3.8 FIELD REPAIRS

A. Patch scratches and damaged areas incurred while installing fusion-bonded epoxy coated items with a two-component, 80 percent solids (minimum), liquid epoxy resin. Wire brush or sandblast the damaged areas per SSPC SP-10. Lightly abrade or sandblast the coating or lining on the sides of the damaged area before applying the liquid epoxy coating. Apply an epoxy coating to defective linings and coatings to areas smaller than 20 square inches. Patched areas shall overlap the parent or base coating a minimum of 0.5 inch. If a defective area exceeds 20 square inches, remove

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the entire lining and coating and recoat the entire item or piece of equipment. Apply the liquid epoxy coating to a minimum dry-film thickness of 15 mils.

END SECTION

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SECTION 31 05 00

EARTHWORK

PART 1 GENERAL

1.1 WORK INCLUDED

A. Work included in this specification includes construction of levees, overexcavation, scarification, structural excavation as shown in the Plans.

B. All earthwork performed under this contact shall conform to the General Requirements set forth in this section, unless otherwise specified in other sections.

C. Excavate earth and rock as necessary to allow the installation or construction of various items of work not including trenching, bedding, and backfill for utilities, regardless of character and subsurface conditions. Rock is defined in this section as any material in excavated areas that cannot be ripped and removed by conventional excavating equipment. In case of conflict with the determination of rock excavation, the Engineer shall have the final decision.

D. Haul, place, rough grade, compact, and finish grade excavated on-site material as engineered fill on those portions of the project site where it is necessary in order to construct the facilities, other than utilities indicated on the Plans. This includes under structures and preparation of subgrade for concrete; drive roads as well as canal/levee embankments.

E. Haul and dispose of excess and unsuitable material off-site or in designated areas, as directed by the Engineer.

F. Prepare fill for compaction testing.

1.2 RELATED WORK

A. GENERAL & SPECIAL PROVISIONS

B. Section 01 51 36– Watering

C. Section 01 57 23 – Storm Water Pollution Prevention Plan

D. Section 01 57 27 – Dust Control

E. Section 02 41 00 – Demolition

F. Section 03 30 00 – Cast-In-Place Concrete

G. Section 31 11 00 – Clearing and Grubbing

H. Section 31 23 17 – Trenching, Backfilling, and Compacting

I. Section 31 23 35 – Disposal of Materials

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1.3 REFERENCES

A. *Geotechnical Engineering Investigation entitled, PROPOSED NEW RECHARGE BASIN AND SEWER IMPROVEMENT by BSK ASSOCIATES, dated JANUARY 15TH, 2024*.

B. ASTM International (ASTM)

1. C136 – Sieve Analysis of Fine and Coarse Aggregates.

2. D75 Standard Practice for Sampling Aggregates

3. D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft-lbf/ft^3 (2,700kN-m/m^3)

4. D6938 – Density of soil and base rock in place by Nuclear method.

5. D2937 – Density of soil and in place by Tube method.

C. California Department of Transportation

1. State Standard Specifications

a. Section 10-6 Watering

b. Section 15 Existing Facilities

c. Section 17-2 Clearing and Grubbing

d. Section 18 Dust Palliatives

e. Section 19 Earthwork

f. Section 26 Aggregate Bases

D. Code of Federal Regulations

1. 29CFR1926, Subpart P – Excavations

1.4 SUBMITTALS

A. Submit plans as required for worker protection against caving ground in excavations.

B. Submittals shall be in accordance with the General and Special Provisions.

C. Description of methods and equipment to be used for rock removal if encountered.

1.5 SAMPLES

A. Samples shall be submitted in accordance with the General and Special Provisions.

B. Submit 10 lb sample of each type of fill to testing laboratory, in airtight containers.

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1.6 PROTECTION

A. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.

1. Trenches shall have sloping, sheeting, shoring, and bracing conforming with 29CFR1926, Subpart P - Excavations, CAL/OSHA requirements, and the Contract Documents.

B. Notify Engineer of unexpected subsurface conditions.

C. Underground utilities may exist at this site. Contractor shall take all necessary precautions to protect said utilities. Notify Engineer of any deviation in utility location from that which is shown on the drawings.

D. Protect bottom of excavations and soil adjacent to and beneath foundations from frost if encountered.

E. Grade excavation top perimeter to prevent surface water run-off into excavation.

1.7 CONTROL AND DIVERSION OF WATER

A. General – The Contractor shall furnish or procure all materials and labor required for constructing and maintaining all necessary cofferdams, channels, flumes, drains, sumps, and/or other temporary diversion and protective works and shall furnish, install, maintain, and operate all necessary pumping and other equipment for removal of water from the various parts of the work and for maintaining the foundations, trenches and other parts of the work free from water. The Contractor shall at all times have on the project sufficient pumping equipment for immediate use, including stand-by pumps for use in case other pumps become inoperable.

B. Plan – Prior to beginning any work; the Contractor shall submit for the Engineer's approval a water control plan showing the proposed method for the removal of water from foundations, trenches and other parts of the work.

C. Dispose of the water in a manner that will prevent damage to the adjacent property and in accordance with regulatory requirements.

D. Devices to control and divert water shall be adequately filtered to prevent the removal of fines from the soil.

E. Provide separate pipelines to drain trench water during construction.

F. Repair any damage caused by the failure of any part of equipment to control and divert water. Remove temporary equipment to control and divert water when no longer needed for dewatering purposes.

G. Provision of equipment to control and divert water shall be considered part of the project with no additional compensation allowed.

H. Drain rock will not be allowed in trenches.

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1.8 QUALITY ASSURANCE

A. Compaction Testing:

1. All compaction testing shall be in accordance with the General and Special Provisions and performed in accordance with Section 19-5 of the State Standard Specifications.

2. Compaction tests will be performed for each lift or layer.

3. Tests for compaction shall conform to ASTM D1557 and D6938.

4. Compaction testing will be performed in accordance with State Standard Specifications, Section 19-6.03.

5. Sample aggregates to be used for backfill materials per ASTM D75 and test them per ASTM C136.

B. In-Place Density:

1. Subgrade preparation including scarification and re-compaction of native soils: At least 1 test per lift every 500 lineal foot of subgrade.

2. Embankments: At least 1 test per lift every 500 lineal foot of embankment.

3. Structures: At least 1 test every 2 feet of height of structures.

4. A greater frequency of testing may be required at the start of work or when new materials, crews, or equipment are introduced to the site.

C. Laboratory Index Testing:

1. Per *Geotechnical Engineering Investigation entitled, PROPOSED NEW RECHARGE BASIN AND SEWER IMPROVEMENT by BSK ASSOCIATES, dated JANUARY 15TH, 2024.*

1.9 DEFINITION

A. Unsuitable Material – Unsuitable material is material determined to be:

1. Impossible to compact to specified density using ordinary methods at optimum moisture content.

2. Material containing trash, debris, oversized material or other foreign and objectionable materials.

3. Too wet to be properly compacted if circumstances prevent satisfactory in-place drying prior to incorporation into the work.

4. Non-native material containing a significant amount of permeable materials, such as sand or rock, that cannot be blended with other material and requires to be off hauled.

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5. Expansive clays that cannot be mixed or treated and requires to be off hauled.

6. Otherwise unsuitable for the planned use.

1.10 PROJECT CONDITIONS

A. Underground utilities may exist at this site. Contractor shall take all necessary precautions to protect said utilities. Notify Engineer of any deviation in utility location from that which is shown on the drawings.

B. Arrange construction sequences to provide the shortest practical time that excavations will be open to avoid hazard to the public, and to minimize the possibility of excavation collapse.

C. Obtain all required permits and licenses before installing utilities and follow the rules and requirements of the authority having jurisdiction.

1.11 CLASSIFICATION

A. Expected material that will be excavated at this site has been identified in the Geotechnical Report.

PART 2 PRODUCTS

2.1 MATERIALS

A. All backfill material shall be approved before use and be free of cinders, ashes, ice, frozen soil, large hard clods, organic debris, or other deleterious items.

B. Engineered fill materials for all fill areas shall be as required by State Standard Specifications, Section 19-3, and Section 19-6.

C. Fill materials for use in construction of levee embankments should be non-expansive, free of organic matter and granular in nature, within the following limits:

Sieve Size	Percent Passing
3 in.	100
No. 4	65-100
No. 200	20-45
R-Value	50 (min.)
Plasticity Index	<12
Expansion Index	<20

D. Existing Embankment Materials / On-Site Material For Levee Construction:

1. Material for embankment construction shall be free from frozen material, debris, muck, detrimental quantities of organic materials, and other unsuitable materials. In addition, suitable material for embankments shall be able to be compacted to specified density using ordinary methods at optimum moisture.

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The presence of excessive moisture in otherwise suitable material is not, by itself, sufficient cause for determining that the material is unsuitable. The Contractor shall be responsible for aeration of excavation or embankment to satisfactory moisture content for compaction.

E. Material Used For The Levee Embankment Fill Shall Meet The Following Requirements:

1. Consist of non-expansive soil (EL < 20).

2. Consist of less than 3 percent organic content by weight.

3. Contain a minimum fines content of 20%.

4. Contain no rocks greater than 3-inches in dimension.

5. Fall within a Plasticity Index (PI) range between 10 and 25.

6. Material used outside of the inner 8-foot section of the embankment has the same requirements as the inner 8-foot section with the following exception: rocks up to 6-inches are allowed granted they are sufficiently mixed with smaller grained material and the larger rocks are not nested together.

7. If expansive clays (PI greater than 25) are present, the material shall be mixed with lower plasticity material and/or treated with lime. If non-plastic material (PI less than 10) is present, the material shall be blended with higher plasticity material. The determination of the presence of high plasticity or low plasticity material that will require treating and/or blending will be at the desertion of the Owner's Representative.

F. Engineered Fill Material Under Structures:

1. Native materials may be used as engineered fill as stated in the *Geotechnical Engineering Investigation entitled, PROPOSED NEW RECHARGE BASIN AND SEWER IMPROVEMENT by BSK ASSOCIATES, dated JANUARY 15TH, 2024.*

2.2 WATER

A. As specified in Section 01 51 36 – Watering.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

A. As specified in Section 31 11 00 – Clearing & Grubbing

3.2 GROUND SURFACE PREPARATION

A. Before excavation for and placing levee embankment, complete all clearing, grubbing, and topsoil stripping. Scarify and re-compact the stripped ground to 90%

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maximum density surface. The scarification depth below new embankments shall be as indicated on the plans. Site stripping material shall be blended with other suitable fill material for reuse in project areas outside of structural levee embankments and/or above the stated High Water Line (HWL).

3.3 INSPECTION

A. Verify stockpiled fill to be reused is approved.

B. Verify areas to be backfilled are free of debris, ice, or water, and ground surface are not frozen.

3.4 GENERAL

A. Provide required shoring, sheeting, and slope layback necessary to protect the excavation, as needed, for the safety of the employees and as required by applicable State and Federal laws. Provide suitable barricades for public safety, regardless of excavation depth.

B. Upon completion of excavation and before placing forms or structures, notify the Engineer who will inspect the excavation and may take tests to determine soil bearing values.

C. Identify required lines, levels, contours, and datum.

1. Stake and identify the extent of all earthwork operations prior to starting work.

D. Use suitable material removed from excavation before placing backfill and/or importing fill.

E. Verify areas to be backfilled are free of debris, snow, ice, or water, and surfaces are not frozen.

F. Unless noted otherwise in the geotechnical report or the contract documents the Contractor shall comply with the following minimum compactions:

1. Areas under flatwork, and structures shall be compacted to minimum of 90% relative compaction.

2. Areas under embankments, scarification depth shall be a minimum of 8 inches recompacted to a minimum of 90% of maximum density.

3. All other fill and disturbed surfaces shall be compacted to a minimum of 90% relative compaction.

3.5 PREPARATION

A. Identify required lines, levels, contours, and datum.

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3.6 MOISTURE CONTROL

A. Water development, hauling, and application shall be in accordance with State Standard Specifications Section 10-6, Watering.

3.7 EXCAVATION

A. Excavate the specified areas to lines and grades as shown on the Plans or as directed by the Engineer.

B. Stockpile as directed excavated material to be used in embankment construction.

C. If the Plans require placement of fill prior to pipe, or structure excavation, the fill shall first be constructed to the design grade shown for a distance each side of the pipe or structure of not less than five times the diameter of the pipe or the width of the structure after which the trench shall be excavated and the pipe or structure installed.

D. Carefully excavate to the established lines and grades shown on the drawings, or as revised and approved by the engineer, to provide a firm, uniform, and unyielding foundation for the proposed structures.

E. Excavate for all foundations, slabs, and/or levee embankments. Remove any bushes, shrubs, stumps, roots, buried objects, or any objects that interfere with construction of structure foundations, or as required by the Engineer.

F. Over excavation shall be required a minimum of 2 feet below all concrete structures, unless shown otherwise on the Plans.

G. Beneath structures and levees, the exposed surface shall be scarified to a depth of eight inches, conditioned to optimum moisture content and compacted to at least 93 percent of the maximum dry density.

H. If any existing foundations, roots, stumps, debris, waste materials, pipes, or similar items have been removed, the Contractor shall excavate below these portions to solid undisturbed earth and foundations in these areas shall be built to necessary levels.

I. Engineered fill in over excavated areas shall be onsite fill material, free from organic materials or deleterious substances.

1. Roads and Ramps

a. In conjunction with construction of levee embankments, construct access roads and earth ramps adjacent to the canal and structures. Place material from excavations as embankments for the roads and ramps.

b. Where the width of a road is not shown in the Drawings it shall have width of not less than 15 feet. The work required for construction of access roads and for earth ramps shall include grading to a uniform

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surface equivalent to that obtainable with a motor grader to provide for safe travel with a two-wheel-drive automobile.

3.8 ENGINEERED FILL AND EMBANKMENT CONSTRUCTION

A. Unless otherwise noted, placement and compaction of engineered fill materials for all fill areas shall be performed according to the provisions of the State Standard Specifications, Section 19-6. Section 19-6.02A shall be amended to say that large rocky material or hard lumps larger than three inches in greatest dimension will not be allowed.

B. Before placing embankment, scarify ground surface to a depth of 8 inches below the original ground surface to provide ample bond between old and new material, as shown on the Plans. Place embankment material in layers not exceeding eight inches, loose measurement.

C. Where compacting of earth materials is required, the materials shall be deposited in horizontal layers not more than eight inches thick. Compact each layer before placing the next layer. As the compaction of each layer progresses, continually level and manipulate to ensure uniform moisture and density. Add water to obtain optimum moisture content. Removal of excess water shall be accomplished through aeration by plowing, blading, disking, or other methods satisfactory to the Engineer. The excavation, placing, moistening, and compacting operations shall be such that the material will be uniformly compacted and will be homogeneous, free from lenses, pockets, streaks, voids, and laminations or other imperfections such that the materials when compacted will be blended sufficiently to secure the required density.

D. Moisture Content for Clayey and Silty (Cohesive) Materials:

1. Prior to and during compaction operations, the materials shall have an above optimum moisture content, but not greater than three percentage points of optimum moisture content, and the moisture content shall be uniform throughout each layer. The optimum moisture content is defined as that moisture content which will result in the laboratory maximum dry density of the soil as determined using ASTM D1557.

2. If the moisture content is less than optimum for compaction, or is greater than optimum for compaction by more than three percentage points, the compaction operations shall not proceed, except with the specific approval of the Engineer, until the material has been wetted or allowed to dry out, as may be required, to obtain a moisture content within the tolerances permitted above, and no adjustment in price will be made on account of any operations of the Contractor in wetting or drying the materials or on account of any delays occasioned thereby.

G. Moisture Content for Cohesionless Free-draining Materials: Prior to and during compaction operations, the materials shall have a moisture content at least equal to the optimum moisture content and shall be uniform throughout each layer. The optimum moisture content is defined as that moisture content which will result in the laboratory maximum dry density of the soil as determined using ASTM D1557.

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H. When the material has been conditioned as specified, it shall be compacted by rollers, by hand or power tampers. Where hand or power tampers are used to compact soils in confined areas such as under pipe, they shall be equipped with suitably shaped heads to obtain the required density.

J. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, or spongy subgrade surfaces.

K. Employ a placement method that will not disturb or damage underground pipe or conduits.

L. ROLLERS

1. Rollers used for compacting earth materials shall have staggered and uniformly spaced tamping feet and be of sufficient weight for proper compaction.

2. The tamping heads and cleaner bars shall be properly maintained, and the spaces between the tamping feet shall be kept clear of materials which impair the effectiveness of the tamping rollers.

M. Water packing or jetting shall not be allowed for compaction of any backfill.

N. Embankment keyway shall be moisture conditioned and compacted using sheepsfoot roller before placing any engineered fill or fill.

3.9 EXCAVATION FOR CONCRETE STRUCTURES

A. Identify required lines, levels, contours, and datum.

1. Stake and identify the extent of all earthwork operations prior to starting work.

B. Carefully excavate to the established lines and grades shown on the drawings, or as revised and approved by the engineer, to provide a firm, uniform, and unyielding foundation for the proposed structures.

C. Excavations for all footings, piers, finished walls and grade beams shall be sufficiently large so that forms for concrete may be properly placed, removed, and inspected.

D. The bottoms of footings, piers, slabs, walls, and grade beams to receive concrete shall be level before placing concrete. All foundations shall rest on firm bearing compacted fill.

1. The exposed subgrade surface shall be scarified to a depth of 8 inches, conditioned to optimum moisture content and compacted to at least 95 percent of the maximum dry density.

E. Provide required shoring, sheeting, and slope layback necessary to protect the excavation, as needed, for the safety of the employees and as required by applicable State and Federal laws. Provide suitable barricades for public safety, regardless of trench depth.

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F. Upon completion of excavation and before placing forms or structures, notify the Engineer who will inspect the excavation and may take tests to determine soil-bearing values. If soil conditions in excavations are not in accordance with the geotechnical report and seem to indicate that footings need not be carried down as deep as shown, or must be carried deeper, the changes shall be made by the Contractor after approval by the Engineer.

1. Over excavation shall be required a minimum of 2 feet below and 5 feet laterally beyond all concrete structures, unless shown otherwise on the Plans.

2. Engineered fill in over excavated areas shall be onsite fill material, free from organic materials or deleterious substances.

G. Use suitable material removed from excavation before placing backfill.

H. Verify that stockpiled fill to be reused is approved by the Engineer.

I. Verify areas to be backfilled are free of debris, snow, ice, or water, and surfaces are not frozen.

J. Unless otherwise shown in the Plans, all backfill shall conform to Section 19-3 of the State Standard Specifications.

K. Do not place backfill against concrete until concrete has cured sufficiently as specified in Section 03 30 00 – Cast-In-Place Concrete.

L. Place and compact common fill material in continuous layers not exceeding eight inches loose depth.

M. Employ a placement method so not to disturb or damage pipes or utilities.

N. Maintain optimum moisture content of backfill materials to attain required compaction density.

3.10 UTILITY INSTALLATION

A. Install utility marking as specified in section 33 05 26 - Utility Line Marking.

B. Utility Installation shall be according the Division 33 Utilities. If not otherwise specified shape the trench bottom to ensure uniform contact with the full length of the installed line and remove any sharp-edged materials that might damage the line. Compaction shall be maintained beneath the line.

3.11 SAND CEMENT SLURRY, CONCRETE ENCASEMENT AND THRUST BLOCKS

A. Concrete

1. Place as shown on the Plans and in accordance with Sections 03 30 00 - Cast-In-Place Concrete.

B. Slurry Cement

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1. Slurry Cement is also referred to as Controlled Low Strength Material (CLSM).

2. Place as shown on the plans and in accordance with State Standard Specifications, Section 19-3.03F.

C. Thrust Blocks

1. Place as shown on the Plans and in accordance with Sections 03 30 00 - Cast-In-Place Concrete.

3.12 CONTROL OF WATER

A. The contactor shall keep all excavation free from water. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering of excavations. The contractor shall at all times have on the project sufficient pumping equipment for immediate use, including stand by pumps for use in case other pumps become inoperable.

B. The dewatering operation shall be continuous, so that the excavated areas are kept free from water during the construction, until backfill has been placed to a sufficient height to anchor the work against possible floatation.

C. Dewatering devices shall be adequately filtered to prevent the removal of fines from the soil.

D. Repair any damage caused by the failure of any part of the protective works. Remove temporary protective works when they are no longer needed for dewatering purposes.

E. Any drain rock required in the trench bottom to convey water or stabilize wet soil shall be included at no extra cost to the owner.

F. Provision of dewatering and dewatering equipment shall be considered part of the project with no additional compensation allowed.

3.13 SURPLUS MATERIAL

A. Unless otherwise specified, surplus suitable excavated material shall be used to widen embankments uniformly or to flatten slopes, or it shall be disposed of in a uniform manner in designated surplus material areas.

3.14 SHORING AND SHEETING

A. Construct and maintain all shoring, sheeting, and slope layback necessary to protect the excavation, as needed, for the safety of the employees and as required by applicable State and Federal laws. Provide suitable barricades for public safety, regardless of excavation depth.

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3.15 UNSUITABLE MATERIAL

A. Unsuitable material shall be excavated and disposed of in a lawful manner off the project site in accordance with Section 31 23 35 - Disposal of Materials. All disposal shall be approved by the Engineer prior to initiating the work.

3.16 SURFACE FINISH WORK

A. Open Areas: Grade all disturbed areas, blending with adjacent terrain without a noticeable break. Bring all sub-grades to specified contours, even and properly compacted.

B. Drainage Swales: Restore drainage ditches to appropriate line and grade, using approved surface erosion prevention techniques and as indicated on the Contract Documents.

C. Clean Up: Remove all rubbish and excess material for disposal as approved, and leave area in a neat, satisfactory condition.

3.17 TOLERANCES

A. Tolerances are defined as allowable variations from specified lines, grades, and dimensions. The intent of this paragraph is to establish tolerances that are consistent with modern construction practice yet are governed by the effect that permissible variations may have upon the construction.

B. Variations from specified lines, grades, and dimensions as specified by the Engineer:

Finish Grading Tolerance:	±0.10 foot
When the material to be placed on the grading plane is to be paid for by the cubic yard, the grading plane at any point shall be not more than	±0.10 foot
When structures are to be placed directly on compacted subgrade on the grading plane of the subgrade at any point shall not vary more than	±0.10 foot
Variation in elevation for invert of canal from those specified	±0.10 foot
Variation from specified width of section at any height	±0.25 foot

C. Variations defined as the distance between the actual dimension and grade of the canal cross section or alignment and the specified position in the plan for the canal cross section or alignment. Plues or minus variations indicate a permitted actual position up or down and in or out from the specified position in the Plans. Variations not designated as plus or minus indicate the maximum deviation permitted between designated successive point on the completed element of construction.

END SECTION

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SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of clearing, grubbing, grinding, transporting, removing and disposing of unsuitable material, trees, stumps, roots, vegetation debris, and existing improvements, including curb, gutters, catch basins, storm drains, landscaping, fencing, utilities, concrete irrigation canal, and other protruding obstructions within the clearing limits.

B. Protect trees, landscaping and shrubs that are not designated to be removed or near construction site that may be harmed by construction activities.

1.2 RELATED WORK

A. Section 01 51 36 Watering

B. Section 01 57 13 – Erosion Control

C. Section 01 57 23 – Storm Water Pollution Prevention Plan

D. Section 01 57 27 – Dust Control

E. Section 02 01 20 – Protection of Underground Facilities & Survey Monuments

F. Section 02 41 00 – Demolition

G. DIVISION 31 – EARTHWORK

1.3 REGULATORY REQUIREMENTS

A. Obtain all required permits.

B. Dispose of removed materials in a legal manner at an approved disposal facility.

C. One hundred percent of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled.

1.4 REFERENCES

A. Section 15 – Existing Facilities, State Standard Specifications

B. Section 19 – Earthwork, State Standard Specifications

1.5 DEFINITION

A. Unsuitable Material: Unsuitable material is material determined to be:

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1. Impossible to compact to specified density using ordinary methods at optimum moisture content.

2. Material containing trash, debris, oversized material or other foreign and objectionable materials.

3. Incapable of being compacted to Specified density using ordinary methods at optimum moisture content.

4. Too wet to be properly compacted if circumstances prevent satisfactory in-place drying prior to incorporation into the work.

5. Non-native material containing a significant amount of permeable materials, such as sand or rock, that cannot be blended with other material and requires to be off hauled.

6. Expansive clays that cannot be mixed or treated and requires to be off hauled.

7. Otherwise unsuitable for the planned use.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

A. Clear the specified areas by removing, above the natural ground surface, all existing improvements including utilities, vegetable growth such as trees, shrubs, logs, upturned stumps, weeds, grasses, roots of down trees, brush, and similar material.

1. Trees of 4-inch diameter and larger shall not be removed without Owner's authorization.

B. Grub the specified areas below the natural ground surface, except in embankment areas where the grading plane is two feet or more above the natural ground, to a depth necessary to remove all boulders, stumps, roots, buried logs, and other objectionable material including rock and concrete.

3.2 PRESERVATION

A. If indicated or required, preserve trees, plants, rock outcroppings, or other features designated to remain. Protect trees and plants from damage; fell trees in a manner which shall not injure standing trees, plants and improvements which are to be preserved.

3.3 SALVAGE EQUIPMENT

A. Equipment to be salvaged is designated in Section 02 41 00 – Demolition.

END SECTION

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31 23 17

TRENCHING, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 WORK INCLUDED

A. This section includes material, testing, installation, and other requirements for trench excavation, bedding, backfilling and compacting for underground pipelines and utilities. Requirements in this section do not apply to underground landscape irrigation pipes. The words pipe, utility, and pipelines are interchangeable in this Section and apply to that which is being installed in the trench.

1.2 RELATED WORK

A. General and Special Provisions

B. Section 03 30 00 – Cast-in-Place Concrete

C. Section 31 05 00 – Earthwork

D. Section 31 11 00 – Clearing and Grubbing

E. DIVISION 33 – UTILITIES

F. Section 40 05 00 – Pipe and Fittings

1.3 REFERENCES

A. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3).

C. ASTM D6938 – Density of Soil and Base Rock in Place by Nuclear method.

D. Cal/OSHA Construction Safety Orders, California Code of Regulations, Chapter 4, Subchapter 4.

E. State Standard Specifications, Section 19 – Earthwork

F. State Standard Specifications, Section 26 – Aggregate Bases

G. AWWA Manual M55 PE Pipe Design and Installation

H. AWWA Manual M11 Steel Pipe: A Guide for Design and Installation

I. American Concrete Pipe Association Concrete Pipe & Box Culvert Installation Guide

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J. National Resource Conservation Service (NRCS) Construction Specification 430 Irrigation Pipeline

K. U.S. Bureau of Reclamation Method for Prediction of Flexible Pipe Deflection M-25

L. U.S Department of Labor, 29 CFR, 1926, Subpart P

M. Geotechnical Engineering Investigation entitled, *PROPOSED NEW RECHARGE BASIN AND SEWER IMPROVEMENT* by *BSK ASSOCIATES*, dated *JANUARY 15TH, 2024.*

1.4 SUBMITTALS

A. Submit plans as required for worker protection against caving ground in excavations. Submittals shall be in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit material classification and geotechnical test results on proposed imported fill.

1.5 SAMPLES

A. Submit samples under provisions of Section 01 43 00 – Quality Control and Testing.

1.6 PROTECTION

A. Prevent trench cave-in or loose soil from failing into excavation by sloping and/or shoring, bracing, sheet piling, underpinning, or other methos according to requirements of Cal/OSHA, the U.S. Department of Labor, and the Contract Documents.

1. Trenches shall have sloping, sheeting, shoring, and bracing conforming with 29CFR1926, Subpart P—Excavations, CAL/OSHA requirements, and the Contract Documents.

B. Notify Engineer of unexpected subsurface conditions.

C. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.

D. When the pipe laying is not in progress, including the noon hours, close the open ends of pipe. Do not allow trench water, animals or foreign material to enter the pipe.

1.7 QUALITY ASSURANCE

A. Compaction Testing:

1. All compaction testing shall be in accordance with Section 01 43 00 – Quality Control and Testing.

1.8 CONTROL AND DIVERSION OF WATER

A. General – The Contractor shall furnish or procure all materials and labor required for constructing and maintaining all necessary cofferdams, channels, flumes, drains,

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sumps, and/or other temporary diversion and protective works and shall furnish, install, maintain, and operate all necessary pumping and other equipment for removal of water from the various parts of the work and for maintaining the trenches and other parts of the work free from water. The Contractor shall at all times have on the project sufficient pumping equipment for immediate use, including stand-by pumps for use in case other pumps become inoperable.

B. Plan – Prior to beginning any work on the removal of water from trenches, the Contractor shall submit for the Engineer's approval a water control plan showing the proposed method for the removal of water from trenches and other parts of the work.

C. Dispose of the water in a manner that will prevent damage to the adjacent property and in accordance with regulatory requirements.

D. Provide separate pipelines to drain trench water during construction.

E. Provide filters on devices to control and divert water to prevent the removal of fines from the soil.

F. Repair any damage caused by the failure of any part of equipment to control and divert water. Remove temporary equipment to control and divert water when no longer needed for dewatering purposes.

G. Provision of equipment to control and divert water shall be considered part of the project with no additional compensation allowed.

H. Drain rock will not be allowed in trenches.

1.9 PROJECT CONDITIONS

A. Existing underground utilities may exist at this site. Contractor shall take all necessary precautions to protect said utilities. Notify Engineer of any deviation in utility location from that which is shown on the drawings.

B. Obtain all required permits and licenses before installing utilities and follow the rules and requirements of authorities having jurisdiction.

C. Arrange construction sequences to provide the shortest practical time that the trenches will be open to avoid hazard to the public, and to reduce the possibility of trench collapse.

1.10 DEFINITION

A. Percent Compaction: The ratio of the field-tested dry density of earthfill to the maximum dry density determined in the laboratory according to the above-referenced Laboratory compaction test method – expressed as a percentage

B. Unsuitable Material – Unsuitable material is material determined to be:

1. Impossible to compact to specified density using ordinary methods at optimum moisture content.

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2. Material containing trash, debris, oversized material or other foreign and objectionable materials.

3. Too wet to be properly compacted if circumstances prevent satisfactory in-place drying prior to incorporation into the work.

4. Non-native material containing a significant amount of permeable materials, such as sand or rock, that cannot be blended with other material and requires to be off hauled.

5. Expansive clays that cannot be mixed or treated and requires to be off hauled.

6. Otherwise unsuitable for the planned use.

C. Deflection is the decrease of the vertical diameter of the pipe (and corresponding increase in horizontal diameter) due to load on the pipe. Deflection is expressed in terms of percentage as follows: change in diameter/ diameter × 100).

D. Ovality% = 2 x [(Dmax-Dmin)/(Dmax +Dmin)] x 100 where Dmax and Dmin are maximum and minimum pipe diameters in any direction.

1.11 CLASSIFICATION AND CHARACTERIZATION OF EXCAVATED MATERIAL

A. The Geotechnical Engineering Report provides subsurface data.

B. The Contractor shall consider all trenched material as being unclassified.

PART 2 PRODUCTS

2.1 EXISTING GROUND AND BACKFILL

A. In-situ soil or bedrock that the Contractor excavates for trenches. The Contractor may use this excavated material as backfill if it meets backfill material property requirements and/or if they process it so that it meets those requirements.

B. Soil fill that the Contractor places and compacts in trenches over granular backfill and aggregates and that meets material property requirements of the geotechnical engineering report and the Contract Documents. Backfill may consist of existing ground or imported earth material. The Engineer shall approve backfill before it is imported to the site and placed.

C. Backfill used above the pipe zone shall be fine-grained materials free from roots, debris, and rocks larger than 3 inches.

2.2 AGGREGATES

A. Granular Backfill: material meeting the requirements of State Standard Specifications Section 19-3.02C.

B. Gravel: Natural rock; free of shale, clay, friable materials and debris; graded in accordance with 1½" x ¾" aggregate grading in Section 90-1.02C, State Standard Specifications.

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C. Sand: Natural sand; free of friable or soluble materials, less than 2 percent organics by dry weight, and graded in accordance with State Standard Specifications Section 90-1.02C(4)(c):

2.3 CONCRETE SLURRY

A. Concrete slurry mix shall be as specified in Section 03 30 00 - Cast-in-Place Concrete.

2.4 MATERIALS FOR TRENCH BACKFILLING

A. Furnish required bedding, select backfill, and backfill materials shown on the Plans and that meets requirements in this section depending on the trench type.

B. The Engineer shall approve all trench-backfill material prior to the Contractor's import and placement.

C. Materials used in backfill, as shown in trench details, are defined as follows:

1. Bedding: Where trench bottoms expose bedrock and/or soil with hard gravel/cobble particles that protrude up into the excavation, and when trench subgrades consist of soft and unstable soil, then bedding is required. Bedding may be omitted if, in the opinion of the Engineer, the excavated trench bottom will adequately support and not damage the utility line. Material property requirements for bedding follow:

   a. Less than 2 percent of organics by dry weight

   b. Plasticity index of less than 6

   c. The following particle size distribution:

Sieve Size	Percent Passing by Dry Weight
3/8 inch	100
No. 4	95
No. 200	5

   d. Sand Equivalent of 30, per ASTM D2419.

2. Backfill: Backfill may be required as shown on the Plans. Backfill shall meet the material property requirements in the Geotechnical Engineering report and the material property requirements that follow:

   a. Less than 3 percent by dry weight of organics

   b. Plasticity index of less than 12

   c. Expansion Index less than 20

   d. The following particle size distribution:

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Sieve Size	Percent Passing by Dry Weight
½ inch	100
No. 4	65-100
No. 200	20-45

3. Gravel: Gravel shall meet the requirements listed above under Aggregates. Gravel shall not be used for pipe bedding or backfill.

4. Sand: Sand shall meet the requirements listed above under Aggregates.

2.5 SAND-CEMENT SLURRY

A. Sand-cement slurry backfill shall be as specified in Section 03 30 00 – Cast-in-Place Concrete.

2.6 WATER FOR FILL MOISTURE CONDITIONING AND COMPACTION

A. Water shall be free of organic materials injurious to the pipe coatings, have a pH of 7.0 to 9.3, maximum chloride concentration of 500 mg/l, and a maximum sulfate concentration of 500 mg/l.

PART 3 EXECUTION

3.1 GENERAL

A. Excavation shall be by open cut except that short sections of a trench may be tunneled if the utilities can be safely and properly installed and backfill can be properly compacted in such tunnel sections.

B. Excavation and backfilling of trenches used for construction of communications, power, process piping, and water distribution and sewer systems shall conform to State Standard Specifications, Section 19, Earthwork.

3.2 INSPECTIONS

A. The contractor must verify that the engineer has approved stockpiled material for reuse as backfill material (for each backfill zone for intended use).

B. The contractor shall verify that trenches that they will backfill are free of debris, snow, ice, or water, and that ground surfaces that backfill will cover are not frozen.

3.3 PREPARATION

A. Identify required lines, levels, contours, and datum.

3.4 TRENCH EXCAVATION

A. Excavate the trench to the lines and grades shown on the Plans with allowance for pipe thickness, sheeting, shoring, and bedding.

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B. Trenching Guidelines: Excavate the trench to the approximate level of the grade of the utility line to be installed, using adequate trench width and side slopes to safely accommodate worker access.

1. Rocky Trench Bottom: Where ledge rock, hard pan, boulders, or sharp-edged materials are encountered, over excavate trenches at least 6 inches below and beyond the planned excavation lines. The installed utility shall have at least 6 inches of clearance from any rock protrusion.

2. Unstable Trench Bottom: Secure the Engineer's approval of over-excavation depth and stabilization method. The Contractor must seek the Engineer's approval of overexcavation bottoms and subgrades before the Contractor backfills and places utility pipes/conduits.

3. Wet Trench Construction: use approved method of dewatering through diversion, damming and pumping, well points, or underdrain systems. Dispose removed fluidized materials as approved. Use bedding material to build a suitable foundation to within 6 inches of finished utility grade, prior to bedding with the specified material. Place and compact backfill as specified. The Contractor must seek the Engineer's approval of overexcavation bottoms and subgrades before the Contractor backfills and places utility pipes/conduits.

C. Correct unauthorized excavation at no cost to Owner.

1. If the trench is excavated below the required grade, backfill over-excavations with compacted engineered backfill as specified.

D. Trench widths shall be as shown on the Plans. If no details are shown, then the maximum width in the pipe zone shall be 24 inches greater than the pipe outside diameter.

E. Trench width at the top of the trench will not be limited except where width of excavation would undercut adjacent structures and footings. In such case, width of trench shall be such that there is at least two feet between the top edge of the trench and the structure or footing.

F. Excavation shall not interfere with normal 45 degree bearing splay of foundations.

G. Hand trim for bell and spigot pipe joints.

H. Remove lumped soil, boulders and rock.

I. During trench excavation, place the excavated material only within the working area. Do not obstruct roadways or streets. Follow Caltrans guidelines for excavation safety for conditions of surcharge from stockpiled material.

J. Foundation stabilization

1. After the required excavation has been completed, the Engineer will inspect the exposed subgrade to determine the need for any additional excavation. It is the intent that additional excavation be conducted in all areas within the

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influence of the pipeline where unsuitable materials exist at the exposed subgrade. Over excavation shall include the removal of all such unacceptable material that exists directly beneath the pipeline to a width 24 inches greater than the pipe outside diameter and to the depth required.

3.5 LENGTH OF OPEN TRENCH

A. Limit the length of open trench to 600 feet in advance of pipe laying or amount of pipe installed in one working day.

B. Complete backfilling, temporary or first layer paving, not more than 400 feet in the rear of pipe laying operation.

3.6 TRENCH EXCAVATION IN EMBANKMENT AREAS

A. Construct and compact fill embankments to an elevation one foot, minimum, over the top of the largest pipe or conduit to be installed prior to trench excavation.

3.7 UNSUITABLE MATERIAL

A. Unsuitable Material – Unsuitable material is material determined to be:

1. Impossible to compact to specified density using ordinary methods at optimum moisture content.

2. Material containing trash, debris, oversized material or other foreign and objectionable materials.

3. Too wet to be properly compacted if circumstances prevent satisfactory in-place drying prior to incorporation into the work.

4. Non-native material containing a significant amount of permeable materials, such as sand or rock, that cannot be blended with other material and requires to be off hauled.

5. Expansive clays that cannot be mixed or treated and requires to be off hauled.

6. Otherwise unsuitable for the planned use.

3.8 CONTROL OF WATER

A. The Contractor shall keep trenches free from water. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering of excavations. The Contractor shall at all times have on the project sufficient pumping equipment for immediate use, including stand-by pumps for use in case other pumps become inoperable. The Contractor shall maintain and operate all necessary pumping and other equipment for dewatering of excavations.

B. The dewatering operation shall be continuous, so that the excavated areas are kept free from water during the construction. until backfill has been placed to a sufficient height to anchor the work against possible floatation.

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C. Dewatering devices shall be adequately filtered to prevent the removal of fines from the soil.

D. Do not drain trench water through pipeline under construction but use separately provided pipeline.

E. Repair any damage caused by the failure of any part of the protective works. Remove temporary protective works when they are no longer needed for dewatering purposes.

F. Use of any drain rock in the trench bottom to convey water or stabilize wet soil shall only be done if approved by the Engineer.

G. Provision of dewatering and dewatering equipment shall be considered part of the project with no additional compensation allowed.

3.9 TRENCH BACKFILLING

A. Support pipe during placement and compaction of bedding fill.

B. Backfilling and cleanup work shall be accomplished as sections of pipe or conduit are tested and approved. Vehicular travel through the work site shall be impeded or obstructed as little as possible.

C. Compaction: The contractor shall choose means and methods for achieving compaction. Generally, vibratory compactors tend to work better for sands and gravels (non-cohesive soils) and mechanical tampers work better for sand and gravel containing a significant portion of fine-grained materials, such as silt and clay (cohesive soils).

D. Hand tamp around pipe or cable to protect the lines until adequate cushion is attained. Puddling or water flooding for consolidation of backfill or compaction by wheel rolling will not be permitted.

E. Bedding: Unless otherwise specified, compact the specified material to 95 percent of maximum density to the finished utility grade.

F. Embedment: Fill by hand placement around the utility to just over half depth, and compact in a manner to ensure against lateral or vertical displacement. Place select backfill to 12 inches above the utility line by hand placement in not more than 6-inch layers.

G. Backfill: Soil backfill shall be placed and backfilled in lifts, with each lift compacted to the project requirements prior to addition of the next layer. Unless otherwise specified, place and compact the specified material as follows:

1. Non-traffic Areas: Fill and compact in 8-inch maximum layers to 90 percent compaction.

H. Employ a placement method that will not disturb or damage pipes or utilities.

I. Maintain moisture content of backfill materials to attain required compaction density.

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J. Compact trench-backfill to the specified percent compaction. Compact by using mechanical compaction or hand tamping. Do not use high impact hammer type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe. Do not use water flooding or jetting for backfill compaction.

K. Compact material placed within 12 inches of the outer surface of the pipe by hand tamping only.

1. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe.

2. Use particular care in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling.

L. After pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, in maximum 8-inch lifts, keeping the level of backfill the same on each side.

M. Do not use any axle-driven or tractor-drawn compaction equipment within 5 feet of building walls, foundations, and other structures.

N. Do not permit free fall of the material until at least two feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or on the surface of compacted backfill around the pipe. Do not operate heavy equipment over the pipe until at least 3 feet of backfill has been placed and compacted over the pipe.

O. Remove surplus backfill materials from site.

P. Leave stockpile areas completely free of excess fill materials.

3.10 TESTING FREQUECY

A. Backfill Compaction:

Pipeline Trenches: At least 1 test per lift per every 200 feet of trench backfill placed or every 500 cubic yards placed, whichever is more frequent.

A greater frequency of testing may be required at the start of work or when new materials, crews, or equipment are introduced to the site. A lesser frequency can be utilized if approved by the Engineer and the Owner's Representative.

B. Laboratory Index Testing:

In addition, at least one set of index tests shall be performed for each distinct material type used as compacted fill at the site.

Additional tests may be performed, as directed by the Owner's Representative, whenever deviations in material properties or quality of workmanship are suspected.

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3.11 COMPACTION REQUIREMENTS

A. Relative compaction requirements shall be as shown on the Plans.

3.12 TOLERANCES

A. Top Surface of trench backfill: ±0.1 foot.

PART 4

4.1 SAND CEMENT SLURRY, CONCRETE ENCASEMENT AND THRUST BLOCKS

A. Place in accordance with the Contract drawings.

4.2 PIPE DEFLECTION AND OVALITY CONTROL

A. Pipe installation and backfill process shall be done in a manner that does not overly deflect pipe or make it overly oval in any direction so that deflection or ovality limits in pipe specifications or installation guidelines are exceeded. The following table has common deflection and ovality limits for flexible pipes but pipe specifications and installation guidelines shall govern over this table. Owner has the option to hire a third-party testing firm to conduct pipe mandrel testing to verify the pipe installation is within the following requirements or as stated in the individual pipe specification sections.

Pipe Type	Deflection and Ovality Limit
PVC Pressure, Sewer, or Gravity Pipe	**7.5%**
Steel with Flexible Coating	**5%**
Cement Mortar Lined Steel with flexible coating	**3%**
Cement Mortar Coated Steel	**2%**
Cement Mortar Lined and Coated Steel	**2%**
Solid Wall HDPE	**7.5% for DRs ≥ 21, 6.0% for DRs ≥13.5 and < 21 5.0% for DR 11, 4.0% for DR 9, 3.0% for DR 7.3**

END SECTION

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SECTION 31 23 19

DEWATERING

PART 1 GENERAL

1.1 WORK INCLUDED

A. This section includes designing, furnishing, installing, operating, maintaining, and removing a dewatering system. The system shall be of sufficient size and capacity to maintain a dry condition for construction of each part of the work without delaying construction operations. Control all water regardless of source. Comply with applicable environmental protection laws and requirements in operation of the dewatering system.

1.2 RELATED WORK

A. Section 01 33 00 – Submittal Procedure

B. Section 31 05 00 – Common Work Results for Earthwork

C. Section 31 23 17 – Trenching, Backfilling and Compacting

1.3 DATA AVAILABLE

A. Logs of test borings, test pits, and trench excavations performed are shown in the geotechnical report (see Section 31 05 00). The subsurface conditions from the test borings and excavations apply only to the locations of the borings and at the times of the explorations. The subsurface conditions elsewhere at the site and at the time of construction may be different.

B. Groundwater elevations often vary with time as well as location and may not be the same as shown above at the time of construction. Furthermore, saturated soil exists in the capillary zone above the water table. Contractor is responsible for monitoring water table elevations and factoring capillary rise throughout the site and duration of construction. Costs for said monitoring are to be included in Contractor's bid.

1.4 SUBMITTALS

A. Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit information on the proposed type of dewatering system including the arrangement, location and depths of system components.

C. Complete description of equipment and instrumentation to be used with installation including operation and maintenance procedures.

D. Type and sizes of desiltation equipment.

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E. Method of disposal of pumped water.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 GENERAL

A. Review and evaluate the available subsurface data for the project site with respect to required dewatering facilities, including any additional groundwater monitoring data required.

B. Provide means and devices to remove promptly and dispose of water entering excavations and keep the bottoms of the excavations firm and free of standing water and side slopes stable until the pipeline or structures to be constructed are completed and/or the backfill to be placed therein has been placed.

C. Perform the pumping and dewatering operations such that no disturbance to the bearing soil or to soil supporting any other work will result from the dewatering operations. The dewatering discharge shall not cause siltation or other negative environmental impact on natural waterways or other property; such discharge shall be in accordance with applicable federal, state, and local regulations.

D. Operate the dewatering system continuously to prevent flotation of partially completed pipelines, structures or other work and flooding/excess wetting of work areas.

3.2 DEWATERING REQUIREMENTS

A. Design, furnish, install, maintain, and operate a dewatering system which shall prevent loss of fines, boiling, quick conditions, or softening of foundation strata and maintain stability of bottoms of excavations so that every phase of the work can be performed in the dry with the exception of dredging. Prior to placement of concrete or pipe the subgrade shall be in a firm, well drained condition and of adequate and uniform load bearing nature to support construction personnel, materials, equipment and reinforcing steel mats without tracking, rutting, heaving or settlement. All soft, saturated or otherwise unsuitable material shall be removed and replaced with approved backfill.

B. Water levels shall be a minimum of four (4) feet below subgrade until all backfill is placed and compacted.

3.3 INSTALLATION AND OPERATION

A. The location of every element of the dewatering system shall be such that interference with excavation and construction activity is minimized.

B. Demonstrate to the Owner’s Representative that the dewatering system meets the specified requirements.

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C. When the dewatering system does not meet the specified requirements and, as a consequence, loosening or disturbance of the foundations strata, instability of the slopes, or damage to the foundations or structures occurs, provide materials, labor, and work for restoration of foundations soil, fill soils, slopes, foundations, or structures at no cost to the Owner.

D. When the dewatering system does not meet the specified requirements and consequently fill surfaces become too wet or the fill exceeds the specified moisture content, remove and replace the upper materials with materials placed and compacted to the specifications. Do not dry out overly wet fills resulting from failed or inadequate dewatering systems or mix with dry material and rework in-place to meet applicable fill specifications.

3.4 STANDBY EQUIPMENT

A. Provide standby pumping and power equipment of sufficient capacity to maintain the dewatering system in an operable condition in the event of failure of any of the original equipment or power.

3.5 DAMAGES

A. The Contractor shall be responsible for and shall repair without cost to the Owner any damage to work in place, other contractors' equipment, and the excavation, including damage to the bottom of the excavation due to heave and removal of material and pumping out of the excavated area that may result from the Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

3.6 REMOVAL

A. Remove the components of the dewatering system from the site at the completion of the dewatering work.

END SECTION

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SECTION 31 23 35

DISPOSAL OF MATERIALS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Disposal of unsuitable material, concrete, and other debris, as described below.

1.2 RELATED WORK

A. Section 01 57 23 – Storm Water Pollution Prevention Plan

B. Section 01 57 27 – Dust Control

C. Section 03 33 00 – Cast-In-Place Concrete

D. Section 31 05 00 – Earthwork

E. Section 31 11 00 – Clearing and Grubbing

F. Section 31 23 17 – Trenching, Backfilling, and Compaction

G. Section 31 37 10– Riprap

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

1.4 GENERAL

A. The Contractor shall be responsible for the cleanup and disposal of waste materials and rubbish. The disposal of waste materials and rubbish shall be in accordance with applicable Federal, State, and local laws and regulations, and with the requirements of this paragraph. Should a conflict exist in the requirements for cleanup and disposal of waste materials, the most stringent requirement shall apply.

B. The Contractor shall keep records of the types and amounts of waste materials produced, and of the disposal of all waste materials on or off the jobsite.

C. The cost of disposing of waste materials other than unsuitable materials shall be included in the prices bid in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

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PART 3 EXECUTION

3.1 DISPOSAL OF EXCAVATED MATERIAL

A. All excess excavated material shall be handled according to Section 31 05 00 – Earthwork.

B. All unsuitable material that is hauled off-site shall be properly disposed.

3.2 DISPOSAL OF OTHER DEBRIS

A. All oil cake, wood debris, structure demolition, vegetation and any other debris removed from the project site shall be legally disposed of at a site(s) obtained by the Contractor with prior written permission of the Owner's Representative. Contractor shall identify the proposed Disposal Site(s) at the pre-construction conference. Such Disposal Site(s) shall be a properly licensed and permitted facility pursuant to state and local regulations for purposes of accepting delivery of the respective materials. No recyclable material shall be disposed of at any landfill. All disposable recyclable materials shall be disposed in a manner that facilitates recycling. In addition to the following, a certificate of compliance stating disposal location and manner of disposal of recyclable materials shall be submitted to the Owner's Representative.

1. Disposal of combustible materials shall be by removal from the construction area. Disposal of combustible materials by burning will not be permitted. Disposal of waste materials by burying will not be permitted.

2. Waste materials shall be disposed of or recycled at a State approved disposal or recycle facility. The Contractor shall make any necessary arrangements with private parties, and State and county officials pertinent to locations and regulations of such disposal or recycle facilities, and shall pay any fees or charges required for such disposition.

3.3 CONTRACTOR'S DISPOSAL SITES

A. Contractor shall make arrangements for disposing of the materials at the Disposal Site(s) and pay all costs involved. Arrangements shall include, but not be limited to, obtaining written authorization from the property owner of the Disposal Site(s) and before disposing of any material off the project site, Contractor shall furnish to the Owner's Representative the authorization or a certified copy thereof together with a written release from the property owner absolving the Owner from any and all responsibility in connection with the disposal of material on the property of the Disposal Site(s). Before any material is disposed of on the Disposal Site(s), the Contractor shall obtain written permission from the Owner's Representative to dispose of the material at the location designated in the authorization.

B. It is expressly understood and agreed that the Owner assumes no responsibility to the Contractor whatsoever by the granting of such permission and Contractor shall assume all risks in connection with the use of the Disposal Site(s). The Contractor is cautioned to make such independent investigation and examination as the Contractor deems necessary to be satisfied as to the quantity and types of materials

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which may be disposed of on the Disposal Site(s) and the status of any permits or licenses in connection therewith.

C. Within 24 hours of removing the respective material from the project site for disposal, Contractor shall provide Owner's Representative with a certified copy of the weight slip from the Disposal Site obtained by Contractor upon delivery of such debris, and a certified statement from Contractor identifying the material constituting the debris and that it was disposed of at the Disposal Site (identifying the and name of the owner) in accordance with all laws and applicable regulations promulgated by Federal, State, regional, or local administrative and regulatory agencies.

3.4 DISPOSAL OF HAZARDOUS WASTE AND MATERIALS

A. Materials or wastes, defined as hazardous by 40 CFR 261.3, or by other Federal, State, or local laws or regulations, used by the Contractor or discovered in work or storage areas, shall be disposed of in accordance with these specifications and applicable Federal, State, and local laws and regulations. Unknown waste materials that may be hazardous shall be tested, and the test results shall be submitted to the Owner's Representative for review.

B. Waste materials known or found to be hazardous shall be disposed of in approved treatment or disposal facilities. Hazardous wastes shall be recycled whenever possible. A copy of all hazardous waste manifest shall be sent to the Owner's Representative.

C. Waste materials discovered at the construction site shall immediately be reported to the Owner's Representative. If the waste may be hazardous, the Owner's Representative may order delays in the time of performance or changes in the work, or both. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with the applicable clauses of the contract.

D. If necessary, the Contractor will be required to conduct an environmental site assessment at the following Contractor use locations:

1. All hazardous waste accumulation areas;

2. All hazardous material and petroleum dispensing and storage areas where the aggregate storage of hazardous materials or petroleum at the site is or has been over 110 gallons.

3. This site assessment shall be performed by a qualified environmental consultant or equivalent and shall document through appropriate analytical sampling that the site is free of the effects of contamination (i.e., contaminant concentrations less than State action cleanup levels).

3.5 CLEANUP

A. The Contractor shall keep work and storage areas free from accumulations of waste materials and rubbish, and before completing the work, shall remove all plant facilities, buildings, including concrete footings and slabs, rubbish, unused

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materials, concrete forms, and other like materials, which are not a part of the permanent work.

B. Upon completion of the work, and following removal of construction facilities and required cleanup, work areas shall be regraded and left in a neat manner conforming to the natural appearance of the landscape.

END SECTION

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SECTION 31 37 10

RIPRAP

PART 1 GENERAL

WORK INCLUDED

A. The work of this section consists of furnishing and placing rock riprap for embankment and channel protection.

1.2 RELATED WORK

A. Section 31 05 00 – Earthwork

1.3 REFERENCES

A. Section 72 – Slope Protection, State Standard Specifications.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Manufacturer's installation instructions for geotextile fabric.

PART 2 PRODUCTS

2.1 GEOTEXTILE FABRIC

A. Non-woven drainage fabric, shall be Mirafi 140NC as manufactured by TenCate Geosynthetics or Engineer approved equivalent.

B. Provide securing pins recommended by fabric manufacturer and fold back as shown on the drawings.

2.2 RIPRAP

A. Riprap shall be Class No 3 as specified in Section 72-2.02 of the State Standard Specifications.

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Rock Gradation

Nominal RSP class by median particle diameter[b]		Nominal median particle weight W_{50}[c,d]	d_{15}[c] (inches)		d_{50}[c] (inches)		d_{100}[c] (inches)	Placement
Class[a]	Diameter (inches)		Min	Max	Min	Max	Max	Method
I	6	20 lb	3.7	5.2	5.7	6.9	12.0	B
II	9	60 lb	5.5	7.8	8.5	10.5	18.0	B
III	12	150 lb	7.3	10.5	11.5	14.0	24.0	B
IV	15	300 lb	9.2	13.0	14.5	17.5	30.0	B
V	18	1/4 ton	11.0	15.5	17.0	20.5	36.0	B
VI	21	3/8 ton	13.0	18.5	20.0	24.0	42.0	A or B
VII	24	1/2 ton	14.5	21.0	23.0	27.5	48.0	A or B
VIII	30	1 ton	18.5	26.0	28.5	34.5	48.0	A or B
IX	36	2 ton	22.0	31.5	34.0	41.5	52.8	A
X	42	3 ton	25.5	36.5	40.0	48.5	60.5	A
XI	46	4 ton	28.0	39.4	43.7	53.1	66.6	A

[a]For RSP Classes I–VIII, use Class 8 RSP fabric. For RSP Classes IX–XI, use Class 10 RSP fabric.
[b]Intermediate or B dimension (i.e., width) where A dimension is length and C dimension is thickness.
[c]d%, where % denotes the percentage of the total weight of the graded material.
[d]Values shown are based on the minimum and maximum particle diameters shown and an average specific gravity of 2.65. Weight will vary based on specific gravity of rock available for the project.

PART 3 EXECUTION

3.1 EXCAVATION

A. Excavate as shown and as necessary to accept variation in stone size. Obtain Contracting Officer's approval of subgrade before placing geotextile fabric or riprap.

3.2 GEOTEXTILE FABRIC

A. Place on smooth, uniform slope, loosely enough to conform to minor surface irregularities. Follow manufacturer's recommendations for making laps and for fastening and securing. Repair or replace fabric that has been damaged to stone placement. Re-lay fabric that becomes dislodged.

3.3 PLACEMENT

A. Placement shall be Method B as specified in Section 72-2.03C of the State Standard Specifications

END SECTION

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SECTION 33 05 23

JACK AND BORE

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test steel casing pipes, and appurtenances as indicated and as specified. Bored or jacked casing shall be installed under the existing and/or proposed City of Los Banos sewer trunk lines and water lines as indicated in the Plans.

B. Construct jacking and receiving pits.

C. Furnish, install and test carrier pipe in steel casing pipe.

D. Backfill pits and restore to original grade after completion of pipe installation.

E. Coordination of work with Earthwork Contractor.

1.2 RELATED WORK

A. Section 31 05 00 – Earthwork

B. Section 33 01 00 – Pipe and Fittings

1.3 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Contractor's plan of construction of jacking and receiving pits, shoring plan, and schedule of work.

1.4 PERMITS

A. The Owner shall obtain the necessary permit(s) from the County, and the Contractor shall comply with all requirements of the permit(s).

B. All costs to obtain and comply with the permits required for the work shall be included in the cost of the work, and no additional allowance will be made therefore.

PART 2 PRODUCTS

2.1 STEEL CASING PIPE

A. Casing pipe shall be new smooth steel pipe meeting the requirements of ASTM A36. Nominal diameters shall be as shown in the table below:

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Crossing Purpose	Nominal Diameter (inches)	Minimum Wall Thickness (inches)
Wastewater	42”	1/2”

B. Pipe sections shall be joined by welding the full circumference of the pipe by a certified welder. Welds shall be full penetration and be the same thickness as the pipe.

C. Pipe skids shall be commercially available plastic pipe skids.

PART 3 EXECUTION

3.1 JACKING AND RECEIVING PITS

A. Contractor shall furnish the design of the pit shoring, signed and stamped by an Engineer registered in the State of California.

B. All work relating to the excavation, maintenance, and backfill of the pits shall be in conformance with applicable safety regulations, all permits relating to the work, and these Specifications.

3.2 INSTALLATION OF CASING PIPE

A. Casing pipe shall be installed by jacking to the line and grade shown on the plans. Pipe grade shall be as indicated in Plans.

B. Boring and rock removal, if required, may proceed ahead of the jacking of the carrier pipe, but not more than one foot ahead of the casing pipe. Jacking shall be in conformance with all permit requirements.

C. After completion of the casing installation, all voids outside of the casing shall be filled with 30 PCF Cellular Grout.

3.3 CARRIER PIPE PLACEMENT

A. Unless otherwise approved, the pipe shall be laid upgrade from point of connection to an existing pipeline or from a designated starting point. The pipe shall be installed with the bell end forward or upgrade, unless approved otherwise. The forward end of the pipe shall be kept tightly closed with a temporary plug.

B. Pipe shall be fitted with securely fastened skids with the pipe supported at each end and at the middle of each joint.

C. After installation of the pipe in the casing, the casing ends shall be sealed with brick and mortar, neoprene seals or as noted on the plans

D. Pipe sections within casing shall be leak tested prior to backfilling the pits.

END SECTION

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SECTION 33 05 26

UTILITY LINE MARKING

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of furnishing and installing utility line marking tape in the trench above newly constructed utility lines.

1.2 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Samples: 24-inch strips of tape and two markers.

C. Certification that the materials used in the tape fabrication meet the requirements of this section.

D. Installation procedure if the cable is installed by plowing.

PART 2 PRODUCTS

2.1 MARKING TAPE

A. Capable of being inductively detected electronically.

B. Construction: Metallic foil laminated between two layers of impervious plastic film not less than 3 inches wide. Total thickness of tape shall not be less than 0.005 inch (5 mil), ±10 percent manufacturing tolerances.

1. Film: Inert plastic. Each film layer shall be not less than 0.001 inch (1.0 mil) thick.

2. Foil: Not less than 0.001 inch (1.0 mil) thick.

3. Adhesive: Compatible with foil and film.

C. Imprint: 3/4-inch or larger bold black letters.

D. Legend: Identify buried utility line tape with imprint such as "Caution: Sewer Line Below". Repeat identification at approximately 24 inch intervals.

E. Background Color: APWA color code and as specified in the following table.

Color	Utility
Purple	Irrigation Water

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F. Manufacturer: Lineguard, Inc., Wheaton, Illinois; Reef Industries, Inc., Houston, Texas; Thor Enterprises, Inc., Sun Prairie, Wisconsin; or Engineer-approved equivalent.

2.2 SURFACE MARKERS

A. All markers shall have an identifying letter either cast or routed into marker. The Contractor has the option of any of the following. However, only one type shall be used on any one project:

B. Cast-In-Place Concrete.

1. Concrete: As specified in Section 03 33 00 – Cast in Place Concrete.

2. Reinforcement: One No. 5 bar in center of the marker.

C. Precast Concrete: Commercially fabricated concrete marker meeting design dimensions and concrete reinforcing requirements.

D. Timber Posts: Any softwood lumber species meeting PS 20-70. Grade No. 1 or better, free of heart center, S4S as shown. Pressure treat timber posts for soil contact with waterborne preservative in accordance with AWPA C2-90.

2.3 TRACER WIRE

NOT USED.

PART 3 EXECUTION

3.1 MARKING TAPE

A. Install tape in backfill directly over each buried utility line as shown on the detailed drawings.

B. Unless otherwise shown, tape shall be installed a minimum 1.5 feet below finish grade. However, in no case shall tape be placed closer than two feet above the top of the pipe.

C. Where utilities are buried in a common trench, identify each line by a separate warning tape. Bury tapes side by side directly over the applicable line.

3.2 TRACER WIRE

NOT USED.

3.3 SURFACE MARKERS

A. In addition to marking tape, install surface markers at all changes in horizontal direction and at intervals not exceeding 400 feet.

END SECTION

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SECTION 33 46 18

HIGH-DENSITY POLYETHYLENE PIPE AND FITTINGS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test all High-Density Polyethylene (HDPE) Pipe, and fittings as indicated and as specified on the plans.

1.2 RELATED WORK

A. Section 03 30 00 – Cast-In-Place Concrete

B. Section 31 23 17 – Trenching, Backfilling and Compacting

C. Section 33 05 26 – Utility Line Marking

D. Section 33 30 00 – Sanitary Sewer

E. Section 33 31 13 – Gravity Sewer Pipe & Appurtenances

F. Section 40 05 00 – Pipe & Fittings

1.3 REFERENCES

A. Uniform Plumbing Code, latest edition.

B. ANSI / AWWA , latest edition.

1. ANSI/AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission

C. American Society for Testing and Materials

1. Standards: D 2657, D 2774, D 2837 and D 3350

D. Plastic Pipe Institute

1. PE 4710

E. State Standard Specifications.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Product Data: Describe materials and installation equipment including fusion machine. Include optimum range of fusion conditions such as fusion temperature, interface pressure, and cooling time.

33 46 18 HDPE Pipe and Fittings.docxhttps://us-partner-integrations.egnyte.com/msoffice/wopi/files/17660874-1a82-4153-b12d-33bfab8927a4/WOPIServiceId_TP_EGNYTE_PLUS/WOPIUserId_246.ppeng.egnyte.com/33 46 18 HDPE Pipe and Fittings.docx

C. Shop drawings of mechanical restrained joint assemblies.

D. Manufacturer's Published Installation Instructions and warranty.

E. Certificates:

1. Manufacturer's certificate attesting that high-density polyethylene pipe (HDPE) and fitting types meet specified requirements.

2. Manufacturer's certification of date of manufacture for each lot delivered.

F. Qualifications of installation crew for high-density polyethylene pipe including qualifications of the fusion machine technician. Furnish proof of training in the use of fusion equipment

1.5 QUALITY ASSURANCE

A. Fusion Machine Technician Qualifications: 3 years' experience in the installation of similar PE piping systems.

B. Markings on the pipe shall be in accordance with AWWA C906.

1.6 MATERIALS

A. All bolts, nuts, washers, and tie rods used to secure underground fittings shall be stainless steel per ASTM A320 unless noted otherwise.

1. Apply an anti-seize compound to all threads of stainless steel bolts.

PART 2 PRODUCTS

2.1 HIGH-DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

A. HDPE Pipe

1. Pipe shall be high molecular weight, high-density polyethylene pipe. All material shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D3350 with a minimum cell classification of 445474C or 445574C as noted in 2.1.A. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of same specification from the same raw material pipe. Polyethylene pressure pipe shall also conform to the applicable requirements of ASTM F714. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black of not less than 2 percent. The manufacture of the HDPE resin shall certify the cell classification indicated.

2. Pipe sizes 3" and large shall have a manufacturing standard of ASTM F714, while pipe smaller than 3" shall be manufactured to the dimensional requirements listed in ASTM D3035. Dimension Ratio (DR) and Outside Diameter (IPS) shall be as specified on plans.

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3. HDPE pipe 4 inches through 65 inches in diameter shall conform to AWWA C906, installed per AWWA M55 unless otherwise specified, and shall be listed as meeting NSF-61.

4. Pipe shall be color coded for the intended service. The color coding shall be permanently co-extruded stripes on the pipe outside surface as part of the pipe's manufacturing process. Color coding shall be as follows:

   a. Irrigation Water – Purple

5. Pipe shall be rated for minimum 80 PSI working pressure

6. The pipe inside diameter shall not be less than the nominal diameter specified or shown.

7. The pipe dimension ratio shall be a minimum of SDR 26.

8. All joints for buried polyethylene pipe shall be of the thermal fusion type.

B. HDPE Fittings

1. PE fittings or PE fitting components are intended for joining with PE pipe by thermal fusion or electrofusion, or fittings or components of fittings of other materials designed to connect between PE pipe and other types of pipe by mechanical methods, such as compression, flange, or mechanical joint adapter, or restrained push-on connection.

2. Polyethylene fittings shall comply with the requirements in AWWA C906. The fittings or components may be molded, thermoformed from pipe sections, or fabricated. Molded fittings shall meet the requirements of AWWA C906 and the requirements of ASTM D2683 for socket-type fittings, ASTM D3261 for butt-type fittings, or ASTM F1055 for electrofusion-type fittings.

3. Thermoformed and fabricated fittings shall meet the requirements of AWWA C906 and ASTM F2206.

4. The pressure class of a fitting shall be the same as or greater than the pipe to which the fitting will be joined, including a surge allowance equal to or greater than the pipe.

5. Butt Fusion Fittings – Fittings shall be made of HDPE material with a minimum material designation code of PE4710 with a minimum Cell Classification as noted in 2.01.A. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by owner/engineer. All fittings shall meet the requirements of AWWA C906.

   a. Molded fittings shall comply with the requirements of ASTM D3261.

   b. All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F2206, as manufactured by a manufacturer holding an ISO 9001 quality system

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certificate. Each fitting will be marked per ASTM F2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project.

c. Socket fittings shall meet ASTM D2683.

6. Electrofusion Fittings – Fittings shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell Classification of 445474C or 445574C as noted in 2.01.A. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans. For potable water systems, all electrofusion fittings shall have AWWA approval.

7. Bolted Connections – Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.

a. Metallic back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with HDPE Flanges. Back up rings shall have bolt pattern that will mate with AWWA C207 Class D (generically known as 150-pound patterns).

b. Flange assemblies shall be assembled and torqued according to PPI TN-38, “Bolt Torque for Polyethylene Flanged Joints.”

C. Mechanical Fittings: The use of mechanical coupling and saddles shall be approved by the Owner or Engineer prior to installation. Mechanical Fittings shall be designed for use and compatible with HDPE pipe, including SS stiffeners when required by manufacturer. Mechanical fittings shall have a pressure rating equal to or greater than the pipe.

D. Fabricated Fittings: Fittings shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell Classification of 445474C or 445574C as noted in 2.01.A. Fabricated Fittings shall have a manufacturing standard of ASTM F2206. Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service at least equal to the full-service pressure rating of the mating pipe.

E. Fusion Equipment Requirements

1. Butt fusion equipment must be in satisfactory working order and the hydraulic system must be leak free. Heater plates shall be free from scrapes, gouges, and have a consistent clean coated surface. The pressure gage and thermometer should be checked for accuracy. When requested by the owner, records showing a maintenance service/inspection within 3 months prior to use for this project shall be provided.

F. Approved Suppliers

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1. All Pipe, Fittings, and Fusion Equipment shall be provided by one supplier. Approved suppliers are ISCO or Engineer approved equal.

2.2 PIPELINE LOCATING MATERIALS

A. Refer to Section 33 05 26

2.3 FLANGED JOINTS

A. Flanges shall conform to ANSI B16.5, Class 150.

B. Polyethylene Flange Adapters. Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasketless sealing, or to restrain the gasket against blowout.

C. Back-up Rings and Flange Bolts. Flange adapters shall be fitted with stainless steel back-up rings pressure rated equal to or greater than the mating pipe. The back-up ring bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be the same material as backing flange.

D. All bolts, nuts, washers, and tie rods used to secure underground or underwater fittings shall be Stainless Steel Type 314, Grade B, conforming with the requirements of ASTM A320.

E. All steel hardware installed underground shall be coated with a rust preventative, wrapped with 4 mil polyethylene sheeting, and secured with PVC tape.

F. Gaskets shall be meet the pressure requirements of the adjoining flanges and shall conform to AWWA C207. Unless specifically specified otherwise, all gasket shall be Nitrile.

G. Gaskets shall meet the requirements and recommendations suitable for the service.

2.4 FLEXIBLE JOINTS

A. Flexible couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins.

B. Hardware shall be as follows:

1. Aboveground; Steel in accordance with AWWA C111.

2. All bolts, nuts, washers, and tie rods used to secure underground or underwater fittings shall be Stainless Steel Type 314, Grade B, conforming with the requirements of ASTM A320.

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PART 3 EXECUTION

3.1 GENERAL

A. All HDPE pipe and fittings shall be cut, joined, and installed in accordance with the manufacturer's recommendations. Joining, laying, and pulling of polyethylene pipe shall be accomplished by personnel experienced in working with polyethylene pipe systems.

3.2 TRANSPORTATION, UNLOADING, HANDLING, AND STORAGE

A. The manufacturer shall package product in a manner designed to deliver the pipe and fittings to the project neatly, intact and without physical damage. During transportation each pipe shall rest on suitable pads, strips skids, or blocks securely wedged or tied in place.

B. During loading, transportation, and unloading, every precaution should be taken to prevent damage to the pipe. The handling of the pipeline shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Cuts or gouges that reduce the wall thickness by more than 10% are not acceptable and must be cut out and discarded.

C. Handle the pipe in accordance with the PPI Handbook of Polyethylene Pipe (2nd Edition), Chapter 2. All pipe and accessories shall be loaded and unloaded by lifting with hoists or by skidding in order to avoid shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skidways shall not be rolled or skidded against pipe on the ground. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior surface or interior of the pipe. All pipe and fittings shall be subjected to visual inspection at time of delivery and before they are lowered into the trench to be laid.

D. Materials, if stored, shall be kept safe from damage and shall not be stacked higher than the limits recommended by the manufacturer. The bottom tiers shall be kept off the ground on timbers, rails, or concrete. Pipe shall not be stored close to heat sources. The contractor shall be responsible for all security, damage and loss of pipe.

E. The interior of the pipe as well as all sealing surfaces of mating components (i.e. flange faces) shall be kept free from dirt or foreign matter at all times. The open ends of all sections of joined and/or installed pipe (not in service) shall be plugged to prevent insects, animals, or foreign material from entering the pipeline or pipe section. The practice of stuffing cloth or paper in the open ends of the pipe will not be permitted. Use waterproof nightcaps to prevent the entrance of any type of natural precipitation into the carrier or containment pipe and will be secured to the pipe in such a manner that the wind cannot blow them loose. Where possible, the pipe shall be raised and supported at a suitable distance from the open end such that the open end will be below the level of the pipe at the point of support.

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3.3 RECEIPT INSPECTION

A. All pipe and fittings shall be subjected to visual inspection at time of delivery and before they are installed or lowered into the trench to be laid. Defective, damaged, or unsound pipe will be rejected. Cuts, punctures, or gouges that penetrate or reduce the wall thickness by 10% or more are not acceptable and must be removed and discarded.

3.4 FUSION AND JOINING

A. Fusion Joining Requirements:

1. All HDPE pipe shall be joined to itself by the heat fusion process which produces homogeneous, seal, leak tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.

3.5 INSTALLING PIPE AT MANHOLES AND STRUCTURES

A. Place a 2-foot PVC length of pipe of the same inside diameter as the adjoining pipe at the inlet and outlet to each manhole or structure. Use one of the following methods:

1. Directly cast a manhole coupling into the manhole base. Provide rubber-ring gasket in the coupling.

2. Stretch a rubber-ring gasket around the pipe to serve as a water stop when cast into the structure wall.

B. Do not cast pipe bells into manholes or structures. Cut off the bell so that no recess or offset appears on the exposed face from the inside wall of the pipe to the outside wall of the pipe. The pipe shall have a plain end, flush with the inside wall of the manhole or structure, or as shown in the Drawings.

3.6 THRUST BLOCKS

A. As specified in Section 03 30 00 – Cast-In-Place Concrete. Thrust blocks shall be used only where specifically permitted on the drawings or with pre-approval from the Engineer.

B. Place concrete thrust blocks at all tees, elbows, plugs, and other locations where unbalanced forces exist in underground pipe in accordance with details shown. Place blocks between undisturbed ground and fitting to be anchored. Place blocking so that pipe and fittings will be accessible for repairs. Thrust blocks shall be of such size as to give bearing against undisturbed vertical earth banks sufficient to absorb the thrust from line pressure, allowing a maximum earth bearing pressure of 1500 pounds per square foot per foot of depth below natural grade or as shown.

3.7 ACCEPTANCE TESTS AND INSPECTION FOR GRAVITY PIPING

A. Refer to Section 40 05 00 – Pipe and Fittings.

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3.8 ACCEPTANCE TESTS FOR BURIED PRESSURE PIPING

A. Refer to Section 40 05 00 – Pipe and Fittings

3.9 ACCEPTANCE TEST FOR EXPOSED PIPING

A. Refer to Section 40 05 00 – Pipe and Fittings

3.10 FIELD HYDROSTATIC TESTING

A. Test in accordance with Section 40 05 00 – Pipe and Fittings.

END SECTION

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SECTION 35 20 16

WATER CONTROL GATE

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work required under this section consists of related items necessary and required to complete the work. The Contractor shall provide all items, and operations, including all labor, materials, equipment, and incidentals necessary for completion of work.

1. Slide Gates

1.2 RELATED WORK

A. Section 03 15 20 – Anchor Bolts and Expansion Anchors

B. Section 03 30 00 – Cast In Place Concrete

C. Section 03 60 00 – Grout

D. Section 09 90 00 – Painting and Coating

E. Section 11 00 00 – General Equipment Stipulations

1.3 SUBMITTALS

A. Submit shop drawings in accordance with the General and Special Provisions.

B. Acknowledgment that products submitted meet the requirements of standards referenced.

C. Operation and Maintenance Manuals:

1.4 QUALITY ASSURANCE

A. Referenced Standards:

1. American Society for Testing Materials (ASTM):

a. A126, Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

b. A276, Stainless and Heat-Resisting Steel Bars and Shapes.

c. D4020, Standard Specification for Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials (UHMWPE)

d. B139, Phosphor Bronze Rod, Bar and Shapes

e. B209, Aluminum and Aluminum Alloy Sheet and Plate.

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2. American Water Works Association (AWWA):

    a. C560-21, Cast-Iron Slide Gates.

    b. C561-21, Fabricated Stainless Steel Slide Gates.

    c. C562-21, Fabricated Aluminum Slide Gates

    d. C 563-21 Fabricated Aluminum Slide Gate

3. Powered Gates

    a. National Electrical Manufacturers Association (NEMA):

        1) 250, Enclosures for Electrical Equipment.
        2) ICS 6, Enclosures for Industrial Control and System.

4. NFPA Style MF1.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following

Manufacturers and models are acceptable:

1. Slide gates:

    a. Waterman C-20 Canal Gate or Engineer Approved Equivalent

2.2 SLIDE GATES

A. General:

1. Self-contained slide gates with operators in accordance with the configuration noted in the gate schedule or shown on the Contract Drawings.

2. Maximum leakage rate: Not to exceed 0.1 gpm per foot of seat perimeter with water at top of gate slide and operating in seating position.

3. Refer to Drawings for schedule, operator size, and other requirements.

B. Material:

1. Slide:

    a. Stainless steel: ASTM A276, Type 304.

2. Frame, guides, guide rails, cross bars, and head rails:

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a. Stainless steel: ASTM A276, Type 304.

3. Anchor bolts:

a. Stainless steel: ASTM A276, Type 304.

4. Stems and stem couplings:

a. Chrome-Plated Stainless steel: ASTM A276, Type 304.

5. Side Seals: UHMWPE.

C. Fabrication:

1. Frame and guides:

a. Rigid, welded gate frame and guides: Composed of the guide rails, cross bars, and headrails, with a clear opening the same size as the waterway, unless otherwise specified.

b. Flatback, spigotback, or embedded type as shown on Contract Drawings.

c. Construct guides incorporating a dual slot design. 1) The primary slot will accept the plate of the slide (disc). 2) The secondary slot will be sufficiently wide to accept the reinforcing ribs of the disc.

d. Design guides for maximum rigidity: Weight not less than 3 LBS per foot.

e. Guides of sufficient length to support two-thirds the height of the slide, when the gate is fully open.

f. Extend the head angle or yoke 42 inches above the operating floor.

g. Provide guides of sufficient strength so that no further reinforcing will be required.

h. Design yoke to support the operating device formed by members welded or bolted at the top of the guides.

i. Design yoke arrangement such that the disc and stem can be removed without disconnecting yoke.

j. Design yoke to support the lift forces when subjected to a load of 80 LB pull on the operator.

k. Design gates with J-seals at the side attached to frame.

l. For embedded type gates provide molded resilient seat mounted at bottom of disc for flush bottom closure and seal against embedded

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portion of the frame in the channel invert or have a resilient seat mounted on frame flush at channel invert.

m. Design gates or downward opening gates with J-seal attached to bottom frame.

n. Design bottom frame member as a minimum of 3 inches of material bearing against slide for gates or downward opening gates.

o. Utilize J-seals and resilient seats of synthetic rubber conforming to AWWA C501.

p. Self adjusting side seals, replaceable.

2. Slide:

a. Plate reinforced slide with structural shapes welded to the plate.

b. Slide cover maximum deflection: 1/360 of the span of the gate under maximum head.

c. Extend reinforcing ribs to guides so that the seating surface of the guide is reinforced.

d. Stem connection of either clevit type, with structural members welded to slide and a bolt to act as pivot pin, or a threaded and bolted (or keyed) thrust nut supported in welded nut pocket.

e. Pocket and yoke of gate capable of taking at least twice the rated thrust output of the operator at 40 lbs pull. Slide material same as frame and guides.

3. Stem:

a. Of suitable length and ample strength for the intended service.

b. Stem diameter capable of withstanding twice the rated output of the operator and supported such that L/r ratio for unsupported part of the stem shall not exceed 200.

D. Coatings:

1. Coat all exposed metal surfaces, including stem guide, slide gate per Section 09 90 00 - Painting.

2.3 GATE OPERATORS AND LIFTS

A. Refer to drawings for size and schedule.

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2.4 ALL GATES, VALVES, OPERATORS AND LIFTS

A. Provide gates, including lift, designed with a minimum safety factor of five. Provide rising stems on all gates.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

A. Installation Check and Startup: Employ and pay for services minimum of 8 hrs of the equipment manufacturer's field service representative(s) fully commissioned and authorized by manufacturers to do the following:

1. Inspect equipment covered by these Specifications.

2. Supervise adjustments, calibrations and installation checks and full commissioning.

3. Perform basic operational checks.

4. Provide Owner with a written statement that manufacturer's equipment has been installed properly, lubricated, and calibrated and is ready for operation by the Owner.

B. Field Leakage Test for Slide Gates:

1. Test gate under design seating head and adjust to maximum leakage of 0.1 gpm per foot of seating perimeter.

END SECTION

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SECTION 40 05 00

PIPE AND FITTINGS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test all water, utility, pipe, fittings, and appurtenances as indicated and as specified.

1.2 RELATED WORK

A. Section 03 30 00 - Cast-In-Place Concrete

B. Section 09 90 01 - Painting and Coating

C. Section 31 05 00 – Earthwork

D. Section 31 23 17 – Trenching, Backfilling, and Compacting

1.3 REFERENCES

A. California Plumbing Code

B. American Water Works Association Standards

1.4 SUBMITTAL REQUIREMENTS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit manufacturer’s catalog data. Show manufacturer’s model number.

C. Submit dimensions including wall thickness and materials of construction by reference standard and grade. Submit information on interior and exterior coatings as applicable.

1.5 QUALITY ASSURANCE

A. All work performed under this section shall meet all recommendations and requirements of AWWA, California Plumbing Code, NFPA 24, ASTM D2774, and all other applicable national, state, local, standards and regulations.

1.6 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

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PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE

A. NOT USED.

2.2 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

A. As specified in Section 33 46 18 – HDPE Pipe & Fittings

2.3 POLYETHYLENE TUBING

A. NOT USED.

2.4 STEEL PIPE

A. General: Steel pipe 12-inches in diameter and smaller shall conform to the requirements of the "Specifications for Black and Hot-Dipped Zinc-Plated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (ASTM A53), and shall be "Standard Weight" Steel Pipe larger than 12 inches in diameter shall be ASTM A139, AWWA C200, wall thickness not less than 0.18 inches.

B. Joints: Pipe 4-inches in diameter and larger shall be flanged. Where shown on the Plans, the pipe shall be flanged or plain end for flanged coupling adapters. Flanges shall be standard 150 psi flanges meeting the requirements of ANSI B16.1. Flanges shall be furnished with flat faces. Pipe smaller than 4 inches shall have screwed or grooved joints unless shown otherwise on the Plans.

C. Fittings: All fittings shall be flanged cast or ductile iron, screwed malleable iron, Victaulic-type fittings. The Contractor may substitute Victaulic-type fittings for flanged fittings or screwed fittings unless the particular joint requires a specific end for compatibility with a valve or special fitting. All Victaulic-type fittings shall be of strength equal to the pipes with lining and coatings equivalent to that specified for the pipe.

D. Outlets: Outlets 3 inches and smaller shall be made using welded Class 3000 thredolets or half couplings. Install couplings per AWWA Manual M11. The use of service saddles will only be permitted where specifically called out on the plans.

E. Unless otherwise specified or noted in the Plans, all steel pipe 2-1/2 inch and smaller shall be Hot-Dipped galvanized, and pipes larger than 2-1/2 inch shall be black steel with epoxy or lining with minimum 10 mil dry thickness. Exterior surfaces of all pipe shall be shop primed. Finish coatings shall be as specified in Section 09 90 00 - Painting.

2.5 POLYVINYL CHLORIDE WATER PIPE (PVC)

A. NOT USED.

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2.6 POLYVINYL CHLORIDE SCHEDULE PIPE

A. NOT USED.

2.7 POLYVINYL CHLORIDE GRAVITY SEWER PIPE (PVC)

A. NOT USED.

2.8 FLEXIBLE COUPLINGS FOR GRAVITY PIPES

A. NOT USED.

2.9 STAINLESS STEEL TUBING

A. NOT USED.

2.10 COPPER PIPE AND TUBING

A. NOT USED.USED.

2.11 CHEMICAL PIPING AND TUBING

A. NOT USED.

2.12 GROOVED COUPLINGS

A. NOT USED.

2.13 FLANGED JOINTS

A. Flange shall conform to ANSI B16.5, Class 150.

B. All steel hardware installed underground shall be coated with a rust preventative, wrapped with 4 mil polyethylene sheeting, and secured with PVC tape.

C. Gaskets shall meet the pressure requirements of the adjoining flanges and shall conform to AWWA C-207. Gaskets for flat faced flanges shall be 1/8-inch thick.

D. Gaskets for metallic pipe and non-potable 150 psi or less services shall be acrylic or aramid fiber bound with nitrile; Garlock Blue-Gard 3000 or equal. EPDM rubber gaskets, Garlock 98206 or equal, are also acceptable.

E. Gaskets for metallic pipe and potable water service shall be NSF/ANSI-61 certified EPDM rubber, Garlock 98206 or equal.

F. Gaskets for non-metallic flat faced flanges shall be constructed of a fluoroelastomeric material with a hardness of 70 durometer designed specifically for lower seating stress. Gaskets shall be certified to NSF/ANSI-61 for potable water service. Gaskets shall be Garlock Style XP or equal.

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2.14 FLANGED COUPLING ADAPTERS

A. Flanged coupling adapters shall be Romac Industries, Inc., Style FC400 for 12" and larger pipe or Engineer approved equivalent:

B. Center sleeves shall comply with the following

Nominal Pipe Diameter	Minimum Sleeve Length
6 inch and smaller	Manufacturer's Standard
8 through 14 inch	7 inch
14 inch and larger	10 inch

2.15 FLEXIBLE SPOOL-TYPE EXPANSION COUPLINGS

A. NOT USED.

2.16 DOUBLE-SOCKET EXPANSION JOINT

A. NOT USED

2.17 MARKER TAPE FOR BURIED PIPING

A. Marker tape shall be as noted in Section 33 05 26 – Utility Line Markings.

2.18 TRACER WIRE

A. NOT USED.

2.19 CONCRETE FOR THRUST BLOCKS

A. As specified in Section 03 30 00 – Cast-In-Place Concrete.

2.20 JOINT RESTRAINT COUPLINGS

A. NOT USED.

2.21 FASTENERS

A. All fasteners shall include washers under both bolt head and nut unless the use of washers is incompatible with the fitting design.

B. Unless otherwise noted, all bolts, tie rods, and T-bolts used to secure flanges, fittings, and couplings located underground or submerged in liquid shall be Type 304 stainless steel per ASTM A320 or ASTM A193. Nuts shall be 304 stainless steel per ASTM A194 and washers shall be ASTM F436 Type 3.

C. Unless otherwise noted, all bolts, tie rods, and T-bolts used to secure flanges, fittings, and couplings located indoors, above grade, and in vaults shall be carbon steel conforming to ASTM A307, Grade B with ASTM A563, Grade A nuts and ASTM F436 washers. Bolts, nuts, and washers shall be hot dipped galvanized in accordance with ASTM F2329. Stainless steel meeting the requirements of Paragraph B shall also be acceptable.

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2.22 INSULATING FLANGE SETS

A. NOT USED.

PART 3 EXECUTION

3.1 HANDLING AND DISTRIBUTION OF MATERIALS

A. Delivery: Handle pipe carefully to ensure delivery at the project site in sound, undamaged condition. Contractor shall replace damaged pipe at no additional expense to the Owner.

B. Storage: Do not store materials directly on the ground. Adequately support piping to prevent warping. Use protective covers where pipe may be damaged by direct sunlight.

C. No more than one week's supply of material shall be distributed in advance of pipe laying operations, unless otherwise approved or required.

D. Before laying, pipe shall be inspected for cracked, broken, or defective pieces. Such pieces shall be rejected. Pipe shall be carefully lowered into the trench to prevent damage. All dirt or other foreign matter shall be removed from inside the pipe before lowering into the trench.

3.2 COATING

A. Unless otherwise indicated in Part 2, all pipe and fittings shall be coated in accordance with specification 09 97 61.

3.3 INSTALLATION OF UNDERDRAINS

A. NOT USED.

3.4 INSTALLATION OF BURIED PIPING

A. General: Pipe, fittings, and appurtenances shall be installed in accordance with the manufacturer's instructions and in accordance with the following references as appropriate:

1. Polyvinyl Chloride Pipe and HDPE pipe - AWWA C605

2. Steel Pipe – AWWA C604

B. Handling: The pipe shall be protected to prevent entrance of foreign materials during laying operations. When laying is not in progress, open pipe ends shall be protected with a watertight plug or other approved means to exclude water or foreign material.

C. Alignment:

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1. Mains shall be installed to the grades and elevations indicated and shall have a minimum cover of 30-inches from the top of the pipe to existing ground or paved surface unless otherwise indicated.

2. The allowable angle of deflection at any joint shall not exceed the amount recommended by the pipe manufacturer for the particular pipe size used. Deviation of any pipe section from the line and grade indicated shall not exceed 1/2-inch.

D. Joints:

1. Pipe shall be assembled and joined in accordance with the manufacturer's published instructions for the type of pipe and joint used. All portions of the joints shall be thoroughly cleaned before the sections of pipe are assembled. The ends of each pipe shall abut against the next pipe section in such a manner that there shall be no unevenness of any kind along the bottom half of the interior of the pipe. Where mechanical joints are used, the pipe shall be marked in such a manner that it can be determined after installation that the pipe is properly seated.

2. Where flexible couplings are used as expansion joints, the ends of the pipes shall be separated 1-inch to allow for expansion. The welded seam at the end of each coupled steel pipe shall be ground smooth for approximately 12-inches. Couplings shall be centered on pipe ends. Runs of pipe containing flexible couplings shall be properly blocked, anchored or tied to the structure to prevent joints from separating.

3. Mechanical restrained joints shall be installed in accordance with joint manufacturer’s instructions and recommendation.

E. Installation of Marker Tape: Install tape in backfill directly over each pipeline, 24 inches over top of pipe, unless shown otherwise on the Plans. Where utilities are buried in a common trench, identify each line by a separate marker tape. Place tapes directly over the applicable line.

3.5 THRUST BLOCKS OR MECHANICAL RESTRAINED JOINTS

A. Thrust blocks shall be used only where specifically allowed on the drawings or with prior approval by the Engineer.

B. Place concrete thrust blocks at all tees, elbows, plugs, and other locations where unbalanced forces exist in underground pipe in accordance with details shown. Place blocks between undisturbed ground and fitting to be anchored. Place blocking so that pipe and fittings will be accessible for repairs. Thrust blocks shall be of such size as to give bearing against undisturbed vertical earth banks sufficient to absorb the thrust from line pressure, allowing a maximum earth bearing pressure of 1000 pounds per square foot per foot of depth below natural grade or as shown.

3.6 INSTALLATION OF EXPOSED PIPING

A. NOT USED.

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3.7 ACCEPTANCE TESTS AND INSPECTION FOR GRAVITY PIPING

A. General

1. All testing and inspection shall be performed after final backfill and compaction operations are complete. If the Contractor so desires, he may pretest the lines at his own expense, but final testing must be performed after compaction requirements have been approved.

2. If any of the tests or inspections covered in this section indicates that pipeline require repair, then after repairs are complete, all testing and inspection shall be performed again. The cost of any retests, including time for the Engineer, shall be borne by the Contractor at no additional cost to the project.

3. Prior to testing, all lines shall be thoroughly cleaned by flushing.

B. Low-Pressure Air Test

1. Supply air to the test section slowly. A constant pressure of 3.5 psig shall be reached and maintain internal pressure of at least 3.0 psig for at least five (5) minutes.

2. After the stabilization period, disconnect the air supply. A pressure loss of 0.5 psig is used to compute the allowable pressure loss using the following formula.

3. The minimum allowable time in minutes for such a pressure drop is determined from the formula $T_{min} = 0.000183D^2L$, where:

   a. D = Nominal inside diameter of pipe (inches)

   b. L = Length of pipe test section (feet)

4. Regardless of the formula, the minimum time allowed for pressure drop shall be eight (8) minutes.

5. The pressure gage for monitoring the air pressure shall have a minimum division of 0.10 psi increments.

6. A valid test is when the air pressure is released from the opposite end of the inlet air entry connection with an air release apparatus outlet connection.

7. Adjustment of Pressure for Groundwater. Should the pipe section being tested lie below the local groundwater table, the test pressures shall be raised in proportion to the depth of the centerline of the pipe below the water table. Additional pressure (beyond the 3.5 psig specified above) shall be added at the rate of 0.433 psig per foot of depth below groundwater.

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3.8 ACCEPTANCE TESTS FOR BURIED PRESSURE PIPING

A. General

1. All testing and inspection shall be performed after final backfill and compaction operations are complete. If the Contractor so desires, he may pretest the lines at his own expense, but final testing must be performed after compaction requirements have been approved.

B. In general, tests shall be conducted in accordance with AWWA C600 and C651 except as otherwise herein specified.

C. All newly installed sections of buried pressure piping shall be pressure and leakage tested as described herein.

1. For buried pressure pipelines, tests shall be made on two or more valved sections not to exceed 2,500 feet in length. The Contractor shall furnish all necessary equipment, material and labor required.

2. Tests shall be made after the trench has been backfilled and compacted, but not until at least 5 days have elapsed since any thrust blocks in the section have been poured.

3. The pipe shall be slowly filled with water and ensuring all air expelled from section being tested. The line shall stand full of water for at least twenty-four hours prior to testing to allow all air to escape. A test pressure equal to 1.5 times the design pressure, of the pipe measured at the point of lowest elevation pressure, or 100 psi, whichever is greater, shall be applied.

4. The test pressure in the line shall be maintained for a period of 2 hours. Test pressure shall be maintained within 5 psi during the test period. Conduct a leakage test concurrently with the pressure test. Leakage is defined as the volume of water that must be supplied into the newly laid pipeline to maintain pressure within +/- 5 psi of the test pressure after it is filled and purged of air. The water required to maintain test pressure shall be measured by means of a graduated barrel, drum, or similar device at the pump suction or through a meter.

Allowable leakage at the specified test pressure shall not exceed the amounts allowed by AWWA C600, $L = \frac{SD\sqrt{P}}{148{,}000}$

Where:

L = Allowable fluid loss, in gallon per hour.

S = Length of pipe tested, in feet.

D = Nominal diameter of the pipe, in inches.

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P = Average test pressure during the hydrostatic test, in pounds per square inch (psi).

Hydrostatic testing allowance per 1,000 ft. of pipeline in gph.

PSI	4”	6”	8”	10”	12”	14”	16”	18”	20”	24”
200	0.38	0.57	0.76	0.96	1.15	1.34	1.53	1.72	1.91	2.29
175	0.36	0.54	0.72	0.89	1.07	1.25	1.43	1.61	1.79	2.15
150	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99
125	0.30	0.45	0.60	0.76	0.91	1.06	1.21	1.36	1.51	1.81
100	0.27	0.41	0.54	0.68	0.81	0.95	1.08	1.22	1.35	1.62

5. Should testing disclose any visible leaks or leakage greater than that allowed, the defective joints or pipe shall be located, repaired, and re-tested until satisfactory. The cost of any retests, including time for the Engineer, shall be borne by the Contractor at no additional cost to the project.

3.9 ACCEPTANCE TEST FOR EXPOSED PIPING

A. Pipe to be Tested - All new installed piping sections shall be pressure and leakage tested as specified herein.

B. Pressure Testing - After the section of line to be tested has been filled with water or other test media, the test pressure shall be applied and maintained without interruption for 2 hours plus any additional time required for the Engineer to examine all piping undergoing the test and for the Contractor to locate all defective joints and materials.

1. Test medium shall be potable water for potable water piping; all other piping may be tested using plant water subject to Engineer’s approval.

2. Pipe system shall be tested at 1-1/2 times the operating pressure, or 100 psi, whichever is greater, using the appropriate test fluid medium.

3. All piping shall be tight and free from leaks. All pipe, fittings, valves, pipe joints, and other materials that are found to be defective shall be removed and repaired or replaced with new and acceptable material, and the affected portion of the piping be retested until satisfactory. The cost of any retests, including time for the Engineer, shall be borne by the Contractor at no additional cost to the project.

Compressed air or gas under pressure shall not be used to test plastic piping unless specifically recommended by the pipe manufacturer.

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Leakage may be determined by loss of pressure, soap solution, chemical indicator, or other positive and accurate method acceptable to the Engineer. All fixtures, devices, or other accessories which are to be connected to the lines and which would be damaged if subjected to the specified test pressure shall be disconnected and ends of the branch lines plugged or capped as required during the testing procedures.

END SECTION

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SECTION 40 05 14

FABRICATED STEEL SPECIALS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Fabricating, furnishing, and installing fabricated steel pipe, specials and connections to new piping. Specials are defined as fittings, closure pieces, correction pieces, bends, reducers, nozzles, wyes, tees, crosses, outlets, manifolds and other steel plate specials.

1.2 RELATED WORK

A. Section 09 90 01 - Painting and Coating

B. Section 31 05 00 – Earthwork

C. Section 31 23 17 – Trenching, Backfilling, and Compacting

D. Section 33 01 00 – Pipe and Fittings

1.3 REFERENCES

A. California Plumbing Code.

B. American Water Works Association Standards,

1.4 SUBMITTAL REQUIREMENTS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit shop drawings in accordance with the General and Special Provisions.

C. Submit dimensions including wall thickness and materials of construction by reference standard and grade.

D. Submit information on interior and exterior coatings as applicable.

E. Submit detailed layout and fabrication drawings showing pipe spools, spacers, adapters, connectors, fittings, and pipe supports.

F. Joint and pipe fitting wall construction details which indicate the type and thickness of cylinder, the position, type, size and area of reinforcement, manufacturing tolerances, and all other pertinent information required for the manufacture of the product. Joint details shall be submitted where butt strap joints are required.

1.5 QUALITY ASSURANCE

A. Where fusion bond epoxy is specified, the fusion bond epoxy manufacturer shall have a record of at least one application of the proposed coating/lining material on

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a successfully performing fabricated steel pipe installation of comparable size and complexity constructed within the past two years.

B. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

C. All welding procedures used to fabricate pipe shall be prequalified under the provisions of ANSI/AWS D1.1. Welding procedures shall be required for, but not necessarily limited to, longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds and plates for lug connections.

D. Welder Qualifications: All welding shall be done by skilled welders, welding operators and tackers who have had adequate experience in the methods and materials to be used. Welders shall be qualified under the provisions of ANSI/AWS D1.1 by an independent local, approved testing agency not more than 6 months prior to commencing work on the pipeline. Machines and electrodes similar to those used on the project shall be used in qualification tests.

PART 2 PRODUCTS

2.1 GENERAL

A. The pipe and specials shall be of the diameter and class shown on the drawings.

B. The Contractor shall insure all pipes and specials are legibly marked in accordance with the laying schedule and marking diagram. Each pipe shall be numbered in sequence and said number shall appear on the laying schedule and marking diagram in its proper location for installation. All special pipe sections and fittings shall be marked at each end with top field centerline.

2.2 PIPE MATERIALS

A. Steel pipe shall comply with ASTM A53 (Type E or S), ASTM A106 or AWWA C200; schedule 40 for pipe 10 inches diameter and smaller, and schedule 80 for pipe larger than 10 inches diameter, except as otherwise indicated.

B. Steel pipe shall be fabricated to meet requirements of AWWA C200. Fabricated pipe shall comply with ASTM A36, ASTM A572 (Grade 42), ASTM A570, (Grades 33 and 36), or ASTM A283 (Grade D), except that ASTM A53 and ASTM A106 pipe shall be grade B, straight or spiral seam. Pipe shall have minimum wall thickness of 7 gauge for pipe 24 inches in diameter and smaller, and a minimum wall thickness of 1/4-inch for pipe larger than 24 inches diameter.

2.3 FITTINGS

A. Threaded steel fittings shall conform to ASTM A47, ASTM A197 or ANSI B16.3.

B. Forged steel fittings shall conform to ASTM A234, ASTM A105 or ANSI B16.11.

C. Fabricated steel fittings shall conform to AWWA C208.

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D. Full-flow cast fittings, or segmentally welded fittings with grooves or shoulders shall be designed and fabricated for standard grooved-end piping.

E. Ductile iron cast fittings shall conform to ASTM A536 or malleable iron conforming to ASTM A47.

2.4 PIPE DESIGN

A. The design of outlet reinforcement shall be in accordance with the procedures given in Chapter 13 of AWWA Manual M-11, except that the design pressure, P, used in the AWWA Manual M-11 procedure shall equal the greater of 1.25 Pw or 0.9375 Pt. Unless otherwise shown outlets 2 inches in diameter and smaller, Weld-O-Let as specified in Section 15105, "Miscellaneous Piping, Valves, Fittings and Appurtenance," need not be reinforced.

B. In lieu of saddle or wrapper reinforcement as provided by the design procedure in AWWA Manual M-11, pipe or specials with outlets may be fabricated in their entirety of steel plate having a thickness equal to the sum of the pipe wall plus the required reinforcement.

C. Where required by the AWWA Manual M-11 design procedure crotch plate reinforcement shall be furnished.

2.5 PIPE LINING

A. Where indicated, pipe linings shall comply with the following:

B. Cement Mortar: Pipe and fittings shall be centrifugally lined with cement mortar complying with AWWA C205. If the special cannot be lined centrifugally, it shall be lined by hand in compliance with AWWA C602. Fittings and specials larger than 24 inches, not fabricated from centrifugally formed straight sections, shall require 2-inch by 4-inch WO.5 x WO.5 gage self-furring wire mesh reinforcement for hand-applied lining. The wire mesh shall be positioned approximately in the center of the lining. The wires spaced 2 inches on centers shall run circumferentially around the pipe with the fabric securely fastened to the pipe. Splices shall be lapped 4 inches and the free ends tied or looped to assure continuity. Surfaces shall be prepared in accordance with SSPC-SP 10 for Near White Blast Cleaning, and the lining shall be applied as recommended by the manufacturer.

C. Fusion Bonded Epoxy Lining: Where indicated, fusion bonded epoxy lining shall conform to the requirements of Paragraph 2.7.

2.6 PIPE COATING

A. Where indicated, pipe coatings shall comply with the following:

B. Coal-Tar Enamel Coating: Coal-tar protective coating shall be a multi-layer coal-tar enamel fibrous glass mat and mineral glass felt wrap conforming to ANSI/AWWA C203 except as indicated below:

1. Coating Conditions

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a. Pipe surfaces shall be prepared by solvent cleaning (SSPC-SP1) followed by blasting to at least Commercial Blast Cleaning (SSPC-SP6) conditions.

b. Pipe temperatures shall be at least 85 degrees F.

2. Primer shall be type B.

3. Coal-Tar Enamel: Specially processed coat-tar pitch combined with inert filler, having no asphalt or petroleum of natural origin, of Type 1, applied hot.

4. Glass Fiber Wrap: Non-woven, either reinforced or non-reinforced, glass fiber mat uniformly impregnated with material compatible with coat-tar enamel.

5. Coal-Tar Enamel: Second coat matching the first.

6. Glass fiber or mineral felt outer wrap.

7. Whitewashing, latex painting, or kraft paper.

8. Coating Thickness: Primer plus coal-tar enamel shall be 3/32 inch thick, plus or minus 1/32 inch.

9. Continuity Testing: The entire coated surface of the pipe shall be electrically tested for continuity. Inspection voltage shall be calculated as:

$V = 1250[T]^{1/2}$

Where: V = Test voltage, volts
T = Total coating system thickness, mils

PART 3 EXECUTION

3.1 INSTALLATION

Pipe shall be installed in accordance with AWWA M11, Chapter 16. Sleeve-type pipe couplings shall be installed in accordance with AWWA M11. Unless otherwise indicated, pipe lining and coatings shall comply with Section 09 90 00.

3.2 TESTING

A. Test specials using the hydrostatic, magnetic particle, ultrasonic, or radiographic methods as described in AWWA C200. Visual inspection only is not acceptable.

B. All exterior surface coatings on specials installed below grade shall be inspected electrically immediately before the pipe is lowered into the trench, following the same requirements for factory inspection procedure and voltage indicated above for the protective material. All holidays shall be repaired before the pipe is placed.

END SECTION

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SECTION 40 05 21

TAPPING SADDLES SLEEVES AND VALVES

PART 1 GENERAL

1.1 WORK INCLUDED

A. This section includes materials, testing, and installation of tapping sleeves, tapping valves, and tapping saddles for connection to existing piping.

1.2 RELATED WORK

A. Section 09 90 00 – Painting and Coating

B. Section 33 01 00 – Pipe & Fittings

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. American Water Works Association (AWWA)

1.4 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit shop drawings in accordance with the General and Special Provisions.

C. Submit manufacturer's catalog data and detail construction sheets showing all valve and sleeve parts. Describe each part by material of construction, specification (such as AISI, ASTM, SAE, or CDA), and grade or type.

D. Show dimensions including laying lengths.

E. Show linings and coatings. Submit manufacturer's catalog data and descriptive literature.

F. Submit six copies of a report verifying that the interior linings and exterior coatings have been tested for holidays and lining thickness. Describe test results and repair procedures for each part. Do not ship valves or sleeves to project site until the reports have been returned by the Owner's Representative and marked "Resubmittal not required."

PART 2 PRODUCTS

2.1 GENERAL

A. Tapping saddles shall be designed to withstand a minimum working pressure equal to the working pressure of the system, but not less than 150 psi.

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B. Tapping saddles may be used for pipeline taps concurrent with new construction. Tapping saddles shall be limited to a maximum nominal outlet diameter of 2 inch.

2.2 TAPPING SADDLES

A. Tapping saddles used for taps on DIP water mains shall be double strap saddles for pipe sizes up to 16" and triple strap saddles for pipe sizes 18" and larger. Saddle bodies shall be ductile iron conforming to ASTM A536, grade 65-45-12, protected with a corrosion-resistant paint. The gasket shall be virgin NBR, or Buna-N rubber; formulated for treated water. Gaskets shall be cemented in place on the saddle bodies prior to shipment from the manufacturer. The bolts, nuts, and washers shall conform to the material requirements specified in Section 33 01 00. The saddle boss shall be tapped with standard iron pipe threads. Double strap saddles shall be Romac Style 202, Ford Style F202, or equal.

B. Tapping saddles used for taps on PVC water mains shall have ductile iron bodies conforming to ASTM A536, grade 65-45-12, and protected with a corrosion-resistant paint. They shall have one or two 304 stainless steel bands. The bolts, nuts, and washers shall conform to the material requirements specified in Section 33 01 00. Single bands with four bolts (two bolts on either side of the saddle) shall be a minimum of 3¼" wide. Double bands with two bolts each (one bolt on either side of the saddle for each of the two bands for a total of four bolts) shall have a total combined width of not less than 3". The gasket shall be virgin NBR, or Buna-N rubber; formulated for treated water. Gaskets shall be cemented in place on the saddle bodies prior to shipment from the manufacturer. The saddle boss shall be tapped with standard iron pipe threads. The saddle bodies shall be preformed at the factory to fit cast iron OD PVC. Each body shall be marked with the OD to which it has been formed. Saddles for taps on PVC water mains shall be Ford Style FS 202 or FC 202 (epoxy coated body); or Romac style 202S or 202N (nylon coated body); or equal.

2.3 TAPPING SLEEVES

A. NOT USED.

2.4 VALVES

A. NOT USED.

PART 3 EXECUTION

3.1 STORAGE AND HANDLING

A. Saddles and sleeves used for water main taps shall be stored and handled in their original containers, which shall not be unpacked until 24 hours prior to installation, except for inspection. Saddles and sleeves shall be maintained free from dirt and foreign matter and shall be stored on wooden pallets in their original containers.

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3.2 INSTALLATION OF TAPPING SADDLES

A. Installation of saddles shall be in accordance with the manufacturer's recommendations.

B. The hole drilled or cut in the main shall be equal to the stated nominal size of the threaded tap on the saddle.

C. Holes cut in PVC water mains shall be accomplished with cutter recommended by the pipe manufacturer. Drills and hole saws not recommended by the pipe manufacturer and are, therefore, prohibited. Cutters shall be advanced slowly and not forced through the pipe wall. Forcing the bit will cause undue heat or fracturing of the PVC material.

D. Holes cut in DIP water mains may be accomplished by either drilling or the use of a hole saw.

E. The outside of the pipe shall be cleaned thoroughly of all dirt, grease, oil, and other foreign matter prior to installing the saddle.

F. Bolts shall be drawn up in an acceptable pattern and torqued to the manufacturer's specifications.

END SECTION

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SECTION 40 05 24

STEEL PROCESS PIPE

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test all AWWA C200 steel pipe of the sizes and in the locations as shown on the Plans and as specified herein.

1.2 RELATED WORK

A. Section 03 30 00 – Cast-In-Place Concrete

B. Section 09 90 00 – Painting & Coating

C. Section 31 23 17 – Trenching, Backfilling, & Compacting

D. Section 40 05 14 – Fabricated Steel Specials

1.3 REFERENCES

A. California Plumbing Code

B. American Water Works Association Standards

1.4 QUALIFICATIONS

A. Manufacturers who are fully experienced, reputable, and qualified in the manufacture of the products to be furnished shall furnish all steel pipe and fittings. The pipe and fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

B. Pipe cylinders, coating, lining, and fabrication of specials shall be the product of one manufacturer that has not less the 5 years experience manufacturing pipe of the particular type and size indicated. The pipe manufacturer must have a certified quality assurance program. The certified program shall be ISO 9001:2000 or other equivalent nationally recognized program as approved by the Engineer.

1.5 SUBMITTAL REQUIREMENTS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Submit shop drawings in accordance with General and Special Provisions. Shop drawings shall include the following:

1. Pipeline layout showing stations and elevations.

2. Details of standard pipe, joints, specials, and fittings.

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3. Submit dimensions including wall thickness and materials of construction by reference standard and grade. Submit information on interior and exterior coatings as applicable.

C. Pipeline Design

1. Calculations for pipe design and fittings reinforcement and/or test data.

2. Details of joint bonding and field welded joint restraint calculations.

D. The Contractor shall furnish a certified affidavit of compliance that meets or exceeds the requirements of these specifications for all pipe and fittings furnished.

1.6 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

1.7 QUALITY ASSURANCE

A. All work performed under this section shall meet all recommendations and requirements of AWWA, California Plumbing Code, NFPA 24, ASTM D2774, and all other applicable national, state, local, standards and regulations.

1.8 VERIFICATIONS

A. Inspections:

1. All pipe shall be subject to inspection at the place of manufacture in accordance with the provisions of AWWA C200 and AWWA coating and lining standard as supplements by the requirements herein.

B. Tests:

1. Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of AWWA C200 and AWWA coating and lining standards.

2. The Contractor shall perform required tests at no additional cost to the Owner. The Engineer shall have the right to witness all testing conducted by the Contractor; provided, that the Contractor's schedule is not delayed for the convenience of the Engineer.

C. Welding Requirements:

1. All welding procedures used to fabricate pipe shall be qualified under the provision of AWS B2.1 or ASME Section IX.

D. Welder Qualifications:

1. Skilled welders, welding operators, and tackers who have had adequate experience in the methods and materials to be used shall do all welding.

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Welders shall maintain current qualifications under the provisions of AWS B2.1 or ASME Section IX. Machines and electrodes similar to those in the work shall be used in the qualification tests. The Contractor shall furnish all material and bear the expense of qualifying welders.

PART 2 PRODUCTS

2.1 AWWA C200 STEEL PIPE

A. Pipe:

1. Steel pipe shall conform to AWWA C200. Steel plate used in the manufacture and fabrication of steel pipe shall meet the requirements of ASTM A1011 or A1018. All longitudinal and girth seams, whether straight or spiral, shall be butt-welded using an approved electric-fusion-weld process.

2. Pipe shall be designed for 150 PSI working pressure. Pipe design shall be in accordance with AWWA M11.

3. Pipe shall be bedded and backfilled in accordance with Section 31 23 17 – Trenching, Backfilling, & Compacting and as shown on the Plans or manufacturer's recommendations utilizing an E' value for design check per AWWA M11 Chapter 6.

4. The pipe fabricator shall prepare a pipe laying schedule showing the location of each piece by mark number with station and invert elevation at each bell end.

B. Fittings:

1. Unless otherwise shown on the Plans, all specials and fittings shall conform to the dimensions of AWWA C208.

2. Pipe material used in the fittings shall be of the same material and pressure class as the adjoining pipe.

3. The minimum radius of elbows shall be 2-1/2 times the pipe diameter and the maximum miter angle on each section of the elbow shall no exceed 11-1/4 degrees (one cut elbow up to 22-1/2 degrees). If elbow radius is less than 2-1/2 times the pipe diameter, stresses shall be checked per AWWA M11 and the pressure class increased if necessary.

C. Joints:

1. Rolled Groove Rubber Gasket Joint:

NOT USED

2. Lap Weld:

a. Lap weld joints shall conform to AWWA C200 and as shown in Chapter 8 of AWWA M11.

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b. Lap field welded joints shall be used where restrained joints are required or indicated on the Plans. The standard bell shall provide for a 2-1/2 inch lap. The minimum lap shall be 1 inch. The maximum joint deflection or offset shall be a 1 inch joint pull.

c. Lap welded joints shall be welded externally or internally, or both. Holdbacks for coating and linings shall be provided as shown on the approved shop drawings. "Weld-after-backfill" of interior welds may be performed any time after joint completion and backfilling has been completed.

d. Unless otherwise shown on the Plans, all field joints shall be lap welded.

e. Pipe fabrication welds shall be full penetration and be the same thickness as the pipe.

3. Mechanical Couplings:

a. Mechanical couplings where indicated on the Plans shall be Smith Blair Style 411, Baker Style 200, Victaulic Depend-O-Loc or Engineer approved equivalent.

b. Insulating mechanical couplings where indicated on the Plans shall be double insulated Smith Blair Style 416, Bakers Style 216, or Engineer approved equivalent for working pressures up to 150 psi only.

c. Couplings for buried service shall have all metal parts painted with liquid epoxy and conform to AWWA C210.

d. Pipe ends for mechanical couplings shall conform to AWWA C200 and M11. Harness lugs or rings and pipe ends shall be painted with liquid epoxy and conform to AWWA C210. The inside lining shall be continuous to the end of the pipe. Coating holdbacks will be utilized only in areas where field welding is shown on the Plans.

e. Pipe for use with sleeve-type couplings shall have plain ends at right angles to the axis.

4. Flanges:

a. Flanges shall be in accordance with AWWA C207 Class D for operating pressures to 175 psi on 4 inch through 12 inch in diameter, and operating pressures to 150 psi on diameters over 12 inches. Flanges shall be AWWA C207 Class E for operating pressures over 150 psi to 275 psi or shall be AWWA C207 Class F for pressure to 300 psi (drilling matches ANSI B16.5 Class 250). Shop lining and coating shall be continuous to the end of the pipe or back of the flange. Flange faces shall be shop coated with a soluble rust preventative compound.

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5. Gaskets shall be NSF/ANSI- 61 certified EPDM rubber, Garlock 98206 or equal.

6. Bolts and Nuts:

   a. Bolts and nuts shall conform to Section 40 50 00 – Pipe & Fittings.

7. All unwelded pipe joints shall be bonded for electrical continuity in accordance with the pipe manufacturer's recommendations unless otherwise specified in the Plans.

D. Linings and Coatings:

1. Liquid Epoxy Lining:

   a. Liquid epoxy lining shall be per AWWA C210 to a minimum thickness of 40 mils, measured in accordance with SSPC-PA 2. Lining shall be continuous to the ends of the pipe except where field welding is indicated.

   b. Lining repair shall be per AWWA C210 and manufacturer's recommendations.

2. Liquid Epoxy Coating:

   a. Liquid epoxy coating shall be per AWWA C210 to a minimum thickness of 40 mils, measured in accordance with SSPC-PA 2. Coating shall be continuous to the ends of the pipe except where field welding is indicated. Exterior field joints shall be completed utilizing heat-shrink sleeves per AWWA C216.

   b. Coating repair shall be per AWWA C210 and manufacturer's recommendations.

PART 3 EXECUTION

3.1 HANDLING, STORAGE, AND DISTRIBUTION

A. Pipe shall be stulled as required to maintain roundness of +/- 1% during shipping and handling.

B. Coated pipe shall be shipped on padded bunks with nylon belt tie-down straps or padded banding located approximately over stulling.

C. Coated pipe shall be stored on padded skids, sand or dirt berms, sandbags, old tires, or other suitable means so that coating will not be damaged.

D. Coated pipe shall be handled with wide belt slings. Chains, cables, or other equipment likely to cause damage to the pipe or coating shall not be used.

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E. Prior to shipment, dielectrically coated pipe shall be visually inspected for damage to the pipe or coating by the following procedure:

1. When visual inspection shows a dielectric coating system has sustained physical damage, the area in question shall be subjected to an electrical holiday test. Voltage shall be per AWWA C222.

2. When the damaged area does shown damage going clear to the steel from either a visual inspection or a jeep for a holiday detector, the area shall be repaired in accordance with Section 2.1.D. of these specifications and per manufacturer's recommendations.

F. Markings:

1. The Contractor shall legibly mark all pipes and specials in accordance with the laying schedule and marking diagram. Each pipe shall be numbered in sequence and said number shall appear on the laying schedule and marking diagram in its proper location for installation. All special pipe sections and fittings shall be marked at each end with top field centerline. The word "top" or other suitable marking shall be painted or marked on the outside top spigot end of each pipe section.

3.2 INSTALLATION OF BURIED PIPING

A. Pipe installation as specified in this section supplements AWWA M11 and Section 31 23 17 – Trenching, Backfilling, & Compacting.

B. Handle pipe in a manner to avoid any damage to the pipe. Do not drop or roll pipe into trenches under any circumstances.

C. Inspect each pipe and fittings before lowering into the trench. Inspect the interior and exterior protective coatings. Repair damaged areas in the field in accordance with Section 2.1.D. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

D. Grade the bottom of the trench and place a 4 inch minimum layer of select or scarified material under the pipe. Before laying each section of the pipe, check the grade and correct any irregularities found. The trench bottom shall form a uniform bearing and support for the pipe.

E. At each location of the joint, bid bell (joint) holes in the bottom of the trench and at the sides to permit completion and vision inspection of the entire joint.

F. Keep the trench in a dewatered condition during pipe laying.

G. When the pipe laying is not in progress, including the noon hours, close the open ends of the pipe. Do not permit trench water, animals, or foreign objects to enter the pipe.

3.3 JOINT ASSEMBLY

A. Rolled Groove Rubber Gasket Joint:

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NOT USED.

B. Lap Field Welded Joints

1. Clean exposed ends of joint surfaces.

2. Provide a minimum overlap of 1 inch at any location around the joint circumference.

3. Field welders and field weld procedures shall be certified in accordance with AWS D1.1.

4. Provide a full fillet weld per AWWA C206. Inside welding may be performed after backfilling in accordance with manufacturer's recommendations.

5. Testing of field welds shall be in accordance with AWWA C206.

6. Complete the interior of the joints with liquid epoxy per AWWA C210. Complete the exterior of the joints with heat-shrink sleeves per AWWA C216 and manufacturer's recommendations.

C. Flanged Joints:

1. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing; lubricate colts with graphite or oil.

2. Insert the nuts and bolts (or studs), hand tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

3. Execute care when tightening joints to prevent undue strain upon valves, pumps, and other equipment.

4. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or re-tighten the bolts and nuts, and retest the joints.

3.4 THRUST BLOCKS OR MECHANICAL RESTRAINED JOINTS

A. As per Section 40 05 00 – Pipe & Fittings.

3.5 INSTALLATION OF EXPOSED PIPING

A. Pipe installation as specified in this section supplements AWWA M11.

B. Handle pipe in a manner to avoid any damage to the pipe. Do not drop or roll pipe into place under any circumstances.

C. Inspect each pipe and fittings before alignment. Inspect the interior and exterior protective coatings. Repair damaged areas in the field in accordance with Section

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2.1.D. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

3.6 ACCEPTANCE TESTS FOR BURIED PRESSURE PIPING

1. As per Section 40 05 00 – Pipe & Fittings.

3.7 ACCEPTANCE TEST FOR EXPOSED PIPING

1. As per Section 40 05 00 – Pipe & Fittings.

END SECTION

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SECTION 40 91 24

PROPELLER METER

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish and install one (1) McCrometer Water Specialties Model OF12D propeller meter as indicated in Plans and in the flow meter schedule in Section 1.4 Service Conditions.

1.2 RELATED WORK

A. Section 40 05 00 – Piping and Fittings

1.3 GENERAL

A. Equipment furnished and installed under this section shall be placed in operating condition in full conformity with drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer unless exceptions are noted by the Engineer.

B. This unit shall be furnished and installed complete with all anchors and supports; all mechanical and electrical equipment required for proper operation, and all additional materials or construction required by manufacturers design.

1.4 SERVICE CONDITIONS

A. Flow meter shall include the following features as indicated below:

	New
No. of Unit	1
Flowmeter Size, inches, diameter	30
Flow range, gpm	1,800 - 15,000
Working pressure, psi	150
Accuracy within flow range, percent	± 2

B. The meter shall be a 30" McCrometer Water Specialties Model OF12D open flow meter installed as per the Plans and manufacturer’s requirements specifications.

C. The new flowmeter will measure discharge of San Luis Canal Outlet.

D. The new flowmeter shall be fitted with a transmitter and battery powered.

E. The new flowmeter shall have a rate of flow indicator calibrated in gallons per minute, and a digital totalizer in acre-feet.

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1.5 MATERIALS

A. All materials in contact with potable water shall be certified to ANSI/NSF Standard 61.

1.6 SUBMITTALS

A. Submittals shall be in accordance with the General and Special Provisions.

B. Complete data, and detailed drawings of the equipment.

PART 2 PRODUCTS

2.1 PROPELLER METER

A. The new propeller meters shall be 30” McCrometer Water Specialties Model OF120 open flow meters.

B. The open flow meters shall be constructed of stainless steel and incorporate bronze mounting brackets that permit simple installation and removal.

C. Propeller bearings shall be stainless steel and shall be factory lubricated for the life of the meter.

D. The register shall be hermetically sealed within a die cast aluminum case including a domed acrylic lens and hinged lens cover with locking hasp.

E. Registers shall be 7 wheel anti-reverse.

PART 3 EXECUTION

3.1 INSTALLATION

A. The new flow meter shall be installed as indicated in Plans and in accordance with manufacturer’s requirement specifications.

B. Following the completion of installation, the new flowmeter shall be tested for proper operation using clean water. At least 20,000 gallons shall be passed through the meter during the test. Readings on totalizer shall be recorded to verify accuracy of meter.

END SECTION

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