REQUEST FOR PROPOSAL
FOR
ALAMEDA LIFTSTATION REHABILITATION

District Contact:
Eric Houston
Director of Operations

Proposals Due By:
February 20, 2025
At 11:00 a.m.
Late proposals may not be accepted.

1. INTRODUCTION

A. General Information

Rancho Murieta Community Services District Background

Rancho Murieta Community Services District (District) was formed in 1982 by State Government Code 61000 to provide essential services in Rancho Murieta. The District provides essential services to an area of 3,500 acres (covering roughly five and a half square miles) located in the beautiful, wooded hills of eastern Sacramento County. The approved master plan calls for residential development on 1,920 acres with single-family residences, townhouses, apartments, and mobile homes for a total of 5,189 units. Current estimates indicate Rancho Murieta has 2,700 households with a population of approximately 6,000 people. The community is a balanced blend of both custom and production homes, townhouses, mobile homes, and a thriving retail complex. In addition, an airport, office building, fire station, and equestrian center are located in the District.

The District is an independent Special District which provides the following services:

- Water supply collection, treatment, and distribution
- Wastewater supply, collection, treatment, and reuse (reclamation)
- Storm drainage collection, disposal, and flood control
- Security
- Solid Waste collection

While each service maintains and operates under its own separate budget, a combination of taxes and user fees fund these services.

The District is determined to deliver superior community services efficiently and professionally at a reasonable cost while responding to and sustaining the enhanced quality of life the community desires. Information about the Rancho Murieta community and the District is available on the District website at https://www.ranchomurietacsd.com.

2. NATURE OF SERVICES REQUIRED

Scope of Work to be Performed

The District is seeking proposals for the following anticipated scope of work:

Alameda Lift Station Replacement. This project will include demolition of existing station components, grout placement, replacement of the

submersible sewage pump (provided by District, see attachment B) piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required. For more information, please see attached all documentation.

Any inquiries concerning this request for proposals should be addressed to Eric Houston, Director of Operations or Travis Bohannon, Chief Plant Operator.

- All work will be at prevailing wage.

Site Visit:

The site visit will be scheduled for Tuesday, February 11th at 9:00am.

3. PROPOSAL SUBMITTAL AND SELECTION

All proposals must be received no later than 11:00 a.m. on February 20th . **Late or incomplete proposals may not be considered.**
Deliver proposals via email in pdf format to: ehouston@rmcsd.com.
Rate Schedules (costs) via email in pdf format to: awilder@rmcsd.com.

A. This request does not constitute an offer of employment or a contract for services.
B. All proposals submitted shall become District property.
C. All proposals shall remain firm for ninety (90) days following the closing date for receipt of proposals.
D. The District reserves the right to award the contract to the firm who represents the proposal which in the judgment of the District best accomplishes the desired results and shall include but not be limited to a consideration of the professional service fee.
E. Selection will be made based on the proposals submitted.

4. PROPOSAL FORMAT & REQUIREMENTS

A. General Requirements
1. Inquiries concerning the RFP and the subject of the RFP shall be made to:

Eric Houston
Director of Operations
P.O. Box 1050
Rancho Murieta, CA 95683
916-354-3700
ehouston@rmcsd.com

2. Submission of Proposal.
One (1) pdf electronic copy of the Proposal shall be received via email at ehouston@rmcsd.com by 11:00 a.m. on February 20, 2025 for the proposal to be considered.

The proposal should address the items listed in the previous sections and below.

3. Format. A qualifying proposal must address all the following points:

A. Project Title

B. Applicant or Firm Name, address, contact information and website

C. Statement of the proposer's understanding of the work to be done

D. Rates and proposed fee for services. Cost proposals shall include a sum cost in an amount not to exceed for completion of the Scope of Services.
   i. Send separately in pdf format to awilder@rmcsd.com

E. Insurance. Attached to the RFP is a blank copy of the District's Services Agreement, which contains the insurance requirements. These requirements include Commercial General Liability, Workers' Compensation, Automotive Insurance and Professional Liability or Error and Omissions. The selected firm will be required to maintain the minimum insurance requirements during the entire time of the engagement.

F. Contract Requirements. Provide evidence of acknowledgment and understanding that the services will be provided under and subject to the terms and conditions of the District's Standard Services Agreement, Attachment A. If the proposer is unable to execute the District's standard agreement without modification, suggested modifications to the standard agreement must be detailed in the proposal. The District will consider any proposed deviations to the standard agreement in the evaluation of the proposal.

5. NON-DISCLOSURE AND DISCLOSURE OF PROPOSALS

Proposals will be held in confidence during the evaluation process until District staff issues the Notice of Intent to Award a contract for professional services. Thereafter, all proposals will be treated as documents subject to disclosure under the California Public Records Act (the "Act").

If the proposer believes any portion of its proposal contains confidential or proprietary information that is exempt from public disclosure under the Act, proposer must submit that information with its proposal. Except as compelled by court process, the District will not release any such documentation claimed to be exempt that is submitted in said manner without prior written notice to the proposer.

6. DISTRICT RIGHTS

During the evaluation process, the District reserves the right, where it may serve the District's best interest, to request additional information or clarification from Proposers, to allow corrections of errors or omissions, and to negotiate terms.

The District reserves the right to retain all proposals submitted and to use any idea(s) in a proposal regardless of whether that proposing firm is selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in this request for proposals, unless clearly and specifically noted in the proposal submitted, and confirmed in the contract between the District and the firm selected.

The District reserves the right to reject any or all proposals, to waive any non-material irregularities or information in any proposal, and to accept, negotiate, or reject any items or combination of items.

7. RFP SCHEDULE

A. Proposal Calendar

Following are the key dates:

Date	Time	Event
January 30, 2025		RFP Issue Date
February 11, 2025	9:00 am	Site Visit
February 20, 2025	**11:00 a.m.**	**Proposal Due Date**
March 20, 2025		Anticipated Award Date
March 21, 2025		Anticipated Notice to Proceed

The dates in this RFP are subject to change at the District's discretion, posted as addenda on the District's website. You may contact Eric Houston, Director of Operations at ehouston@rmcsd.com with any questions related to the RFP.

8. EVALUATION PROCEDURES

A. The District will evaluate proposals based on but not limited to the following criteria:

1. Understanding of the Scope of Work to be performed
2. Demonstrated understanding of the project objectives.
3. Costs for completing the scope of work.
4. Consideration will be given to the demonstrated ability of completing the work in a timely manner.

The District will evaluate all proposals received before the submittal deadline and make a selection based on the contents and costs of the proposal. A recommendation from District staff will be presented to the District Board of Directors for consideration and final approval.

ATTACHMENT A

Rancho Murieta Community Services District

Services Agreement

ATTACHMENT A

PUBLIC WORKS BID AND CONTRACT DOCUMENTS

TABLE OF CONTENTS

1 BIDDING REQUIREMENTS

1.1 INVITATION TO BID

Sealed proposals will be received at the office of the Rancho Murieta Community Services District, located at Rancho Murieta Community Services District, 15160 Jackson Road, Rancho Murieta, CA 95683, until 4 PM local time on ---, or such later date as may be set by addendum, and then will be publicly opened and read for the construction of the following public works project:

> **Alameda Lift Station Replacement.** This project will include demolition of existing station components, grout placement, replacement of the submersible sewage pump, piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required.

The contract documents for the Project, including the public works construction contract, instructions to bidders, bid forms, and plans and specifications, may be examined at the District office, with prior notice to the District's representative, located at 15160 Jackson Road, Rancho Murieta CA 95683. A copy of contract documents may be obtained electronically at the District's website.

The District will hold a non-mandatory pre-bid conference at the site of the project, across the street from 6635 Camino Del Lago Drive, Rancho Murieta, CA 95683, on --- at 10:00AM. It is suggested that each prospective bidder review the bid documents and project site prior to the non-mandatory pre-bid conference.

Each Bid must be submitted on the prescribed forms and accompanied by cash, a cashier's check, certified check or bid bond executed on the prescribed form payable to the District in an amount not less than 10 percent of the amount bid.

The successful bidder will be required to furnish a payment bond and faithful performance bond each in the full amount of the Contract price, and insurance with certificates and endorsements of insurance, as provided in the Contract Documents. The required bonds must be provided only by a surety insurer who is admitted to do business by and in good standing with the California Department of Insurance.

Bidders are hereby notified that in accordance with Public Contract Code section 22300, securities may be substituted for any monies that the District may withhold pursuant to the terms of this Contract to ensure performance.

The successful bidder must possess the following classification or type of contractor's license issued by the Contractors State License Board: Class A, California.

To be qualified to bid on this Project, bidders must be registered and qualified to perform public work with the Department of Industrial Relations pursuant section 1725.5 of the Labor Code. All subcontractors listed in a qualified bidder's bid as performing any portion of the work also must be registered and qualified with the Department of Industrial Relations.

Bids that equal or exceed $1,000,000 must be accompanied by an Iran Contracting Act certification in the form provided in section 1.9.

The attention of bidders is directed to the requirements and conditions of employment to be observed and prevailing wage rates to be paid to all workers employed under the Contract in accordance with Labor Code sections 1770 and following. Copies of the prevailing rate of per diem wages are on file at the District's office, and will be made available to any interested party on request. In accordance with Labor Code section 1771.4(a)(1), this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The District reserves the right to reject all bids. Any bid not conforming to the intent and purpose of the Contract Documents may be rejected. The District may extend the time to award the Contract.

Dated: _____ Rancho Murieta Community Services District

By: _____

Eric Houston
Director of Operations

1.2 BID

TO: Rancho Murieta Community Services District, 15160 Jackson Road, Rancho Murieta, CA 95683

The undersigned states and declares as follows:

That the Bidder has carefully examined the location of the proposed work; that the Bidder has examined the Contract Documents entitled: **Alameda Lift Station Replacement**; the Addenda Numbers ___ to ___, if any; that the Bidder has read the accompanying Instructions to Bidders; that the Bidder hereby proposes to begin work and complete the project in accordance with the schedule and deadlines in the Contract Documents; that the Bidder hereby proposes to furnish all labor, materials, tools, and equipment, and to perform all work required, complete in place, in compliance with all terms and condition and requirements of the Contract Documents; and that the Bidder will take in full payment for the work the prices set forth in the accompanying bid schedule.

The Bidder acknowledges that the following quantities are approximate only, being given as a basis for the comparison of proposals, that the District does not expressly or by implication agree that the actual amount of the work will correspond therewith, and that the District reserves the right to increase or decrease the amount of any class or portion of the work, as may be deemed necessary or advisable by the Engineer.

The following surety or sureties have agreed to furnish payment and faithful performance bonds to the Bidder if it is awarded the contract:

Name of Performance Bond Surety: _____

Name of Payment Bond Surety: _____

BIDDER INFORMATION

Bidder Name: _____

Type of Business Entity and State of Incorporation (e.g., corporation, limited liability company, partnership):

_____

Contractor's License No.: _____

DIR Public Works Contractor Registration No.: _____

Expiration Date: _____

Type of license: _____

Name under which license is held: _____

Status of license: _____

The Bidder's authorized officer identified below hereby declares that the representations in this Bid are true and correct and of my own personal knowledge, and that these representations are made under penalty of perjury under the laws of the State of California.

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

Address: _____

_____

Phone: _____

Fax: _____

Email: _____

1.3 BID SCHEDULE

Item No.	Description	Unit (e.g., Lump Sum, Per Hour)	Amount ($)
1	Mobilization/Demobilization, Insurance, Bonding	LS	
2	Trench and Site Safety/Security	LS	
3	Earthwork	CY	
4	Demolition & Disposal	LS	
5	Landscaping	LS	
7	Bypass Pump	EA	
8	Aluminum Vault Lid	EA	
9	Tie-in Existing Piping	LS	
10	Concrete and Grout	LS	
11	Aluminum Wet Well Lid	EA	
12	Pre-cast Concrete Vault	EA	
13	Piping to Connect to Pumps	LF	
14	Valves	EA	
15	Site Electrical, Conduit & Junction Boxes	LS	
	Total Lump Sum Price:		**$**

Acknowledge Addenda

Addendum #:_____ Signed: _____

Addendum #:_____ Signed: _____

Addendum #:_____ Signed: _____

Addendum #:_____ Signed: _____

1.4 DESIGNATION OF SUBCONTRACTORS

In compliance with Public Contract Code section 4100 et seq. each bidder shall set forth below the: (a) name, location of the mill, shop, or office, and California contractor's license number of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement to be performed under these specifications in excess of one-half of 1% of the Contractor's total bid, (b) description of the type of work to be performed by each such subcontractor, and (c) portion of the work (expressed in dollar amount) that will be performed by each such subcontractor.

If the Contractor fails to specify a subcontractor for any portion of the work to be performed under the Contract, it shall be deemed to have agreed to perform such portion itself, and it shall not be permitted to subcontract that portion of the work except under the conditions hereinafter set forth.

Subletting or subcontracting of any portion of the work in excess of one-half of 1% of the Contractor's total bid as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a making a written finding as a public record of the District setting forth the facts constituting the emergency or necessity.

Subcontractor (name, address, Subcontractor's CSLB License Number, Subcontractor's DIR Public Works Contractor Registration Number)	Description of Subcontractor Work	Portion of Work ($)

Subcontractor (name, address, Subcontractor's CSLB License Number, Subcontractor's DIR Public Works Contractor Registration Number)	Description of Subcontractor Work	Portion of Work ($)

Additional pages attached: _____

1.5 BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, THE UNDERSIGNED _____, Contractor as Principal; and _____, as Surety, are hereby held and bound unto Rancho Murieta Community Services District, hereinafter called the District, in the sum of $_____, which sum is equal to at least ten percent of the total amount of the Bid, payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the District a certain Bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing, for the construction of the following public works project:

> **Alameda Lift Station Replacement.** This project will include demolition of existing station components, grout placement, replacement of the submersible sewage pump, piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required.

NOW, THEREFORE,

(a) If the Bid is rejected, or in the alternate,

(b) If the Bid is accepted and the Principal shall sign and deliver a Contract, in the form of the Contract attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto and shall deliver proof of insurance (all completed in accordance with the Contract Documents), and shall in all other respects perform the agreement created by the acceptance of the Bid;

Then, this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

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

IN WITNESS THEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of _____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

For Contractor as Principal:

_____

Name: _____

Title: _____

For Surety:

_____

Name: _____

Title: _____

(Seal)

1.6 EXPERIENCE QUALIFICATIONS

The Bidder has been engaged in the contracting business, under the present business name for ____ years. Experience in work of a nature similar to that covered in the Bid extends over a period of _____ years.

The Bidder, as a contractor, has never failed to satisfactorily complete a contract awarded to it, except as follows:

_____

_____

_____

_____

The following contracts have been satisfactorily completed in the last three years for the persons, firm or entity indicated:

Year	Owner	Type of Work	Contract Amount

The following is a list of plant and equipment owned by the Bidder, which is definitely available for use on the proposed work as required.

Quantity	Name, Type, and Capacity	Condition	Location

Executed on _____, at _____, _____

BIDDER

Company Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

1.7 NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID (PUBLIC CONTRACT CODE SECTION 7106)

The undersigned declares:

I am the _____ (Title) of _____ (Bidder), the party making the foregoing bid.

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

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

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

Authorized Signature: _____

Printed Name: _____

1.8 ACKNOWLEDGMENT OF INSURANCE REQUIREMENTS

By signing below Bidder acknowledges the insurance requirements as listed in the General Conditions, section 5.52 "Insurance". By this acknowledgment, the Bidder and its insurance provider(s) and surety(ies) certify that they have read and understand the insurance and bonding requirements in their entirety, including limits of coverage, additional insureds and endorsements, and bonding requirements, and that the Bidder can provide the insurance coverage and bonds as required in the Contract documents without exception.

Bidder understands that if the insurance coverage provided in section 5.52 of the General Conditions and the Contract Bonds cannot be provided, its bid is subject to rejection by the District as non-responsive.

BIDDER

Company Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

INSURANCE PROVIDER/SURETY REPRESENTATIVE

Insurer/Surety Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

Bidder Must Provide This Acknowledgment for Each Insurer or Surety Providing Insurance Coverage or a Bond under this Contract

1.9 IRAN CONTRACTING ACT CERTIFICATION

Pursuant to Public Contract Code (PCC) section 2204, the following Iran Contracting Act certification is required if your bid totals $1,000,000 or more.

If your bid totals $1,000,000 or more, you must complete only one of the following two paragraphs. To complete paragraph 1, check the corresponding box and complete the certification. To complete paragraph 2, simply check the corresponding box.

☐ 1. We are not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services (DGS) pursuant to PCC 2203(b), and we are not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

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

_____ (date),

at _____ (city), _____ (state).

_____(signature)

_____(printed name)

OR

☐ 2. We have received written permission from the District to submit a bid pursuant to PCC 2203(c) or (d). A copy of the written permission from the District is included with our bid.

2 CONTRACT FORMS

2.1 CONTRACT

THIS CONTRACT is made as of [date], in Rancho Murieta, California, by and between Rancho Murieta Community Services District, a public agency, ("District") and [name of contractor], a [insert capacity of Contractor, e.g., a California corporation, partnership or a sole proprietorship] ("Contractor"), who agree as follows:

2.1.1 The Contractor agrees to furnish all labor, materials, supplies, tools and equipment and to perform all the work required to construct and complete in a good and workmanlike manner, and in strict accordance with the Contract Documents, those certain improvements entitled:

> **Alameda Lift Station Replacement.** This project will include demolition of existing station components, grout placement, replacement of the submersible sewage pump, piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required.

2.1.2 Contract Documents for this project have been prepared by the District's Engineer, Domenichelli & Associates, hereinafter called the Engineer. All Contract Documents, and each and every provision thereof, relating to this Contract are hereby made a part of and incorporated by reference into this Contract. The following are the applicable Contract Documents: Invitation to Bid, Bid, Bid Bond, Designation of Subcontractors, Experience Qualifications, Non-collusion Declaration, Acknowledgment of Insurance Requirements, Instructions to Bidders, Contract, Faithful Performance Bond, Payment Bond, Contractor's Certificate Regarding Workers' Compensation, the Insurance Certificates and Endorsements, Abbreviations and Definitions, General Conditions, Technical Specifications and Plans (Drawings) applicable to this work, and all Addenda and Change Orders, as well as all written modifications of the Contract Documents agreed to by the parties. Any work called for in one Contract Document and not mentioned in others is to be performed and executed as if mentioned in all Contract Documents.

2.1.3 The District agrees to pay the Contractor for the performance of the Contract, subject to additions and deductions provided therein, the following prices, and the Contractor agrees to receive and accept the following prices as full compensation for furnishing all materials, labor, supplies, tools and equipment, and for doing all the work contemplated and embraced in this Contract, and for all risks of every description connected with the work and for all expenses incurred by or in consequence of the suspension or discontinuance of the work, and for well and faithfully completing the work and the whole thereof in the manner and according to the Contract Documents and the requirements of the Engineer under them, namely:

Item No.	Description	Unit (e.g., Lump Sum, Per Hour)	Amount ($)
1	Mobilization/Demobilization, Insurance, Bonding	LS	
2	Trench and Site Safety/Security	LS	
3	Earthwork	CY	
4	Demolition & Disposal	LS	
5	Landscaping	LS	
6	Pump Package	EA	
7	Bypass Pump	EA	
8	Aluminum Vault Lid	EA	
9	Tie-in Existing Piping	LS	
10	Concrete and Grout	LS	
11	Aluminum Wet Well Lid	EA	
12	Pre-cast Concrete Vault	EA	
13	Piping to Connect to Pumps	LF	
14	Valves	EA	
15	Site Electrical, Conduit & Junction Boxes	LS	
	Total Lump Sum Price:		
			$

2.1.4 The District shall make payments on the account of the Contract as specified in the General Conditions of the Contract.

2.1.5 The Contractor shall diligently prosecute the work to completion in accordance with the following schedule:

Milestone	**Calendar Days from Notice to Proceed**
Substantial completion:	---
Final completion:	---

2.1.6 The Contractor acknowledges that it has examined the prevailing rate of per diem wages as established and published by the California Director of Industrial Relations, copies of which are available for inspection at the office of the District. The Contractor agrees to pay all workers employed on the work not less than the applicable prevailing rate of per diem wages, as the same may be amended from time to time. The Contractor shall post at each job site a copy of the determination of the Director of Industrial Relations of the prevailing rate of per diem wages. The Contractor also shall ensure that all subcontractors on the work are notified of and comply with their obligations in regard to the payment of prevailing wages to all of their workers employed on the Project.

2.1.7 Intentionally omitted.

IN WITNESS WHEREOF, the parties execute this Contract as follows:

For District:

_____

Name: _____

Title: General Manager,

Attest:

_____

Name: _____

Title: Secretary, Board of Directors

For Contractor:

_____

Name: _____

Title: _____

2.2 FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

THAT, WHEREAS, Rancho Murieta Community Services District, hereinafter designated as the "District," entered into a Contract with _____, hereinafter designated as the "Contractor" for the work described as follows:

> **Alameda Lift Station Replacement.** This project will include demolition of existing station components, grout placement, replacement of the submersible sewage pump, piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required.

WHEREAS, the Contractor is required under terms of the Contract to furnish a bond for the faithful performance of the Contract;

WHEREAS, the Contract is by reference made a part hereof;

NOW, THEREFORE, we, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized and in good standing to transact business under the laws of the State of California, as an admitted Surety, are held and firmly bound unto the District in the penal sum of $_____, the sum being not less than one hundred percent (100%) of the total Contract amount, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT, if the above bounden Contractor, its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the Contract and any alterations thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the District, its directors, officers, employees and agents, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the said Contract, the above obligation in above-stated amount shall hold good for a period of one (1) year after the recording of the notice of completion, during which time if the Contractor, its heirs, executors, administrators, successors or assigns shall fail to make full, complete, and satisfactory repair and replacements or totally protect the District from loss or damage made evident during the period of one (1) year from the date of recording of the notice of completion, and resulting from or caused by defective materials or faulty workmanship in the prosecution of the work done, the above obligation in the above-stated amount shall remain in full force and effect. However, anything in this paragraph to the contrary notwithstanding, the obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations on this bond and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the specifications. The Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including, but not limited to, administrative and consultant costs, and reasonable attorneys' fees to be fixed by the Court.

The address or addresses at which the principal and surety(ies) may be served with notices, papers and other documents under the California Bond and Undertaking Law (Code of Civil Procedure section 995.010 et seq.) is the following:

_____

_____

IN WITNESS THEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of _____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

For Contractor as Principal:

_____

Name: _____

Title: _____

For Surety:

_____

Name: _____

Title: _____

(Seal)

(NOTE: The date of this bond must not be prior to date of Contract. If Contractor is a partnership, all partners should execute bond.)

2.3 PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

THAT, WHEREAS, the Rancho Murieta Community Services District, hereinafter designated as the "District," has awarded to _____ hereinafter designated as the "Contractor" a Contract for the work described as follows:

> **Alameda Lift Station Replacement.** This project will include demolition of existing station components, grout placement, replacement of the submersible sewage pump, piping, valves, and check valves for this station. In addition, the Contractor will be responsible for intercepting and pumping incoming sewage around the worksite as required.

WHEREAS, the Contractor is required by the Contract and by the provisions of Division 4, Part 6 of the Civil Code to furnish a bond in connection with the Contract, as hereinafter set forth.

WHEREAS, the Contract by this reference is made a part hereof;

NOW, THEREFORE, we, the undersigned Contractor, as Principal, and _____ _____, as Surety, a corporation organized and existing under the laws of the State of _____, duly authorized and in good standing to transact business under the laws of the State of California, as an admitted Surety, are held and firmly bound unto the District in the sum of $ _____, the sum being not less than one hundred percent (100%) of the total Contract amount payable by the District, under the terms of the Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT, if the Contractor, its heirs, executors, administrators, successors, assigns or subcontractors shall fail to pay for any materials, provisions, provender or other supplies or teams, implements or machinery used in, upon, for or about the performance of the work contracted to be done, or shall fail to pay for any work or labor thereon of any kind, or shall fail to pay any of the persons named in Civil Code Section 9100, or shall fail to pay for amounts due under the Unemployment Insurance Code with respect to such work or labor as required by the provisions of Division 4, Part 6 of the Civil Code, or shall fail to pay for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work or labor, and provided that the claimant shall have complied with the provisions of that Code, the Surety or Sureties hereon will pay for the same in amount not exceeding the sum specified in the Contract, otherwise the above obligation shall be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to the prevailing party to be fixed by the court. This bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under Section 9100 of the Civil Code, so as to give a right of action to them or to their

assigns in any suit brought upon this bond. And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

The address or addresses at which the principal and surety(ies) may be served with notices, papers and other documents under the California Bond and Undertaking Law (Code of Civil Procedure section 995.010 et seq.) is the following:

_____

_____

IN WITNESS THEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of _____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

For Contractor as Principal:

_____

Name: _____

Title: _____

For Surety:

_____

Name: _____

Title: _____

(Seal)

(NOTE: The date of this bond must not be prior to date of Contract. If Contractor is a partnership, all partners should execute bond.)

2.4 CONTRACTOR'S WORKERS' COMPENSATION CERTIFICATE (LABOR CODE SECTION 1861)

To: Rancho Murieta Community Services District

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

BIDDER

Company Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

3 ABBREVIATIONS AND DEFINITIONS

3.1 ABBREVIATIONS

The following abbreviations may be used in the Contract Documents:

AA	Aluminum Association
AASHO	American Association of State Highway Officials
ABMA	American Boiler Manufacturer's Association
ACI	The American Concrete Institute
AGA	American Gas Association
AGC	Associated General Contractors
AGMA	American Gear Manufacturer's Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute, Inc.
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BGHMA	Builders Hardware Manufacturers Association

CCMTC	California Concrete Masonry Technical Committee
CRSI	Concrete Reinforcement Steel Institute
DFPA	Douglas Fir Plywood Association
ETL	Electrical Testing Laboratory
FS	Federal Specification
ICBO	International Conference of Building Officials
IEEE	The Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
MBMA	Metal Building Manufacturer's Association
MSS	Manufacturers Standardization Society of Valve and Fitting Industry Standards
NBFU	National Board of Fire Underwriters
NBS	National Building Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Act of 1970
PCA	Portland Cement Association
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
UBC	Uniform Building Code
UHPHS	United States Public Health Service
UL	Underwriter's Laboratory

UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USAS	The United States of America Standard Institute
USBR	United States Bureau of Reclamation
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California

3.2 DEFINITIONS

For purposes of the Contract Documents, these words and phrases shall be defined as follows:

3.2.1 District means the Rancho Murieta Community Services District, also referred to as the Owner.

3.2.2 As Approved shall be understood to be followed by the words "by the Engineer," unless otherwise qualified.

3.2.3 As Shown and As Indicated shall be understood to be followed by the words "on the Plans."

3.2.4 Bid means the offer of the bidder for the work when made out and submitted on the prescribed bid form, properly completed, signed and guaranteed.

3.2.5 Bid Bond means the cash, cashier's check, certified check, or bidder's bond accompanying the bid submitted by the bidder, as a guarantee that the bidder will enter into a Contract with the District for the performance of work herein described.

3.2.6 Bidder means any individual, firm, partnership or corporation submitting a bid for the work contemplated, and acting directly or through a duly authorized representative.

3.2.7 Board of Directors or Board means the Board of Directors of the District.

3.2.8 Contract means the written agreement covering the performance of the work and the furnishing of labor, materials, tools and equipment in the construction of the work. The Contract shall include all Contract Documents and supplemental agreements amending or extending the work contemplated which may be required to complete the work in a substantial and acceptable manner. Supplemental agreements are written agreements covering alterations, amendments or extensions to the Contract, and include Addenda and Contract Change Orders.

3.2.9 Contract Documents means any or all of the documents listed in section 2.1.2 of the Contract.

3.2.10 Contractor means the person or persons, firm, partnership or corporation or other entity who has entered into the Contract with the District to perform the work.

3.2.11 County means County of Sacramento, California.

3.2.12 Date of the Contract means the date on which the Contract is signed by the District's authorized representative.

3.2.13 Days mean calendar days unless otherwise designated.

3.2.14 Engineer means the architect or engineer retained by the District, or the person or persons designated by the District as its engineering representative during the course of construction, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

3.2.15 He shall include "she" and "it" and his shall include "her" and "its."

3.2.16 Or Equal means the term "or equal" shall be understood to indicate that the "equal" product be the same or better than the product named in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the Engineer.

3.2.17 Plans or Drawings mean the term "Plans" or "Drawings" refers to the official plans, drawings, profiles, cross sections, elevations, details, and other working drawings and supplementary drawings, or reproductions thereof, signed by the Engineer, which show the location, character, dimensions, and details of the work to be performed, and identified at section 2.1.2. Plans may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

3.2.18 Specifications mean the terms, provisions, and requirements contained in the Contract Documents and identified in section 2.1.2 and is synonymous with "Technical Specifications." Where standard specifications, such as those of "ASTM", "AASHO", etc. have been referred to, the applicable portions of such standard specifications shall become a part of these Contract Documents.

3.2.19 State means State of California.

3.2.20 State Standard Specifications mean the edition in effect as of the Date of Execution of the Contract of the Standard Specifications issued by the State of California Business and Transportation Agency, Department of Transportation, unless a specific edition is referenced.

3.2.21 Subcontractor means only those persons, firms or entities having a direct contract with the Contractor, and it includes one who furnishes material worked to a special design according to the Plans or Specifications of this work, but does not include one who merely furnishes material not so worked and would be considered a supplier only.

3.2.22 Time Limits mean all time limits stated in the Contract Documents are of the essence of the Contract.

3.2.23 Work means all the work specified, indicated, shown or contemplated in the Contract Documents to construct the improvements, including all alterations, amendments or extensions thereto made by Contract Change Order or other written orders of the Engineer.

3.2.24 Whenever in the Contract Documents or upon the Drawings the words DIRECTED, REQUIRED, PERMITTED, ORDERED, DESIGNATED, PRESCRIBED, or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the Engineer is intended, and similarly the words APPROVED, ACCEPTABLE, SATISFACTORY, or words of like import, shall mean approved or acceptable to, or satisfactory to the Engineer, unless otherwise expressly stated.

4 INSTRUCTIONS TO BIDDERS

4.1 INTRODUCTION

Each bid shall be in accordance with these Instructions to Bidders and other applicable provisions of the Contract Documents. The Invitation to Bid will specify whether Contract Documents are available on a purchase or deposit basis. Where payment for such sets is specified, no refund will be made.

4.2 PLANS

Additional copies of full-scale plans or individual plan sheets may be obtained at the office of the Engineer for the cost of reproduction.

4.3 LOCAL CONDITIONS

4.3.1 The quantities of work or material stated in the unit price items of the Bid Schedule are given only as a basis for the comparison of Bids, and the District does not represent or warrant that the actual amount of work or material will correspond therewith, but reserves the right to increase or decrease the quantity of any unit price item of the work as may be deemed necessary or expedient by the Engineer.

4.3.2 The Bidder shall examine carefully the site of the work contemplated and the Contract Documents. The submission of a Bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality and quantities of work to be performed and the materials to be furnished, and as to the requirements of the Contract Documents. Bidders shall thoroughly examine and be familiar with the Plans and Specifications. The failure of any bidder to receive or examine any form, instrument, addendum or other document, or to visit the site and acquaint himself with conditions there existing shall in no way relieve the Bidder from any obligation with respect to its proposal or to the Contract. The Plans for the work show conditions as they are supposed or believed by the District, the Engineer or their representatives to exist; but it is neither intended nor to be inferred that the conditions as shown thereon constitute a representation by the District, the Engineer, or their representatives that such conditions are actually existent, nor shall the District, the Engineer or their representatives be liable for any loss sustained by the Contractor as a result of any inference or extrapolation drawn by the Bidder between conditions as shown on the Plans and the actual conditions revealed during the progress of work, or otherwise. The Bidder's attention is directed to the possible existence of obstructions and public or private improvements which may be within the limits of the work or adjacent thereto, which may or may not be shown on the Plans.

4.3.3 Where the Engineer has made investigations of surface and subsurface conditions in areas where work is to be performed under the Contract, or in other areas, some of which may constitute possible local material sources, such investigations were made only for the purpose of study and design. Where such investigations have been made, bidders or Contractor may, upon written request, inspect the records of the Engineer as to such investigations subject to and upon the conditions hereinafter set forth. Such inspection of records may be made at the office of the Engineer.

4.3.4 The records of such investigations are not a part of the Contract and are made available for inspection solely for the convenience of the bidder or Contractor. It is expressly understood and agreed by bidder or Contractor that neither the District nor the Engineer assumes any responsibility whatsoever with respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretation set forth therein or made by the Engineer in his use thereof and there is no representation, warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records thereof are correct or representative of those existing throughout such areas or any part thereof, or that unanticipated developments may not occur or that materials other than, or in proportions different from, those indicated may not be encountered.

4.3.5 Where a log of test borings or other investigations of subsurface conditions have been made by the District in respect to foundation or other structural design, and that information is shown in the plans, said information represents only the statement by the District as to the character of material which has been actually encountered by it in its investigation, and is only included for the convenience of bidders. Water levels that may be shown on a log of test borings are valid only for the stated date of observation. The water level may change from season to season and from year to year. Investigations of subsurface conditions are made for the purpose of design, and the District assumes no responsibility whatever in respect to the sufficiency or accuracy of borings or of the log of test borings or other preliminary investigations, or of the interpretation thereof, and there is no guaranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or any part of it, or that unobserved or unanticipated developments may not occur. Making such information available to bidders is not to be construed in any way as waiver of the provisions of this section and bidders must satisfy themselves through their own investigations as to conditions to be encountered.

4.3.6 The availability or use of information described in these Instructions to Bidders and other bid documents shall not be construed in any way as a waiver of the provisions of the Instructions of Bidders and a Bidder or Contractor is cautioned to make such an investigation and examination as it deems necessary to satisfy itself as to conditions to be encountered in the performance of the work and, with respect to possible local material sources, the quality and quantity of material available from such property and the type and extent of processing that may be required in order to produce material conforming to the requirements of the Specifications.

4.3.7 No information derived from such inspection of records of investigations or compilations thereof made by the Engineer, will in any way relieve the bidder or Contractor from any risk or from properly fulfilling the terms of the Contract.

4.3.8 Information derived from inspection of topographic maps, or from Plans showing location of utilities and structures will not in any way relieve the Contractor from any risk, or from properly examining the site and making such additional investigations as it may elect, or from properly fulfilling all the terms of the Contract.

4.4 FORM OF BID AND SIGNATURE

Bids shall be submitted only on the forms attached hereto or copies thereof and shall be enclosed in a sealed envelope and marked and addressed as hereinafter directed. The Bidder shall state in figures the unit prices or the specific sums as the case may be, for which he proposes to supply the labor, materials, supplies tools or equipment, and perform the work required by the Contract Documents. If the Bid is made by an individual, it shall be signed by its full name and address shall be given; if it is made by a partnership, it shall be signed with the partnership name by a member of the partnership, who shall also sign his own name, and the name and address of each member of such partnership shall be given; and, if it is made by a corporation the name of the corporation shall be given and it shall be signed by its duly authorized officer or officers, the name(s) and title(s) of all signing officers, of the corporation shall be given, and the address of the corporation and the state in which incorporated shall be stated. Bids will be considered only from persons licensed as required under applicable provisions of the Contractors' State License Law (California Business and Professions Code section 7000, et seq.) and rules and regulations adopted pursuant thereto; and each bidder shall insert its type of contractor's license, license number, and other requested information in the place provided in the bid. No oral, telephonic, e-mail, facsimile or telegraphic Bid or modification of a Bid will be considered.

4.5 SUBMISSION OF BIDS

4.5.1 All Bids must be submitted not later than the time prescribed, at the place and in the manner set forth in the Invitation to Bid. The District shall not consider any Bid received after the time fixed or received at any place other than the place stated in the Invitation to Bid. Bids must be made on the prescribed Bid forms. A complete Bid requires submission of fully completed and executed: Bid, Designation of Subcontractors (if applicable), Bid Bond (or other bid guarantee), Experience Qualifications and Noncollusion Declaration. Each Bid must be submitted in a sealed envelope, so marked as to indicate its contents without being opened, and addressed in conformance with the instructions in the Invitation to Bid. The bidder is wholly responsible to see that its Bid is submitted at the time and place named for the opening of bids.

4.5.2 Bids shall acknowledge receipt of all addenda (identified by addendum no.) issued during the bidding period. Failure to acknowledge an addendum or clarification may result in the Bid being rejected as not responsive.

4.5.3 Bids shall be open at the time and place specified in the Invitation to Bid, unless changed by addendum. All Bids will be opened and read publicly. Bidders, their representatives and other interested parties, are invited to be present at the opening.

4.6 PREPARATION OF THE BID

4.6.1 Blank spaces in the Bid shall be properly completed. The phraseology of the Bid must not be changed and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations or provisions attached to a Bid may render it nonresponsive and may cause its rejection. If erasures, interlineations or other changes appear on the form, each erasure, interlineation or change must be initialed by the person signing the Bid. Alternative Bids will not be considered unless specifically provided for in the Bid Schedule.

Where performance and/or labor and material bonds are required, the Bidder shall name in his Bid the surety or sureties which have agreed to furnish the bonds.

4.6.2 Section 5.36 of the Contract General Conditions provides that the successful Contractor shall pay all federal, state and local taxes, including manufacturers' taxes, sales taxes, use taxes, processing taxes, and payroll, wage, insurance, social security, and unemployment taxes on wages, salaries or any remuneration paid to Contractor's employees. A bidder's bid prices shall be deemed to include all applicable taxes, and there shall be no separate bid item or billing for taxes.

4.7 BID GUARANTEE

4.7.1 All Bids shall be accompanied by a Bid Bond, as defined, made payable to the District. The Bid Bond must be enclosed in the same envelope with the Bid. The amount of the Bid Bond shall be not less than 10 percent of the total amount of the Bid.

4.7.2 If a bond is utilized, the Attorney in Fact (resident agent) who executes the Bid Bond on behalf of the surety company must attach a copy of his Power of Attorney as evidence of his authority. A notary shall acknowledge the power as of the date of execution of the surety bond which it covers. A bond will be accepted only if it is made out on either the Bid Bond form enclosed in these documents or on a form which substantially conforms to it.

4.8 LIST OF SUBCONTRACTORS; SUBCONTRACTING LIMITS

4.8.1 Each Bidder shall set forth in its Bid on the form provided the following information in accordance with the provisions of California Public Contract Code section 4100, et seq.: (a) The name, location of the place of business, and California contractor's license number of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement, and of each subcontractor who, under subcontract to the Contractor, is to specifically fabricate and install or provide a portion of the work or improvement according to the Contract Documents, in any amount in excess of 1/2 of 1 percent of the Contractor's total Bid; and (b) The portion of the work that will be done by each such subcontractor. Only one subcontractor shall be listed for each such portion of the work as defined in the Bid. If the Bidder fails to specify a subcontractor for any portion of the work to be performed under the Contract, the Bidder agrees to perform that portion of the work itself.

4.8.2 The Contractor shall perform with its own organization work amounting to not less than 50 percent of the original total contract price, except that any designated "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the original total contract price before computing the amount of work required to be performed by the Contractor with its own organization. When items of work in the Bid schedule are preceded by the letter (S), such items shall be deemed designated "Specialty Items." Where an entire item is subcontracted, the value of work subcontracted will be based on the contract item bid price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the contract item bid price, determined from information submitted by the Contractor, subject to approval by the Engineer.

4.9 INTERPRETATION OF CONTRACT DOCUMENTS

4.9.1 Any explanation desired by the bidders regarding the meaning or interpretation of any of the Contract Documents must be requested in writing, with sufficient allowance of time for receipt of reply before the time set for opening of Bids. Any such explanations or interpretations will be made only in the form of addenda to the documents and will be furnished to all bidders who shall submit all addenda with their Bids. Neither the Engineer nor any representative of the District is authorized to give oral explanations or interpretations of Contract Documents, and a submission of a Bid constitutes agreement by the bidder that he has placed no reliance on any such oral explanation or interpretation. However, the Engineer may, upon inquiry by bidder, orally direct the bidder's attention to specific provisions of the Contract Documents which cover the subject of the inquiry.

4.9.2 The Bidder shall review the Plans and Specifications prior to submission of his bid and shall report any errors and omissions noted by the Bidder to the District prior to such submission.

4.10 MODIFICATION OF BIDS

A Bidder may modify its Bid by written communication provided such communication is received by the District prior to the closing time for receipt of Bids. The written communication should not reveal the Bid price but should state the addition or subtraction or other modification so that the final prices or terms will not be known by the District until the sealed bid is opened.

4.11 WITHDRAWAL AND RETURN OF BIDS

Bids may be withdrawn without prejudice by written, e-mail, facsimile or telegraphic requests received from the Bidder prior to the time for opening of Bids, and Bids so withdrawn will be returned to bidders unopened. No Bid may be withdrawn after the hour affixed for opening Bids without rendering the accompanying Bid Bond subject to retention as liquidated damages in like manner as in the case of failure to execute the Contract after award, as provided in the Contract Documents. Negligence on the part of the Bidder preparing its Bid shall not constitute a right to withdraw the Bid subsequent to the opening of Bids. Any Bid received after the bid submission deadline shall be returned to the bidder unopened.

4.12 DISCREPANCIES

In the case of discrepancy between unit prices and totals, unit prices will prevail. In case of discrepancy between words and figures, words will prevail.

4.13 SERVICING AND MAINTENANCE

Each Bidder must, if requested, furnish evidence that there is an efficient service organization which regularly carries a stock of repair parts for the proposed equipment to be furnished and installed in the work and that the organization is conveniently located for prompt service.

4.14 DISQUALIFICATION OF BIDDERS

4.14.1 More than one Bid from an individual, firm, partnership or corporation under the same or different names will not be considered. Reasonable grounds for believing that any individual, firm, partnership or corporation is interested in more than one Bid for the work contemplated may cause the rejection of all Bids in which the individual, firm, partnership or corporation is interested. If there is reason for believing that collusion exists among the bidders, any or all Bids may be rejected. Bids in which the price is obviously unbalanced may be rejected.

4.14.2 All bidders are put on notice that any collusive agreement fixing the prices to be bid so as to control or affect the awarding of this Contract is in violation of the competitive bidding requirements applicable to the District, including Public Contract Code section 7106, and may render void any contract let under such circumstances.

4.15 AWARD OF CONTRACT

4.15.1 The District reserves the right to accept or reject any and all Bids during the time for awarding the Contract, and to waive any informality or irregularity in any Bid. No Bid can be withdrawn during the time for awarding the Contract. The time for awarding the Contract is provided in section 4.17.

4.15.2 Before a Bid is considered for award, the District may, in addition to the Experience Qualifications form, require a Bidder to submit a statement of facts and detail as to its business, technical organization and financial resources and equipment available and to be used in performing the work. Additionally, the District may require evidence that the Bidder has performed other work of comparable magnitude and type. The District expressly reserves the right to reject any Bid if it determines that the business and technical organization, equipment, financial and other resources or other experience of the Bidder (including the Bidder's subcontractors) is not sufficiently qualified for the work bid upon and, therefore, justifies such rejection.

4.15.2 The award of the Contract, if it is awarded, will be to the lowest responsible and responsive Bidder whose Bid complies with the requirements of the Contract Documents.

4.16 CONTRACT BONDS

4.16.1 The successful Bidder shall furnish both a Performance Bond and a Payment Bond in the type, form and amount specified in the forms included with the Contract Documents. These bonds shall be furnished on such forms or on substantially similar forms acceptable to the District. The Payment Bond shall comply with California Civil Code sections 9550 and 9554 and applicable provisions of the California Bond and Undertaking Law (California Code of Civil Procedure section 995.010 et seq.). The bonds shall be obtained from a responsible corporate surety (or sureties) acceptable to the District, who is (or are) in good standing with and duly admitted by the Insurance Commissioner of the State of California to act as surety upon bonds and undertakings. The surety (or sureties) shall furnish reports as to its financial condition from time to time as requested by the District. The premiums for the bonds shall be paid by the successful Bidder.

4.16.2 If any surety becomes unacceptable to the District, is deemed insolvent, is no longer an admitted surety in California, or fails to furnish reports as to its financial condition as requested by the District, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the District and of persons supplying labor or materials in the prosecution of the work contemplated by this Contract.

4.16.3 In the event of any conflict between the terms of the Contract and the terms of the bonds, the terms of the Contract shall control and the bonds shall be deemed to be amended thereby. Without limiting the foregoing, the District shall be entitled to exercise all rights granted to it by the Contract in the event of default, without control thereof by the surety, provided that the District gives the surety notice of such default at the time or before the exercise of any such right by the District, and, regardless of the terms of the bonds, the exercise of any such right by the District shall in no manner affect the liability of the surety under the bonds.

4.17 EXECUTION OF CONTRACT

The successful Bidder will be notified in writing by the District of the award of the Contract within thirty (30) days after opening of Bids, unless the time period is extended as provided in the Invitation to Bid. Accompanying the District's notice of award will be the Contract, which the District may require to be executed in duplicate or triplicate. Within ten (10) days following receipt of such notice of award, the successful bidder will be required to execute and return the original contract(s), together with the performance and payment bonds, and the required certificates and proof of insurance documents (see sections 2.4 and 5.52), to the District. Failure to do so shall be just cause for annulment of the award and for forfeiture of the Bid Bond which shall be retained as liquidated damages, and it is agreed that the Bid Bond sum is a fair estimate of the amount of damages that the District will sustain by reason of such failure. The District will promptly determine whether such Contract, bonds and insurance are as required by the Contract Documents, and upon such determination will forward a fully executed copy of the Contract and a Notice to Proceed with the work to the successful bidder. Signature by both parties constitutes execution of the Contract. In the event of failure of the lowest responsible responsive Bidder to sign and return the Contract with acceptable bonds and insurance as prescribed herein, the District may award the Contract to the next lowest responsible responsive Bidder, and, in the event that Bidder fails to sign and return the Contract with acceptable bonds and insurance, the District may award the Contract to the then next lowest responsible responsive Bidder, etc.

4.18 RETURN OF BID GUARANTEES

All Bid Bonds will be held until the Contract has been finally executed, after which all Bid Bonds, other than any Bid Bonds which have been forfeited, will be returned to the respective bidders whose Bids they accompanied, but in no event shall non-forfeited bonds be held by the District beyond 60 days from the date that the District awards the Contract.

4.19 POWER OF ATTORNEY

The Attorney in Fact (resident agent) who executes the Performance Bond and Payment Bond on behalf of the surety company must attach a copy of his Power of Attorney as evidence of

his authority. A notary public shall acknowledge the power as of the date of the execution of the bond which it covers.

4.20 TIME OF COMPLETION

The time of completion of the work to be performed under this Contract is the essence of the Contract. Delays and extensions of time may be allowed in accordance with the provisions of the General Conditions. The time allowed for the completion of the work is stated in the Contract.

4.21 LICENSING REQUIREMENTS FOR CONTRACTORS

The Contractor shall hold such licenses as may be required by the laws of the State of California for the performance of the work specified in the Contract Documents, and shall have the following classification or type of license for the work issued by the California Contractors State License Board: Class A.

4.22 PREVAILING WAGES

Copies of the prevailing rate of per diem wages are on file at the District's office, and will be made available to any interested party on request. The Contractor shall post at each job site a copy of the determination of the Director of Industrial Relations of the prevailing rate of per diem wages. Furthermore, Contractor must post job site notices, as required by Section 1771.4(a)(2) of the Labor Code and prescribed by regulation.

4.23 BID PROTEST

4.23.1 Any bid protest must be submitted in writing to the District before 5:00 p.m. of the fifth working day following the bid opening. "Working day" as used in this section means a day that District is open for normal business, and excludes weekends and holidays observed by District. The party filing the protest must have actually submitted a timely bid for the work. A subcontractor of a bidder may not submit a bid protest. A bidder may not rely on a bid protest submitted by another bidder, but must timely file its own protest.

4.23.2 The bid protest shall be in the form of a letter or memorandum and it shall include the following: a complete statement of the basis or bases for the protest, including any supporting documents; a reference to the specific portion(s) of the Contract Documents which form(s) the basis for the protest; and, the name, address and telephone number of the person representing the protesting bidder.

4.23.3 The bidder filing the protest shall concurrently transmit a copy of the protest document and any attached documentation to all other bidders with a direct financial interest who may be adversely affected by the outcome of the protest, including all other bidders who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

4.23.4 The District will issue a prompt decision on the protest. If the District determines that a protest is frivolous, the party originating the protest may be determined to be irresponsible and that party may be determined to be ineligible for future contract awards.

4.23.5 The procedure and time limits set forth in this section are mandatory and are the bidder's sole and exclusive remedy in the event of a bid protest. 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, lawsuit or other legal proceeding.

4.23.6 For purposes of this section, a "bid protest" means any protest, objection, complaint or challenge to, concerning or against (a) a rejection of a bidder for any reason, (b) a contract award to the apparent low bidder, (c) another bidder's bid, or (d) the legality or enforceability of the bid documents.

4.24 INELIGIBLE CONTRACTORS AND SUBCONTRACTORS

The District shall not accept a bid from a bidder who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code section 1777.1 or 1777.7. Bidders and the Contractor who is awarded the project contract shall not utilize, or allow work by, any subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code section 1777.1 or 1777.7. (See California Public Contract Code section 6109.) The California Division of Labor Standards Enforcement publishes a list of debarred contractors and subcontractors on the Internet at http://www.dir.ca.gov/DLSE/debar.html

4.25 AUDIT OF BID DOCUMENTS

The District shall have the right to audit all (including review, obtain and copy upon reasonable notice) documents that comprise or relate to a bidder's bid in connection with any request, claim or contention raised by any bidder, including, but not limited to, Public Contract Code Sections 4000, et seq., or 5000, et seq., or any bid protest. The term "records" and the term "documents" as used herein shall include, but not be limited to, original estimates, subcontracts, bids, proposals, purchase orders, books, documents, accounting records, papers, correspondence, project files and scheduling information, including the original Bid and all documents related thereto and to its preparation, the as-planned construction schedule and any related documents.

4.26 SUBSTITUTIONS DURING BIDDING

Manufacturers or suppliers of materials and equipment may offer an alternative product to the Contractor, except where alternatives or substitutes are specifically excluded, and request that alternatives to specified products be considered equal. Inclusion of such alternatives in the bid is the responsibility of the Contractor. Inclusion should only be considered if the Contractor believes the offered alternative is equal in quality and performance to the specified product. After award of the Contract, such offers of alternative products will be reviewed and processed as a substitution as provided under General Conditions section 5.24 (Trade Names and Alternatives). Inclusion or offers of alternative products will not be reviewed or processed during the bidding period.

5 GENERAL CONDITIONS

5.1 INTENT OF CONTRACT DOCUMENTS/MEANS AND METHODS

5.1.1 The intent of the Contract Documents is to prescribe the details for the construction and completion of the work which the Contractor undertakes to perform in accordance with the terms of the Contract. Where the Specifications and Plans describe portions of the work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment and incidentals and do all the work involved in performing the Contract in a satisfactory and workmanlike manner.

5.1.2 The technical specifications are presented in sections for convenience. However, this presentation does not necessarily delineate trades or limits of responsibility. All sections of the Specifications and Plans are interdependent and applicable to the project as a whole.

5.1.3 The Contract Documents are complementary, and what is called for in any one shall be as binding as if called for in all.

5.1.4 It is expressly stipulated that the drawings, specifications and other Contract Documents set forth the requirements as to the nature of the completed work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent on the method of performance.

5.1.5 Except as provided elsewhere in the Contract Documents, neither the District nor the Engineer will be responsible for or have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work. Except as provided elsewhere in the Contract Documents, neither the District nor the Engineer will be responsible for or have control or charge over the acts or omissions of the Contractor, or any of their subcontractors, agents or employees, or any other persons performing any of the work. Any general control of the work exercised by the District or its authorized representatives shall not make the Contractor an agent of the District, and the liability of the Contractor for all damages to persons and/or to public or private property arising from the Contractor's execution of the work shall not be lessened because of such general control.

5.2 CONTRACTOR'S UNDERSTANDING

It is understood and agreed that the Contractor has, by careful examination, satisfied itself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of 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 District, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.

5.3 CHANGES IN THE WORK

5.3.1 The District reserves the right to make such alterations, deviations, additions to, deletions or omissions from the plans and specifications, including the right to increase or decrease the quantity of any item or portion of the work, as may be deemed by the Engineer to be necessary or advisable and to require such extra work as may be determined by the Engineer to be required for the proper completion or construction of the whole work contemplated. Such changes, no matter how many, shall be within the contemplation of this Contract and shall not be the basis for a compensable delay or a claim for lost profits.

5.3.2 The Engineer shall have the authority to order minor changes in the work not involving any increase or decrease in the Contractor's cost of, or time required for, performance of the Contract. Such minor changes shall be effected by written order of the Engineer, and the Contractor shall carry out such written orders promptly. If the Contractor disagrees with the Engineer's determination that the minor change does not involve any increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, then the Contractor may file and pursue a claim pursuant to section 5.4. The written claim must be submitted to the Engineer within 15 days after the date of the Engineer's written order. If the Contractor believes that any such work is beyond the scope of the contract documents, the Contractor shall provide a written "Daily Extra Work Report" documenting the alleged extra work, which will be submitted to and verified by the Engineer or the District's representative at the end of the day the work was performed.

5.3.3 If any change in the work ordered by the Engineer causes an increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, an adjustment and modification of the Contract will be made in the form of a Change Order which will set forth (a) the changes, additions and/or deductions in the work to be done, (b) the increase or decrease in compensation due the Contractor, if any, or the method by which the increase or decrease, if any, will be calculated, and (c) the adjustment in the time of completion of the work, if applicable. A Change Order may be issued to the Contractor at any time.

5.3.4 The compensation to be paid for any work addressed in a Change Order shall be determined in one or more of the following ways as shown in the Change Order:

a. By unit prices;

b. By an agreed-upon lump sum; or

c. By the cost-plus basis determined pursuant to section 5.3.9.

5.3.5 Contractor shall keep full and complete records of the cost of any work addressed in a Change Order in the form and manner prescribed by the Engineer and shall permit the Engineer to have access to such records as may be necessary to assist in the determination of the compensation payable for such work.

5.3.6 With respect to a Change Order involving the deletion or reduction of work, the Engineer shall determine the appropriate reduction in the Contract price based on the lump sum and/or per unit prices in the bid schedule for the items of work deleted or

reduced by the Change Order. The Contractor shall not be entitled to claim damages for anticipated profits on any portion of the work that may be deleted.

5.3.7 Upon receipt of a Change Order signed by the Engineer, the Contractor shall forthwith proceed with the ordered work, unless otherwise directed by the Engineer. If the Contractor agrees with the terms and conditions of the Change Order, then it shall sign the Change Order.

5.3.8 Should the Contractor disagree with any terms or conditions set forth in a proposed Change Order, it shall submit a written protest to the Engineer within 15 days after the receipt of the proposed Change Order. The protest shall state the points of disagreement, addressing, if applicable, the quantities and cost involved and the adjustment of time for completion.

5.3.8.1 If a written protest is not timely submitted by the Contractor, then the proposed Change Order, including all cost and time adjustment provisions, if any, that was submitted to the Contractor shall be deemed final and acceptable to the Contractor even if not signed by the Contractor. Any payment under an unprotested Change Order's cost adjustment provisions shall constitute full compensation for all work included in or required by the Change Order.

5.3.8.2 If the Contractor timely protests a proposed Change Order, it shall nevertheless proceed with the ordered work pending resolution of the protest.

5.3.8.3 If the Contractor timely protests a proposed Change Order, the Engineer shall render in writing its determination of the protest. If the Contractor disputes the determination, then the Contractor may file and pursue a claim pursuant to section 5.4. The written claim must be submitted to the Engineer within 15 days after the date of the Engineer's written determination on the protest. If the Contractor does not timely file a claim, then the proposed Change Order (as may have been revised by the Engineer's determination on the protest), including all cost and time adjustment provisions, if any, shall be deemed final and acceptable to the Contractor even if not signed by the Contractor. Any payment under such a Change Order's cost adjustment provisions shall constitute full compensation for all work included in or required by the Change Order.

5.3.8.4 If the Contractor refuses to accept a Change Order, the District may issue it unilaterally. The Contractor shall comply with the requirements of the Change Order. The District shall provide for an equitable adjustment to the Contract, and compensate the Contractor accordingly. If the Contractor does not agree that the adjustment is equitable, it may submit a claim in accordance with section 5.4.

5.3.9 The following shall constitute the cost-plus basis of payment:

5.3.9.1 Charges for all of 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 mechanics. The time charged to work shall be subject to the daily approval of the Engineer and evidence of such approval shown on an approved Daily Extra Work Report and

shall be submitted with the billing. Labor rates used to calculate the costs shall be those basic wages including current employer contributions for fringe benefits and federal and state surcharges and including applicable subsistence and travel allowances, all as actually paid to workers under collective bargaining agreements or as a regular practice of the employer. No time or charges will be allowed except when the workers are actually engaged in the proper, efficient and diligent performance or completion of the work as authorized. Overtime shall not be worked without prior approval of the Engineer.

5.3.9.2 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 shall not include charges for listed equipment or major tools with a new cost of $500 or less. Equipment time charges shall be itemized on a Daily Extra Work Report, subject to the daily approval of the Engineer and evidence of such daily approval shall be 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 work and shall include an approved allowance for depreciation. The cost for each type of approved equipment (active or standby) shall be no greater than the amount allowed in the latest edition of the Caltrans Standard Equipment Rates. Time and charges shall be allowed only when equipment is actually being used for the proper and efficient performance or completion of the work as authorized.

5.3.9.3 Charges for the cost of materials furnished by the Contractor shall be made, provided such furnishing was specifically authorized in the work order and the actual use verified by the Engineer. Charges shall be net cost to the Contractor delivered at the job, including all applicable sales taxes; and a vendor's invoice must accompany the billing along with verification of use of such materials by the Engineer.

5.3.9.4 A charge for major tools, supplies, overhead, supervision and profit will be allowed in the amount of 15% of the total direct labor costs, equipment costs, and material costs, as defined in sections 5.3.9.1 to 5.3.9.3.

5.3.9.5 When all or any part of work is performed by any of the Contractor's subcontractors, the markup percentage established in section 5.3.9.4 shall be applied to the subcontractor's actual cost of such work (as determined in sections 5.3.9.1 to 5.3.9.3), to which a markup of 5% on the subcontracted portion of the extra work may be added by the Contractor.

5.3.10 Lump sum change orders shall include all work and costs associated with the change work item(s) and shall be agreed to and signed by both the Contractor and the District prior to commencing the work.

5.3.10.1 A charge for major tools, supplies, overhead, supervision and profit will be allowed an amount no greater than 15% of the total direct labor, equipment, and material costs.

5.3.10.2 When all or any part of work is performed by any of the Contractor's subcontractors, the markup percentage established in section 5.3.10.1 shall be applied

to the subcontractor's actual cost of such work, to which a markup of no greater than 5% on the subcontracted portion of the extra work may be added by the Contractor.

5.3.11 The consent of the Contractor's bond sureties shall not be required as to any change or extra work ordered by the District, and the liability of the Contractor's bonds and sureties shall be increased or decreased accordingly without notice to the sureties.

5.3.12 The District reserves the right to contract with any person or firm other than the Contractor for any or all extra work.

5.3.13 If the total pay quantity of any item of work required under the Contract to be paid at a unit price exceeds the item as bid by more than 25 percent, then in the absence of an executed contract change order specifying the compensation to be paid, the work in excess of 125 percent of such estimate may, at the District's discretion, be paid for by a cost plus basis of payment as described at section 5.3.9, instead of at the unit price.

5.3.14 Any extra work related to differing site conditions pursuant to Public Contract Code section 7104 shall be addressed in accordance with section 5.45.7.5 of these General Conditions. No claim of the Contractor under this clause shall be allowed unless the Contractor has promptly given the notice required before any such claimed conditions are disturbed.

5.4 CLAIMS AND RESOLUTION OF DISPUTES

5.4.1 General. The parties intend by this section 5.4 that differences between the parties, arising under the Contract, be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The parties agree to initially strive to resolve all disputes amicably and in an informal manner. Any dispute resolved informally shall be documented by the Engineer, and if the dispute resolution involves a change in the contract work, increase or decrease in the compensation due the contractor, or adjustment in the time of completion of the Work, then the informal dispute resolution shall be confirmed by a Change Order pursuant to section 5.3. Informal discussions or negotiations with the Engineer or other District representatives concerning informal resolution of a dispute shall not toll or suspend the claim filing and other deadlines provided below, unless so provided by the Engineer in writing. The willingness of the Engineer to engage in any such discussions is not a waiver of the District's right to deny a claim or dispute it based on lack of merit, or procedural deficiency, or both.

5.4.2 Compliance Required. Contractor shall not be entitled to any additional time to complete Work or to the payment of any additional compensation for claimed extra work (or otherwise on account of any claim, cause, act, failure to act, or happening of any event or occurrence) unless either District has issued a Change Order pursuant to section 5.3 or a claim has been timely filed and approved pursuant to this section 5.4. If the Contractor fails to file a written claim within the claim deadline of section 5.4.4, then the Contractor agrees that it has waived any right or remedy to thereafter pursue the claim against the District in any administrative, arbitration or litigation proceeding, and the District may elect to document this waiver.

5.4.3 Scope of Claims. A claim for purposes of this section 5.4 means a separate demand by the Contractor for (a) a time extension (including a demand for relief from damages or penalties for delay assessed by the District under the Contract), (b) payment of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the Contractor is not otherwise entitled to, or (c) an amount the payment of which is disputed by the District.

5.4.4 Filing of Contract Claim; Contents; Filing Deadline

5.4.4.1 The Contractor shall file any "Contract Claim" with the Engineer. A Contract Claim must (a) be in writing, (b) be labeled or clearly indicated as a claim under the Contract, (c) set forth in detail the reasons why the Contractor believes additional compensation or a time extension is or may be due, the nature of the costs involved, and, insofar as possible, the amount of the claim, and (d) include (or reference earlier provided) documents that support and substantiate the claim as to both entitlement and quantification of time, money, or both.

5.4.4.2 A Contract Claim must be submitted to the Engineer within the following claim filing deadlines: (a) if a deadline is set forth in the Contract Documents for filing of the particular claim, then the claim must be filed by the specified time; (b) if the claim relates to extra, additional or unforeseen work for which the Contractor intends to demand additional compensation, a time extension, or both, notice shall be given to the Engineer prior to the time that the Contractor commences performance of the work giving rise to the potential claim for additional compensation or time extension, and Contractor shall not proceed with that work until so directed by the Engineer; and (c) for all other claims not included within (a) or (b), the claim must be filed on or before 15 days after the date of the occurrence, event or circumstance giving rise to the claim. In no event shall a Contract Claim be filed later than the date of final payment.

5.4.5 Processing of Claims, Generally. This Contract provides for three types of Contract Claims, which will be processed and resolved under different subsections. Any claim for money or damages of $375,000 or less or for a time extension (i.e., any claim subject to Public Contract Code section 20104) shall be processed and resolved in accordance with section 5.4.6. Any claim for money or damages of more than $375,000 (i.e., any claim not subject to Public Contract Code section 9204 or 20104) shall be processed and resolved in accordance with section 5.4.7. Any Contract Claim sent to District by registered mail or certified mail with return receipt requested (i.e., any claim subject to Public Contract Code section 9204) shall be processed and resolved pursuant to section 5.4.8.

5.4.6 Claims for $375,000 or Less or for Time Extension

5.4.6.1 Application. This section applies to all claims for $375,000 or less in value, including any claim for a time extension or for a time extension that includes claimed delay damages of $375,000 or less.

5.4.6.2 District Response to Contract Claim. The Engineer shall respond in writing to the Contract Claim within 60 days of receipt of the claim (or within 45 days

of receipt for claims of less than $50,000), or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subsection, upon mutual agreement of the Engineer and the Contractor. The Engineer's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days after receipt (or 15 days after receipt for claims of less than $50,000) of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater. The District shall not fail to pay money as to any portion of a Contact Claim that is undisputed except as otherwise provided in the Contract Documents.

5.4.6.3 Meet and Confer. If the Contractor disputes the Engineer's written response, or the Engineer fails to respond within the time prescribed, the Contractor may notify the District, in writing, either within 15 days of receipt of the Engineer's response or within 15 days of the Engineer's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon such a demand, the District shall schedule a meet and confer conference within 30 days for the parties to consider settlement of the dispute. If the Contractor fails to timely demand a meet and confer conference within the applicable 15-day period, then the Contractor shall be deemed not to dispute the Engineer's written response to the Contract Claim and the Engineer's decision on the Contract Claim shall be final, conclusive and binding, and the Contractor shall be deemed to have waived all its rights to further protest, judicial or otherwise.

5.4.6.4 Government Code Claim. Following the meet and confer conference, if the Contract Claim or any portion remains in dispute, the Contractor may file a Government Code Claim as provided in Government Code title 1, division 3.6, part 3, chapters 1 (commencing with section 900) and 2 (commencing with section 910). The running of the period of time within which Contractor must file a Government Code Claim shall be tolled from the time the Contractor submits a timely Contract Claim pursuant to section 5.4.4 until the time that the Contract Claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process. The District shall respond to any Government Code Claim in accordance with the Government Claims Act.

5.4.6.5 Lawsuit. If the claim is not resolved pursuant to section 5.4.6.4, the Contractor may file a lawsuit on the claim within the limitations period provided by the Government Claims Act. If the Contractor fails to timely file a lawsuit within the limitations period of the Government Claims Act, then the District's response to the Government Code Claim shall be final, conclusive and binding on the Contractor, and the Contractor thereafter shall be barred from filing a lawsuit on the claim.

5.4.6.6 Mediation. If the Contractor timely files a lawsuit, then within 60 days, but no earlier than 30 days, following the filing of responsive pleadings, the court shall submit the matter to non-binding mediation (unless waived by mutual stipulation of both parties). The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties.

If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator. The mediator's fees and expenses shall be split and paid equally between the parties. The court may, upon request by any party, order any witnesses to participate in the mediation process.

5.4.6.7 Arbitration. If the matter remains in dispute following the mediation or if the parties waive the mediation, then the case shall be submitted to judicial arbitration pursuant to Code of Civil Procedure part 3, title 3, chapter 2.5 (commencing with section 1141.10), notwithstanding section 1141.11 of that code. The Civil Discovery Act of 1986 (Code of Civil Procedure part 4, title 3, chapter 3, article 3 (commencing with section 2016)) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. The arbitrator shall be experienced in public works construction law. The arbitrator's fees and expenses shall be split and paid equally by the parties, except where the arbitrator, for good cause, determines a different division. The court may, upon request by any party, order any witnesses to participate in the arbitration process. Any party who, after receiving an arbitration award, requests a trial de novo but does not obtain a more favorable judgment shall (in addition to payment of any costs and fees under Code of Civil Procedure part 3, title 3, chapter 2.5 (commencing with section 1141.10)) pay the attorney's fees of the other party arising out of the trial de novo.

5.4.6.8 Interest. In any lawsuit filed under this subsection, District shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the lawsuit is filed in court.

5.4.7 Claims for More Than $375,000

5.4.7.1 Application. This section applies to all claims that exceed $375,000 in value, including any claim for time extension that includes claimed delay damages exceeding $375,000.

5.4.7.2 District Response to Contract Claim. The Engineer shall respond in writing to the Contract Claim within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim that the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subsection, upon mutual agreement of the Engineer and the Contractor. The Engineer's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation. If the Contractor fails to timely dispute the Engineer's decision on the matter in accordance with section 5.4.7.3, then the Contractor shall be deemed not to dispute the Engineer's written response to the Contract Claim and the Engineer's decision shall be final, conclusive and binding, and the Contractor shall be deemed to have waived all its rights to further protest, judicial or otherwise.

5.4.7.3 Government Code Claim. If the Contractor disputes the Engineer's written response to the Contract Claim, the Contractor may file a Government Code Claim as provided in Government Code title 1, division 3.6, part 3, chapters 1 (commencing with

section 900) and 2 (commencing with section 910). District shall respond to any Government Code Claim in accordance with the California Government Claims Act.

5.4.7.4 Lawsuit. If the claim is not resolved pursuant to section 5.4.7.3, the Contractor may file a lawsuit on the claim within the limitations period provided by the Government Claims Act. If the Contractor fails to timely file a lawsuit within the limitations period of the Government Claims Act, then the District's response to the Government Code Claim shall be final, conclusive and binding on the Contractor, and the Contractor thereafter shall be barred from filing a lawsuit on the claim.

5.4.7.5 Judicial Reference. If the Contractor timely files a lawsuit, the case shall be submitted to judicial reference pursuant to California Code of Civil Procedure sections 638 and 640 through 645.1 (or any successor statute) and California Rules of Court title 3, division 9 (commencing with section 3.900). As authorized by Code of Civil Procedure section 638, a referee will consider and decide all factual and legal issues in the action. Each party acknowledges that it will not have any right to a jury trial or to have any judicial officer besides the referee hear or decide the action. When Contractor initiates the superior court lawsuit, it will, at the same time it files the complaint in the action, also file a motion for appointment of a single referee.

(a) Appointment of a referee shall be by mutual agreement within 30 days between the parties, and if unsuccessful, then by the court and will be governed by Code of Civil Procedure section 640, and subject to objection by either party as provided by Code of Civil Procedure section 641. The referee must be a retired judge or a licensed attorney with at least ten years substantive experience in public works construction matters.

(b) The parties shall be entitled to discovery and the referee shall oversee discovery and may enforce all discovery orders in the same manner as a superior court judge. The referee shall have the authority to consider and rule on appropriate pre-hearing and post-hearing motions in the same manner as a superior court judge. The referee will have the authority to set a briefing and hearing schedule for any such motion or for a hearing on the merits.

(c) The referee's statement of decision shall include findings of fact and conclusions of law. The statement of decision will stand as the decision of the superior court and, upon filing of the statement with the clerk of the court, judgment may be entered pursuant to Code of Civil Procedure section 644, subsection (a). The parties will have rights to appeal the final judgment so entered.

(d) Each Party will pay half of the costs of the referee and the administrative fees of the reference proceeding, and each party will bear its own costs, expenses and attorney fees for the reference proceeding.

5.4.8 Claims Subject to Public Contract Code section 9204

5.4.8.1 The Contract Claim will be processed and resolved pursuant to Public Contract Code section 9204, which is summarized here:

(a) District Review of Claim. Within 45 days after receiving a complete Contract Claim, District shall review the claim and provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. District will pay any undisputed portion of the claim within 60 days from the date of the written statement. If District fails to timely issue a written statement, the claim shall be deemed rejected in its entirety.

(b) Meet and Confer Conference. If the Contractor disputes the District's written statement or if the Contract Claim is deemed rejected, the Contractor may demand and the parties will conduct an informal conference to meet and confer regarding settlement in accordance with section 9204, subsection (d)(2). Within 10 business days following the conclusion of the meet and confer conference, District shall provide Contractor a written statement identifying the portion (if any) of the claim remaining in dispute and any undisputed portion will be paid by District within 60 days after this written statement.

(c) Non-Binding Mediation. Any remaining disputed portion of the claim shall be submitted to nonbinding mediation in accordance with section 9204, subsection (d)(2).

(d) Interest. Any amount not paid in a timely manner as required by this subsection shall bear interest at a rate of 7 percent per annum until paid.

The foregoing is a summary of section 9204. In the event of any conflict between the summary and section 9204, the statute will govern.

5.4.8.2 Lawsuit and Reference. If mediation is unsuccessful and all or parts of the Contract Claim remain in dispute, then the Contractor may pursue a lawsuit (with judicial reference) in accordance with the procedures set forth at sections 5.4.7.4 through 5.4.7.5.

5.4.9 Contract Work Pending Claim Resolution. Unless otherwise directed in writing by the Engineer, pending resolution of a claim under this section 5.4, the Contractor shall continue to diligently prosecute the Contract work in accordance with the Contract Documents and the instructions of the Engineer.

5.4.10 Tort Claims. The provisions of this section 5.4 apply only to contract-based claims and they shall not apply to tort claims, and nothing in this section 5.4 is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Government Code title 1, division 3.6, part 3, chapters 1 (commencing with section 900) and 2 (commencing with section 910).

5.5 GUARANTEE

5.5.1 In addition to warranties, representations and guarantees stated elsewhere in the Contract Documents, or implied-in-fact or in-law, the Contractor unconditionally guarantees all materials and workmanship furnished hereunder, and agrees to repair or replace or both at its sole cost and expense, and to the satisfaction of the Engineer and the District, any and all materials which may be defective or improperly installed.

5.5.2 The Contractor shall repair or replace to the satisfaction of the Engineer any or all such work that may prove defective in workmanship or materials, ordinary wear and tear excepted, together with any other work which may be damaged or displaced in so doing. Contractor shall leave the site of any such repair or replacement work in satisfactory working order and condition.

5.5.3 In the event of failure to comply with the above stated conditions within a reasonable time, the District is authorized to have the defect repaired and made good at the expense of the Contractor who will pay the costs and charges therefor immediately upon demand, including any reasonable management and administrative costs, and engineering, legal and other consultant fees incurred to enforce this section.

5.5.4 The signing of the Contract by the Contractor shall constitute execution of the above guarantees. Except as otherwise provided in this Contract, the guarantees and warranties shall remain in effect for one year from the date of recording a notice of completion. The District shall have the right to call for such inspection or inspections of the work before the end of the one-year guarantee period and Contractor shall attend and participate in such inspection(s) upon request of the District. This guarantee does not excuse the Contractor from breaches of contract causing defects that occur or are discovered more than one year after the notice of completion. In addition, the warranty and guaranty period for repaired or replaced work or part shall be one year from the date of acceptance of said repaired or replaced work or part, but not less than the remaining warranty period of the original work.

5.6 AUTHORITY OF THE ENGINEER

5.6.1 The Engineer is the representative of the District and has full authority to interpret the Contract Documents, to conduct the construction review and inspection of the Contractor's performance, and to decide questions which arise during the course of the work; and its decisions on these matters shall be final and conclusive. The Engineer has the authority to reject all work and materials that do not conform to the Contract Documents, and has the authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.

5.6.2 If at any time the Contractor's work force, tools, plant or equipment appear to the Engineer to be insufficient or inappropriate to secure the required quality of work or the proper rate of progress, the Engineer may order the Contractor to increase their efficiency, improve their character, to augment their number or to substitute other personnel, new tools, plant or equipment, as the case may be, and the Contractor shall comply with such order. Neither the failure of the Engineer to demand such increase of efficiency, number, or improvement, nor the compliance by the Contractor with the demand, shall relieve the Contractor of its obligation to provide quality work at the rate of progress necessary to complete the work within the specified time.

5.6.3 The Engineer shall have the authority to make minor changes in the work, not involving extra costs, and not inconsistent with the purposes of the work.

5.6.4 Any order given by the Engineer, not otherwise required by the Contract Documents to be in writing shall, on request of the Contractor, be given or confirmed by the Engineer in writing.

5.6.5 Whenever work, methods of procedure, or any other matters are made subject to direction or approval, such direction or approval will be given by the Engineer.

5.7 DRAWINGS

5.7.1 Drawings furnished herewith are for bidding purposes. The Engineer will furnish the Contractor, free of charge, copies of full-size Drawings which are reasonably necessary for the execution of the work. The Contractor shall have no claim for excusable delay on account of the failure of the Engineer to deliver such Drawings unless the Engineer shall have failed to deliver the same within two weeks after receipt of written demand therefor from the Contractor. If the Contractor, in the course of the work, finds any discrepancy between the Drawings and the physical condition of the locality, or any errors or omissions in the Drawings, or in the layout as given by points and instructions, it shall be its duty to inform the Engineer in writing, and the Engineer will promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk. All Drawings, Specifications, and copies thereof furnished by the Engineer are the property of the Engineer and shall not be reused on other work and, with the exception of the signed Contract sets, are to be returned to it, on request, at the completion of the work. All models are the property of the District.

5.7.2 The Contractor shall maintain at the site of work one record copy of the Drawings, in good order, and available to the Engineer. The Contractor shall mark the Drawings to record all changes and corrections made during construction. The Contractor shall make all corrections and changes on the Drawings as necessary to produce accurate and complete record Drawings showing the “as built” work. Marked Drawings shall be updated at least weekly. The Contractor shall submit to the Engineer a final, complete and accurate set of record Drawings prior to or simultaneously with the Contractor’s request for final payment.

5.7.3 The Drawings shall be supplemented by such shop drawings prepared by the Contractor as are necessary to adequately control the work. Contractor shall not make any changes in any shop drawings after they have been reviewed by the Engineer.

5.7.4 Shop drawings for any structure shall include, but not be limited to: stress sheets, anchor bolt layouts, shop details, and erection plans, which shall be reviewed and approved by the Engineer before any such work is performed.

5.7.5 Shop drawings will be required for cribs, cofferdams, falsework, centering and form work and for other temporary work and methods of construction the Contractor proposes to use. Such drawings shall be subject to the review and approval of the Engineer insofar as the details affect the character of the finished work, but details of design will be left to the Contractor who shall be responsible for the successful construction of the work.

5.7.6 Contractor agrees that shop drawings processed by the Engineer are not Contract Change Orders, and that the purpose of shop drawings submitted by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, and to

demonstrate its understanding by indicating which equipment and material it intends to furnish and by detailing the fabrication methods it intends to use.

5.7.7 It is expressly understood, however, that favorable review of the Contractor's shop drawings shall not relieve the Contractor of any responsibility for accuracy of dimensions and details, or for mutual agreements of dimensions and details. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of its shop drawings with the Specifications. Contractor further agrees that if deviations, discrepancies or conflicts between shop drawings and Specifications are discovered either prior to or after shop drawings are processed by the Engineer, the Specifications shall control and shall be followed.

5.7.8 Unless otherwise stated, the Engineer shall have 30 days from the date of receipt of shop drawings for review.

5.7.9 Full compensation for furnishing all shop drawings shall be considered as included in the prices paid for the Contract items of work to which such drawings relate and no additional compensation will be allowed therefor. Any cost related to the Engineer's review of any particular set of shop drawings more than twice, due to incompleteness or unacceptability, shall be borne by the Contractor, and the District reserves the right to withhold such costs from payments due the Contractor.

5.8 CONSTRUCTION STAKING AND SURVEYS

The Engineer will provide the Contractor with drawings showing benchmarks and reference points as it deems necessary to establish lines and grades required for the completion of the site work specified in the Contract Documents. The Contractor shall make or furnish all surveys and set all construction stakes necessary for the completion of the work.

Stakes and marks set by the District or Engineer, if any, shall be carefully preserved by the Contractor. The Contractor shall be charged for the cost of replacing or restoring the stakes and marks that are destroyed or damaged by its operation. This charge will be deducted from any monies due or to become due to the Contractor under the Contract.

5.9 PERMITS AND REGULATIONS

5.9.1 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 District unless otherwise specified.

5.9.2 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as shown on the plans and described in the Specifications. The Contractor shall promptly notify the Engineer in writing of any specification at variance therewith and any necessary changes shall be adjusted as provided in the Contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, and regulations and without such notice to the Engineer, it shall bear all costs arising therefrom.

5.10 CONFORMITY WITH CONTRACT DOCUMENTS

Work and materials shall conform to the lines, grades, cross sections, dimensions and material requirements, including tolerances, shown on Contract Documents. Although measurement, sampling, and testing may be considered evidence as to such conformity, the Engineer shall be the sole judge as to whether the work or materials deviate from the Specifications and plans, and his decision as to any allowable deviations therefrom shall be final and conclusive.

5.11 COORDINATION & INTERPRETATION OF CONTRACT DOCUMENTS

5.11.1 The Contract Documents are complementary and a requirement occurring in one is as binding as though occurring in all.

5.11.2 In the event of conflict between the Plans and the Specifications, the Specifications shall govern, except that, where items are shown on the Plans and are not specifically included in the Specifications, the Plans shall govern.

5.11.3 Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Specifications and Plans, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the Contract. In the event of any doubt or question arising respecting the true meaning of the Specifications and Plans, reference shall be made to the Engineer, whose decision thereon shall be final and conclusive.

5.11.4 In the event of any discrepancy between any Plans and the figures written thereon, the figures shall be taken as correct. Detailed drawings shall prevail over general drawings.

5.11.5 Any reference made in the Specifications or on the Plans to any specification, standard, method, or publication of any scientific or technical society or other organization shall, in the absence of a specific designation to the contrary, be understood to refer to the Specification, standard, method, or publication in effect as of the date that the work is advertised for Bids.

5.12 SUBCONTRACTS

5.12.1 The attention of the Contractor is directed to California Public Contract Code section 4100, et seq., regarding subcontracting and said provisions are by this reference incorporated herein and made a part hereof.

5.12.2 Each subcontract shall contain a suitable provision for the suspension or termination thereof should the work be suspended or terminated or should the subcontractor neglect or fail to conform to every provision of the Contract Documents insofar as such provisions are relevant. No subcontractor or supplier will be recognized as such, and all persons engaged in work will be considered as employees of the Contractor, and the Contractor will be held responsible for their work, which shall be subject to the provisions of the Contract Documents. The Contractor shall be fully responsible to the District for the acts or omissions of

its subcontractors and of the persons either directly or indirectly employed by them. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and the District. If a legal action, including arbitration and litigation, against the District is initiated by a subcontractor or supplier, the Contractor shall reimburse the District for the amount of legal, engineering and all other expenses incurred by the District in defending itself in said action.

5.12.3 The District and the Engineer reserve the right to approve all subcontractors. Such approval shall be a consideration to the awarding of the Contract and unless notification to the contrary is given to the Contractor prior to the signing of the Contract, the list of subcontractors that is submitted with its proposal will be deemed to be acceptable.

5.13 COOPERATION OF CONTRACTORS

5.13.1 Should construction be under way by other forces or by other contractors within or adjacent to the limits of the work specified or should work of any other nature be under way by other forces within or adjacent to said limits, the Contractor shall cooperate with all such other contractors or other forces to the end that any delay or hindrance to their work will be avoided. The right is reserved by the District to perform other or additional work at or near the site (including material sources) at any time, by the use of other forces.

5.13.2 When two or more contractors are employed on related or adjacent work, each shall conduct its operation in such a manner as not to cause any unnecessary delay or hindrance to the other. Each contractor shall be responsible to the other for all damage to work, to persons or property caused to the other by its operations, and for loss caused the other due to its unnecessary delays or failure to finish the work within the time specified for completion.

5.14 SUPERINTENDENCE

5.14.1 The Contractor shall designate in writing before starting work an individual as authorized representative who shall have the authority to represent and act for the Contractor. This authorized representative shall be present at the site of the work at all times while work is actually in progress on the Contract. When work is not in progress and during periods when work is suspended, arrangements acceptable to the Engineer shall be made for any emergency work that may be required.

5.14.2 The Contractor is solely responsible, at all times, for the superintendence of the work and for its safety and progress.

5.14.3 Whenever the Contractor or its authorized representative is not present on any particular part of the work where it may be desired to give direction, orders will be given by the Engineer, which shall be received and obeyed by the superintendent or foreman who may have charge of the particular work in reference to which the orders are given.

5.14.4 Any order given by the Engineer, not otherwise required by the Contract Documents to be in writing, will on request of the Contractor, be given or confirmed by the Engineer in writing.

5.15 INSPECTION OF WORK

5.15.1 Unless otherwise provided, all equipment, materials, and work shall be subject to inspection and testing by the Engineer. The Engineer will observe the progress and quality of the work and determine, in general, if the work is proceeding in accordance with the intent of the Contract Documents. He shall not be required to make comprehensive or continuous inspections to check the quality of the work, and he shall not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work. Visits and observations made by the Engineer shall not relieve the Contractor of its obligation to conduct comprehensive inspections of the work and to furnish proper materials, labor, equipment and tools, and perform acceptable work, and to provide adequate safety precautions, in conformance with the intent of the Contract.

5.15.2 Whenever the Contractor varies the period during which work is carried on each day, it shall give due notice to the Engineer so that proper inspection may be provided. Any work done in the absence of the Engineer shall be subject to rejection. Proper facilities for safe access for inspection to all parts of the work shall at all times be maintained for the necessary use of the Engineer and other agents of the District, and agents of the Federal, State, or local governments at all reasonable hours for inspection by such agencies to ascertain compliance with laws and regulations.

5.15.3 One or more inspectors may be assigned to observe the work and to act in matters of construction under this Contract. It is understood that inspectors shall have the power to issue instructions and make decisions within the limitations of the authority of the Engineer. Such inspection shall not relieve the Contractor of its obligation to conduct comprehensive inspections of the work, to furnish proper materials, labor, equipment and tools, and perform acceptable work, and to provide adequate safety precautions in conformance with the intent of the Contract.

5.15.4 The Engineer and his representatives shall at all times have access to the work wherever it is in preparation or progress; and the Contractor shall provide safe and convenient facilities for such access and for inspection. If the Specifications, the Engineer's instructions, laws, ordinances, or any public authority require any material, equipment or work to be specifically tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by an authority other than the District, of the time fixed for inspection. Inspections by the Engineer will be made promptly and, where practicable, at the source of supply.

5.15.5 Work performed without inspection may be required to be removed and replaced under proper inspection and the entire cost of removal and replacing, including the cost of District-furnished materials used in the work, shall be borne by the Contractor, regardless of whether or not the work exposed is found to be defective. Examination of questioned work, other than that installed without inspection, may be ordered by the Engineer and, if so ordered, the work must be uncovered by Contractor. If such work is found to be in accordance with the Contract Documents, the District will pay the cost of reexamination and replacement. If such work is found to be not in accordance with the Contract Documents, the

Contractor shall pay such cost unless it can show that the defect in the work was caused by another contractor, and in that event the District will pay such costs.

5.15.6 The inspection of the work shall not relieve the Contractor of its obligation to fulfill the Contract as herein prescribed, or in any way alter the standard of performance provided by the Contractor; and defective work shall be made good and unusable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Engineer and accepted or estimated for payment. If the work or any part thereof shall be found defective, Contractor shall, within ten (10) calendar days, make good such defect in a manner satisfactory to the Engineer. If the Contractor shall fail or neglect to make ordered repairs of defective work or to remove the condemned materials from the work within ten (10) calendar days after direction by the Engineer in writing, the District may make the ordered repairs, or remove the condemned materials, and deduct the cost thereof from any monies due the Contractor.

5.15.7 The Contractor shall furnish promptly without additional charge all facilities, labor and materials reasonably needed by the Engineer for performing all inspection and tests. Contractor shall be charged with any additional cost of inspection when material and workmanship are not ready at the time specified by the Contractor for its inspection.

5.15.8 Where any part of the work is being done under an encroachment permit or building permit, or is subject to Federal, State, County or City codes, laws, ordinances, rules or regulations, representatives of the government agency shall have full access to the work and shall be allowed to make any inspection or tests in accordance with such permits, codes, laws, ordinances, rules, or regulations. If advance notice of the readiness of the work for inspection by the governing agency is required, the Contractor shall furnish such notice to the appropriate agency.

5.15.9 The Engineer may inspect the production of material, or the manufacture of products at the source of supply. Plant inspection, however, will not be undertaken until the Engineer is assured of the cooperation and assistance of both the Contractor and the material producer. The Engineer or his authorized representative shall have free entry at all times to such parts of the plant as concerns the manufacture or production of the materials. Adequate facilities shall be furnished free of charge to make the necessary inspection. The District assumes no obligation to inspect materials at the source of supply.

5.16 TESTS

The Contractor shall perform at its expense all tests specified or required by the Specifications. The Engineer will perform such tests as he deems necessary to determine the quality of work or compliance with Contract Documents. The Contractor shall furnish promptly without additional charge all facilities, labor, and material reasonably required for performing safe and convenient tests as may be required by the Engineer. All tests by the Engineer will be performed in such a manner as will not unnecessarily delay the work. The Contractor shall not be required to reimburse the District for tests performed by the District or Engineer. If samples of materials are submitted which fail to pass the specified tests, the Contractor shall pay for all subsequent tests.

5.17 REMOVAL OF REJECTED/UNAUTHORIZED WORK AND MATERIALS

5.17.1 All work or materials which have been rejected shall be remedied, or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed it for such removal, replacement, or remedial work.

5.17.2 Any work done beyond the lines and grades shown on the Plans or established by the Engineer or any extra work done without written authority will be considered as unauthorized work and will not be paid for. Upon order of the Engineer, unauthorized work shall be remedied, removed, or replaced at the Contractor's expense.

5.17.3 Upon failure of the Contractor to comply with any order of the Engineer made under this section, the District may cause rejected or unauthorized work to be remedied, removed, or replaced, and may deduct the costs therefor from any monies due or to become due the Contractor.

5.18 DEDUCTIONS FOR UNCORRECTED WORK.

If the Engineer deems it inexpedient to correct work damaged or not done in accordance with the Contract Documents, an equitable deduction from the Contract price shall be made therefor; and such sum may be withheld by the District from Contractor's payment.

5.19 EQUIPMENT AND PLANTS

5.19.1 Only equipment and plants suitable to produce the quality of work and materials required will be permitted to operate on the project.

5.19.2 Plants will be designed and constructed in accordance with general practice for such equipment and shall be of sufficient capacity to ensure the production of sufficient material to carry the work to completion within the time limit.

5.19.3 The Contractor shall provide adequate and suitable equipment and plants to meet the above requirements, and when ordered by the Engineer, shall remove unsuitable equipment from the work and discontinue the operation of unsatisfactory plants.

5.19.4 The Contractor shall identify each piece of its equipment, other than hand tools, by means of an identifying number plainly stenciled or stamped on the equipment at a conspicuous location, and shall furnish to the Engineer a list giving the description of each piece of equipment and its identifying number. In addition, the make, model number and empty gross weight of each unit of compacting equipment shall be plainly stamped or stenciled in a conspicuous place on the unit. The gross weight shall be either the manufacturer's rated weight or the scale weight.

5.19.5 In the case of termination of this Contract before completion from any cause whatever, the Contractor, if notified to do so by the District, shall promptly remove any part or all of its equipment and supplies from the property of the District. If the Contractor

fails to do so, the District shall have the right to remove such equipment and supplies at the expense of the Contractor.

5.20 CHARACTER OF WORKER

If any subcontractor or person employed by the Contractor or any subcontractor shall be incompetent or act in a disorderly or improper manner, that subcontractor or person shall be removed from the work immediately, and such subcontractor or person shall not again be employed on the work. Such discharge shall not be the basis for any claim for compensation or damages against the District, the Engineer or any of their officers, directors, employees or agents.

5.21 SEPARATE CONTRACTS

5.21.1 The District reserves the right to let other contracts in connection with this work. 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 its work with the other contractor's work.

5.21.2 If any part of the Contractor's work depends for proper execution or results 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 Contractor's failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the Contractor's work, except as to defects that may develop in the other contractor's work after the execution of its work. To ensure the proper execution of its subsequent work, the Contractor shall measure work already in place and shall at once report to the Engineer any discrepancy between the executed work and the drawings.

5.22 MATERIALS

5.22.1 Unless otherwise specifically stated in the Specifications, the Contractor shall furnish all materials necessary for the execution and completion of the work. Unless otherwise specified, all materials shall be new and shall be manufactured, handled, and installed in a workmanlike manner to insure completion of the work in accordance with the Contract Documents. The Contractor shall, upon request of the Engineer, furnish satisfactory evidence as to the kind and quality of materials.

5.22.2 Where materials are to be furnished by the District, the type, size, quantity and location at which they are available will be stated in the Contract Documents.

5.22.3 Manufacturers' and suppliers' warranties, guarantees, operating manuals, instruction sheets and parts listed, which are furnished with certain articles or materials incorporated in the work, shall be delivered to the Engineer before final acceptance of the Contract work.

5.23 STORAGE OF MATERIALS; STORAGE AREAS

5.23.1 Articles or materials to be incorporated in the work shall be stored in such a manner as to ensure the preservation of their quality and fitness for the work, and to facilitate inspection.

5.23.2 The Contractor's work and storage areas are limited by the right-of-way lines as indicated on the Plans. The plant facilities are to be installed in property or easements owned by the District as shown on the Plans. The District shall be specifically exempted in any agreement from any liability incurred from the use of private property for construction purposes. The Contractor shall make arrangements and pay for property off-site as required for storage, offices, work assembly areas, etc. The Contractor shall take all responsibility for storage of materials. No equipment for incorporation in the project may be stored in an area subject to flooding.

5.24 TRADE NAMES AND ALTERNATIVES

For convenience in designation in the Specifications and Plans, certain articles or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and its catalog information. The use of an alternative article or material that is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

5.24.1 The burden of proof as to the quality and suitability of alternatives shall be upon the Contractor and it shall furnish all information necessary as required by the Engineer. The Engineer shall be the sole judge as to the quality and suitability of alternative articles or materials and his decision shall be final.

5.24.2 Whenever the Specifications and Plans permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of such substitute material or article will be made until the request for substitution is made in writing by the Contractor accompanied by complete data as to the equality of the material or article proposed. Such request by the Contractor must be made within thirty-five (35) days after award of Contract.

5.25 CERTIFICATES OF COMPLIANCE

5.25.1 A Certificate of Compliance shall be furnished prior to the use of any materials for which the Specifications require that such a certificate be furnished. In addition, when so authorized in the Specifications, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. 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 Contract. 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.

5.25.2 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 Contract Documents and any such material not conforming to such requirements will be subject to rejection whether in place or not.

5.25.3 The District reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

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

5.26 ASSIGNMENT

The Contractor shall not assign the Contract or sublet it as a whole or in part without the written consent of the District, nor shall the Contractor assign any monies due, or to become due to it hereafter, without the prior written consent of the District.

5.27 DISTRICT ENTRY ON WORK SITE; RIGHT TO OPERATE UNSATISFACTORY EQUIPMENT OR FACILITIES

5.27.1 The District may, at any time, and from time to time, during the performance of the work, enter the work site for the purpose of installing any necessary work by District labor or other contracts, and for any other purpose in connection with the installation of facilities. In doing so, the District shall endeavor not to interfere with the Contractor and the Contractor shall not interfere with other work being done by or on behalf of the District.

5.27.2 The District reserves the right, prior to completion and final acceptance, to occupy, or use, any completed part or parts of the work, providing these areas have been approved for occupancy by the District. The exercise of this right shall in no way constitute an acceptance of such parts, or any part of the work, nor shall it in any way affect the dates and times when progress payments shall become due from the District to the Contractor or in any way prejudice the District's rights in the Contract, or any bonds guaranteeing the same. The Contract shall be deemed completed only when all the work contracted has been duly and properly performed and accepted by the District.

Prior to such occupancy or use, the District and Contractor shall agree in writing regarding the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the work, insurance, the period for correction of the work, and the commencement of warranties required by the Contract Documents.

In exercising the right to occupy or use completed parts of the work prior to the completion thereof, the District shall not make any use which will materially increase the cost to the Contractor, without increasing the Contract Amount, nor materially delay the completion of the Contract, without extending the time for completion.

5.27.3 If, following installation of any equipment or facilities furnished by the Contractor, defects requiring correction by the Contractor are found, the District shall have the right to operate such unsatisfactory equipment or facilities and make reasonable use thereof

until the equipment or facilities can be shut down for correction of defects without injury to the District.

5.28 LANDS FOR WORK; RIGHTS OF WAY; CONSTRUCTION ROADS; TEMPORARY UTILITY SERVICES

5.28.1 The District will provide the lands, easements, rights of way, and/or encroachment permits necessary or other rights to enter and work on lands necessary for the performance of the work. Other permits and licenses are addressed by section 5.9. Should the Contractor find it advantageous to use any additional land for any purpose whatever, the Contractor shall provide for the use of such land at its expense. The Engineer shall be furnished with a copy of written agreements or otherwise be notified in writing of additional working space which is acquired. Nothing herein contained and nothing marked on the Plans shall be interpreted as giving the Contractor exclusive occupancy of the territory provided by the District. When two or more contracts are being executed at one time on the same or adjacent land in such a manner that work on one contract may interfere with that on another, the Engineer shall decide which contractor shall cease work, and which shall continue, or whether the work on both contracts shall progress at the same time and in what manner; and the decision of the Engineer shall be final and binding. When the territory of one contract is the necessary or convenient means of access for the performance of another contract, such privilege of access or any other reasonable privilege may be granted by the Engineer to the contractor so desiring, to the extent, amount, in the manner, and at the time permitted. No such decision as to the method or time of conducting the work or the use of territory shall be the basis of any claim for delay or damage.

5.28.2 Lands, easements or rights of way to be furnished by the District for construction operations will be specifically shown on the Plans.

5.28.3 The Contractor shall construct and maintain all roads necessary to reach the various parts of the work and for the transportation thereto of construction material and personnel. The cost of constructing and maintaining such roads shall be borne by the Contractor.

5.28.4 The Contractor shall make its own arrangements for any utility services it may require during the life of this project. The Contractor shall make its own arrangements for telephone service which it will require for its field office.

5.29 PROGRESS SCHEDULE

5.29.1 The Contractor shall submit within 10 days after Date of the Contract a schedule or schedules which shall show the dates at which the Contractor will start and complete the several parts of the work. This schedule shall conform to the completion time specified in the Contract. The Contractor shall review and, if necessary, revise the progress schedule at least once per month, and in any event shall submit a current schedule to the Engineer at his request at any time during the contract period.

The Contractor's timely submittal of complete and accurate initial and updated project schedules is a material requirement of this Contract, and Contractor's failure to comply with this

requirement would be a material breach of this Contract that could subject Contractor to all applicable penalties, up to and including termination.

5.29.2 The Engineer shall be advised in advance by the Contractor when any part of the work is scheduled and the days when no work will take place. If the Contractor fails to notify the Engineer in advance of the day or days when no work will be done, the Contractor will be charged the cost of inspection for that day or days and such charges may be deducted from any payment due the Contractor.

5.29.3 When, in the judgment of the Engineer, it is necessary to accelerate any part of the work ahead of schedule, the Contractor shall, when directed, concentrate its efforts on such part of the work.

5.30 COMMENCEMENT AND PROGRESS OF THE WORK AND TIME OF COMPLETION; CONSTRUCTION SEQUENCE; DELAYS

5.30.1 The Contractor shall commence the work covered by this Contract within fifteen (15) days after date of issuance of Notice to Proceed from the District to proceed with the work. Work will be considered to have commenced when the Contractor begins ordering materials and equipment or starts site work. The Contractor shall not commence work or incur any expenses in connection therewith, before it is notified to proceed with the work. Work on the total project shall be completed within 60 calendar days from the date of the Notice to Proceed. The time allowed for completion includes an allowance for working time lost due to normal inclement weather. A Pre-Construction conference will be scheduled by the Engineer prior to the Contractor starting work.

5.30.2 The Contractor shall give the Engineer written notice not less than two (2) working days in advance of the actual date on which the work will be started. The Contractor shall be entirely responsible for any delay in the work that may be caused by this failure to give such notice. The Engineer shall have the right to specify the locations where the Contractor shall start and proceed with the work.

5.30.3 The Contractor shall diligently pursue the work and complete the work as specified within the time limits as set forth in the Contract Documents.

5.30.4 When the Contractor foresees a delay in the prosecution of the work and, in any event, immediately upon the occurrence of a delay, the Contractor shall notify the Engineer in writing of the probability of the occurrence and the estimated extent of the delay, and its cause. The Contractor shall take immediate steps to prevent, if possible, the occurrence or continuance of the delay. The Contractor agrees that no claim shall be made for delays that are not called to the attention of the Engineer at the time of their occurrence.

5.30.5 Non-excusable delays in the prosecution of the work shall include delays which could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers.

5.30.6 Excusable delays in the prosecution or completion of the work shall include delays which result from causes beyond the control of the Contractor and District and

which could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers.

5.30.7 Delays caused by acts of god, fire, unusual storms, floods, tidal waves, earthquakes, epidemics and pandemics, strikes, labor disputes, and freight embargoes, shall be considered as excusable delays insofar as they prevent the Contractor from proceeding with at least seventy-five (75) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule. Such delays may entitle the Contractor to an adjustment in the Project schedule as its sole and exclusive remedy.

5.30.8 Should inclement weather conditions or the conditions resulting from weather prevent the Contractor from proceeding with seventy-five (75) percent of the normal labor and equipment force engaged in the current critical activity item for a period of at least five (5) hours per day toward completion of such operation or operations, and the crew is dismissed as a result thereof, it shall be a weather delay day.

5.30.9 Upon the submission of satisfactory proof to the Engineer by the Contractor, shortages of material may be acceptable as grounds for granting a time extension. In order that such proof may be satisfactory and acceptable to the Engineer, it must be demonstrated by the Contractor that the Contractor has made every effort to obtain such materials, or obtain acceptable substitute materials, from all known sources within reasonable reach of the proposed work. Only the physical shortage of material, caused by unusual circumstances, will be considered under these provisions as a cause for extension of time, and no consideration will be given to any claim that material could not be obtained at a reasonable, practical, or economical cost or price, unless it is shown to the satisfaction of the Engineer that such material could have been obtained only at exorbitant prices entirely out of line with current rates, taking into account the quantities involved and usual practices in obtaining such quantities. A time extension for shortage of material will not be considered for material ordered or delivered late or whose availability is affected by virtue of the mishandling of procurement. The above provisions apply equally to equipment to be installed in the work.

5.30.10 Compensable delays in the prosecution or completion of the work shall include delays that occur through no fault of the Contractor and prevent the Contractor from proceeding with at least seventy-five (75) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule due one or more of the following cause(s):

a. Delays due solely to the actions and/or inactions of the District.

b. Delays due to differing site conditions as addressed in sections 5.3.14 and 5.45.7.5.

c. Delays due to other Contractors employed by the District who interfere with the Contractor's prosecution of the work as defined above.

No delay shall be compensable unless the claimed event or occurrence delays completion of the work beyond the contractual completion date or the completion date shown in the accepted

initial or updated schedules, and the delay affects a critical activity while such activity is on the critical path.

5.30.11 Concurrent delays are those delay periods when the prosecution of the work is delayed during the same period of time due to causes from a combination of the delays defined in sections 5.30.5 (Non-excusable delays) 5.30.6 (Excusable delays) or 5.30.10 (Compensable delays) During such concurrent delay periods, time extensions will be granted in accordance with the sections below in this section 5.30; however, the Contractor shall not be compensated for its delay damages as defined in section 5.30.14, or for any other damages, and the District shall not assess its actual costs as defined in section 5.30.12 (non-excusable delays).

5.30.12 Non-excusable Delays - The District may in its sole discretion grant an extension of time for non-excusable delays if the District deems it is in its best interest. If the District grants an extension of time for non-excusable delays, the Contractor agrees to pay the District's actual costs, including charges for engineering, inspection and administration incurred during the extension.

5.30.13 Excusable or Compensable Delays - If the Contractor is delayed in the performance of its work as defined in section 5.30.6 (excusable delays), or section 5.30.10 (compensable delays), then the Contract completion date may be extended by the District for such time that, in the District's and Engineer's determination, the Contractor's completion date will be delayed, provided that the Contractor strictly fulfills the following:

a. The Contractor shall provide notification, in accordance with section 5.30.4 and as otherwise provided by this Contract, and may submit in writing a request for an extension of time to the Engineer stating at a minimum the probable cause of the delay and the number of days being requested. Any Contractor time extension request shall be submitted as a change order request in accordance with the requirements of section 5.3.

b. If requested by the Engineer, the Contractor shall promptly provide sufficient information to the Engineer to assess the cause or effect of the alleged delay, or to determine if other concurrent delays affected the work.

c. Weather Delays. The Contractor will be granted a non-compensable time extension for weather caused delays, pursuant to section 5.30.8 (weather delays), over and above any allowance provided for in this Agreement for weather days or weather delays.

Should the Contractor fail to fulfill any of the foregoing, which are conditions precedent to the right to receive a time extension, the Contractor waives the right to receive a time extension.

During such extension of time, neither extra compensation for engineering, inspection and administration nor damages for delay will be charged to the Contractor. It is understood and agreed by the Contractor and District that time extensions due to excusable or compensable delays will be granted only if such delays involve controlling operations which would prevent completion of the whole work within the specified Contract time.

Should the Contractor fail to complete the work within the time specified in the Contract, as extended in accordance with this clause if appropriate, the Contractor shall pay to the District liquidated damages in accordance with section 5.34.

5.30.14 Delay Damages

5.30.14.1 Indirect Overhead - The Contractor shall be reimbursed for indirect overhead expenses for periods of time when the work is delayed as defined in section 5.30.10 (Compensable delays). However, no reimbursement for indirect overhead or any other costs or damages shall be made for compensable delays which occur during a concurrent delay as defined in section 5.30.11 (Concurrent delays). No reimbursement for indirect overhead as covered in this section shall be made for any time extensions granted for Contract change orders as provided in section 5.4. As a condition precedent to any reimbursement, the Contractor must fulfill all conditions as provided in section 5.30.13 (Excusable or Compensable delays). No additional markup for overhead or profit shall be provided for such indirect overhead expenses.

Payment to the Contractor for indirect overhead expenses will be made only if the extended Contract period granted for the compensable delay(s) is required to complete the work following the depletion of the original contract period and any time extensions granted other than compensable time extensions. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay including not limited to extended field costs, extended home office overhead costs, impact, inefficiency, unabsorbed home office overhead, under-absorbed home office overhead, hindrance, disruption, or any other damage arising from delay, no matter how characterized, including delay claims of its subcontractors/suppliers of every tier.

5.30.14.2 Indirect Field Overhead - For those allowable delay periods as defined in section 5.30.14.1 (Indirect Overhead), the Contractor shall be reimbursed for its indirect field overhead based on:

a. Invoices for all field office equipment.

b. Actual salary for field office staff.

c. Fair rental values acceptable to the Engineer for construction equipment idled due to the delay.

5.30.14.3 Indirect Home Office Overhead - For those allowable delay periods as defined in section 5.30.14.1 (Indirect Overhead), the Contractor shall be reimbursed for its daily home office overhead based on the following formula:

Contract Bid Price ($) ÷ Contract Period (Days) x (0.04) = Daily Home Office Overhead ($/Day).

As it is impractical to determine the actual home office overhead, such reimbursement shall be mutually agreed between the District and Contractor to encompass full payment for any home office overhead expenses for such periods of time for the Contractor and all subcontractors. The Contractor agrees to indemnify, defend and hold the District harmless for any indirect overhead claims from its subcontractors.

5.31 SUSPENSION OF WORK

5.31.1 The Engineer may at any time, by notice in writing to the Contractor, suspend any part of the work for such period of time with or without cause, and the Contractor shall have no claim for damages or additional compensation on account of any such suspension.

5.31.2 Upon receipt of a written notice to suspend any portion of the work issued by the Engineer, the Contractor shall thereupon discontinue all work suspended except for all operations necessary to prevent loss or damage to work already executed as may be directed by the Engineer. In the event a part of the work is suspended, the Contractor, if the suspension is not through its fault or the fault of its subcontractors or agents, shall be paid in accordance with section 5.3.9 for costs of work performed in accordance with such orders of the Engineer during such suspension, provided that this shall not include any cost pertaining to work not suspended by the notice to suspend work. Work shall be resumed by the Contractor after such suspension on subsequent written notice to resume work from the District. In the event of suspension of the entire work by the District, the Contractor, if the suspension is not through the fault of the Contractor or the fault of its subcontractors or agents, shall be paid the sum of $50 for each calendar day during which the entire work shall have been suspended. Said sum is hereby mutually agreed upon as fixed and liquidated damages in full settlement of all costs and expenses, losses and damages resulting to the Contractor from such suspension.

5.31.3 In the event of any suspension of the work in whole or in part under subsection 5.31.2, if the suspension is not through the fault of the Contractor or the fault of its subcontractors or agents, the Contractor shall be entitled to an extension of time wherein to complete the work to the extent of the delay caused the Contractor thereby. If no agreement can be reached as to the time for extension, the Contractor shall submit a claim to the District within fifteen (15) days of a notice from the District that no agreement can be reached. The claim shall be processed in accordance with section 5.4.

5.31.4 In the event the entire work shall be suspended by order of the District, and shall remain so suspended for a period of ninety (90) consecutive days, through no fault of the Contractor or its subcontractors or agents, and notice to resume the work shall not have been served on the Contractor, Contractor may, at its option, by written notice to the District, terminate the Contract in the same manner and on the same terms as if the termination had been initiated by the District pursuant to section 5.32, and the District shall have no claim for damages because of such termination of the Contract.

5.32 TERMINATION FOR DEFAULT; DAMAGES FOR DELAY; TIMELY EXTENSION

5.32.1 Subject to prior notice from the District and the Contractor's cure rights set forth in this section, the District will have the right to terminate the Contract for cause and/or the Contractor's right to proceed with the work upon the occurrence of any of the following:

a. Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.

b. Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.

c. A receiver is appointed to take charge of Contractor's property.

d. The work is not completed within the applicable Contract time, as such Contract time may be adjusted in accordance with this Contract, and Contractor is not diligently prosecuting the completion or correction of the work.

e. Contractor persistently or repeatedly refuses or fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the work in accordance with the Contract Documents.

f. Contractor fails to make prompt payment of amounts properly due subcontractors after receiving payment from District.

g. Contractor disregards applicable laws, regulations or other governmental requirements.

h. Contractor persistently or materially fails to execute the work in accordance with the Contract Documents.

i. Contractor persistently or materially fails to comply with applicable safety requirements.

j. Contractor abandons the work.

k. Contractor is in default of any other material obligation under the Contract Documents.

5.32.2 Upon the occurrence of any of the preceding events, District will have the right to terminate the Contract for cause and/or the Contractor's right to proceed with the work if Contractor fails to promptly commence to cure such default and diligently prosecutes such cure within 5 days after notice from District, or within such longer period of time as is reasonably necessary to complete such cure.

5.32.3 The rights and remedies of the District provided in this section are in addition to any of the rights and remedies provided by law or under this Contract.

5.32.4 In addition to the District's rights under this section, if at any time before completion of the work under the Contract, it shall be determined by the District that it is advisable for it, for whatever reason, to terminate the work, it may do so upon ten (10) days written notice to the Contractor. Upon service of such notice of termination, the Contractor shall discontinue the work in such manner, sequence, and at such times as the Engineer may direct. The

Contractor shall have no claim for damages for such discontinuance or termination, nor any claim for anticipated profits on the work thus dispensed with or uncompleted, nor any other claim except for the work actually performed up to the time of termination, including any extra work ordered by the Engineer to be done, nor for any claim for liquidated damages in accordance with the provisions of section 5.31.

5.32.5 Upon receipt of notice of termination of the Contract and/or the Contractor's right to proceed with the work under this section 5.32, the Contractor shall, unless the notice directs otherwise, do the following:

a. Immediately discontinue the work to the extent specified in the notice.

b. Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of such portion of the work as is not discontinued.

c. Promptly cancel, on the most favorable terms reasonably possible, all orders and subcontracts to the extent they relate to the performance of the discontinued portion of the work.

d. Thereafter do only such work as may be necessary to preserve and protect work already in progress and to protect materials, plants, and equipment on the project site or in transit thereto.

Upon termination of the Contract, the obligations of the Contract shall continue as to portions of the work already performed and, subject to the Contractor's obligations under this section 5.32, as to bona fide obligations assumed by the Contractor prior to the date of termination.

Upon termination of the Contract or the Contractor's right to proceed with the work, the District shall pay to the Contractor the sum of the following:

a. The amount of the Contract price allocable to the portion of the work properly performed by the Contractor as of the date of termination, less sums previously paid to the Contractor.

b. Plus previously unpaid costs of any items delivered to the project site that were fabricated for subsequent incorporation into the work.

c. Plus any proven losses with respect to materials and equipment directly resulting from such termination.

d. Plus reasonable demobilization costs.

e. Plus reasonable costs of preparing a statement of the aforesaid costs, expenses, and losses in connection with such termination.

The above payment shall be the sole and exclusive remedy to which the Contractor is entitled in the event of termination of the Contract by the District and/or the Contractor's right to

proceed with the work pursuant to this section 5.32; and the Contractor will be entitled to no other compensation or damages and expressly waives same. The District shall have the right to subtract from the above payment such sums as may be deducted consistent with the terms of the Contract Documents.

5.33 RIGHTS OF DISTRICT UPON TERMINATION

5.33.1 In the event the right of the Contractor to proceed with the work, or any portion thereof, has been terminated because of the fault of the Contractor and the Contractor has been given five (5) days' notice to cure such fault and has not done so, the District may take over the work and prosecute the same to completion by contract or any other method the District deems expedient, and may take possession of and utilize in completing the work such materials, appliances, equipment and plant as may be on the site of the work and necessary therefor. Whether or not the Contractor's right to proceed with the work is terminated, it and its sureties shall be liable for all damages, including but not limited to, costs of managerial and administrative services, engineering, legal and other consultant fees, sustained or incurred by the District in enforcing the provisions of section 5.32 and in completing or causing to complete the Contract work.

5.33.2 Upon termination, the Contractor shall not be entitled to receive any further payment until the work is finished. If upon completion of the work the total cost to the District, including, but not limited to, engineering, legal and other consultant fees, costs of managerial and administrative services, construction costs and liquidated damages, shall be less than the amount which would have been paid if the work had been completed by the Contractor in accordance with the terms of the Contract, then the difference shall be paid to the Contractor in the same manner as the final payment under the Contract. If the total cost incurred by the District on account of termination of the Contractor and subsequent completion of the work by the District by whatever method the District may deem expedient shall exceed said amount which the Contractor would otherwise have been paid, the Contractor and its sureties shall be liable to the District for the full amount of such excess expense.

5.33.3 The rights and remedies of the District provided in this section are in addition to any of the rights and remedies provided by law or under this Contract.

5.34 FAILURE TO COMPLETE THE WORK IN THE TIME AGREED UPON; LIQUIDATED DAMAGES

5.34.1 It is agreed by the parties to the Contract that time is of the essence; and that in case all the work is not completed before or upon the expiration of the time limit as set in the Bid, Contract and/or Progress Schedule as designated by the District (Generally the date of final completion), or as revised by any time extensions that may have been granted, damage will be sustained by the District; and that it may be impracticable to determine the actual amount of damage by reason of such delay; and it is, therefore, agreed that the Contractor shall pay to the District as damages the amount of $1,000 per day for each and every calendar day's delay in finishing the work in excess of the number of days specified. The parties expressly agree that this liquidated damage clause is reasonable under the circumstances existing at the time the

Contract was made. The District shall have the right to deduct the amount of liquidated damages from any money due or to become due the Contractor.

5.34.2 Notwithstanding the above, the parties expressly agree that the liquidated damages specified above do not include the District's legal, engineering, inspection, superintendence and other similar expenses. Accordingly, the District shall have the right to charge to the Contractor and to deduct from the final or progress payments for the work the actual cost to the District of legal, engineering, inspection, superintendence, loss of revenue due to water delivery interruptions, and other expenses, which are directly chargeable to the Contract and which accrue during the period of such delay, except that the cost of final inspection and preparation of the final estimate shall not be included in the charges.

5.34.3 Notwithstanding the provisions of section 5.34.1, the Contractor shall not be liable for liquidated damages or delays caused by the removal or relocation of utilities when such removal or relocation is the responsibility of the District or the owner of the utility under California Government Code section 4215.

5.35 CLEAN UP

5.35.1 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 accumulation of rubbish. Upon completion of work and before the final estimate is submitted, the Contractor shall at its own cost and expense remove from the vicinity of the work all plants, buildings, rubbish, unused work materials, concrete forms, and temporary bridging and other like materials, belonging to it or used under its direction during the construction; and in the event of its failure to do so, the same may be removed by the District after ten (10) calendar days' notice to the Contractor, such removal to be at the expense of the Contractor. Where the construction has crossed yards or driveways, they shall be restored by the Contractor to the complete satisfaction of the Engineer, at the Contractor's expense.

5.35.2 The Contractor shall dispose of all testing or disinfection water without damage to property, and all in accordance with applicable regulations. All chlorinated water shall be dechlorinated prior to discharge.

5.36 COMPLIANCE WITH LAWS; PERMITS; TAXES

Contractor is an independent contractor and shall at its sole cost and expense do the following: comply with all laws, rules, ordinances and regulations of all federal, state and local agencies having jurisdiction over the work; procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the lawful prosecution of the work; pay all federal, state and local taxes, including manufacturers' taxes, sales taxes, use taxes, processing taxes, and payroll, wage, insurance, social security, and unemployment taxes on wages, salaries or any remuneration paid to Contractor's employees, whether levied under existing or subsequently enacted laws, rules or regulations; and pay all property tax assessments on materials or equipment used until acceptance by the District. If any discrepancy or inconsistency is discovered in the Plans or Specifications, or in this Contract in relation to any such law, rule, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the Engineer in writing. The

Contractor shall also protect, defend, hold harmless and indemnify the District, the Engineer, and all of the District's officers, directors, agents, and employees against any claim or liability arising from or based upon the violation of any such law, rule, ordinance, regulation, order or decree, whether by the Contractor itself or by its employees. Particular attention is called to the following:

5.36.1 Contractor is responsible for the safety of its workers and Contractor shall comply with, and require its workers to comply with, all applicable federal and state worker and job site safety-related laws and regulations, including, but not limited to, applicable federal Department of Labor, Occupational Safety and Health Administration ("OSHA") regulations and California Department of Industrial Relations (including the Division of Occupational Safety and Health and Occupational Safety and Health Standards Board ("Cal/OSHA")) regulations and safety orders.

5.36.2 The Contractor, upon request, shall furnish evidence satisfactory to the District and Engineer that any or all of the foregoing obligations have been or are being fulfilled. The Contractor warrants to the District that it is licensed by all applicable federal, state and local governmental bodies to perform this Contract and will remain so licensed throughout the progress of the work, and that it has, and will have, throughout the progress of the work, the necessary experience, skill and financial resources to enable it to perform this Contract.

5.36.3 The Contractor shall comply in all respects with the requirements of AB 5 (Labor Code sections 2750.3 and 3351 and Unemployment Insurance Code sections 606.5 and 621), and is solely responsible for such compliance and the costs thereof. The Contractor shall indemnify, hold harmless and defend the Agency against any claims, demands or damages of any workers or entity arising out of Contractor's failure to comply in all respects with the requirements of AB 5.

5.37 PREVAILING WAGE PENALTIES; WAGE CLAIMS PROHIBITED

5.37.1 The Contractor shall forfeit as penalty to the District not more than the sum of two hundred dollars ($200) and not less than forty dollars ($40) for each calendar day or portion thereof for each worker (whether employed by the Contractor or subcontractor) paid less than the stipulated prevailing rates for any work done under the Contract in violation of the provisions of the California Labor Code and in particular, sections 1772 to 1780. The amount of this penalty shall be determined by the Labor Commissioner and shall be based on consideration of the contractor's mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages, the previous record of the contractor in meeting its prevailing wage obligations, and a contractor's willful failure to pay the correct rates of prevailing wages. A mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages is not excusable if the contractor had knowledge of its obligations under Labor Code sections 1720, et seq. In addition to the aforementioned penalty, each worker shall be paid the difference between the prevailing wage rate and the amount paid to each worker for each calendar day or portion thereof for which said worker was paid less than the prevailing wage.

5.37.2 The District will not recognize any claims for additional compensation because of the payment of the wages set forth in the Contract Documents. The possibility of wage increases is one of the elements to be considered by the Contractor in determining its Bid, and will not under any circumstances be considered as the basis of a claim against the District or the Engineer.

5.38 LABOR DISCRIMINATION

Attention is directed to California Labor Code section 1735 which is applicable to the work under this Contract and which reads as follows: "A contractor shall not discriminate in the employment of persons upon public works on any basis listed in subdivision (a) of section 12940 of the Government Code, as those bases are defined in sections 12926 and 12926.1 of the Government Code, except as otherwise provided in section 12940 of the Government Code. Every contractor for public works who violates this section is subject to all the penalties imposed for a violation of this chapter."

5.39 EIGHT HOUR DAY LIMITATION; CERTIFIED PAYROLL REPORTS

5.39.1 In accordance with the provisions of the California Labor Code, and in particular, sections 1810 to 1815, eight hours labor shall constitute a day's work, and no worker, in the employ of the Contractor, or any subcontractor, doing or contracting to do any part of the work contemplated by this Contract, shall be required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of those provisions; provided that subject to Labor Code section 1815, a worker may perform work in excess of either eight (8) hours per day or forty (40) hours during any one week upon compensation for all hours worked in excess of eight (8) hours per day or forty (40) hours during any one week at not less than one and one half times the basic rate of pay. Except as just provided, the Contractor shall forfeit as a penalty to the District the sum of twenty-five dollars ($25) for each worker employed in the performance of this Contract by it or by any subcontractor under it for each calendar day during which such worker is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of sections 1810 through 1815.

5.39.2 The Contractor shall comply in all respects with the provisions of Labor Code section 1776, whose provisions are incorporated herein by this reference. In accordance with section 1776, the Contractor and each subcontractor shall keep an accurate record showing the names, addresses, social security numbers, work classifications, and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by it in connection with the work specified therein, which record shall be open at all reasonable hours at the principal office of the Contractor to the inspection of the District, State and Federal officers and agents. Certified copies of the payroll records shall be furnished or made available for inspection to others as provided in section 1776. These payroll records shall be certified and shall be on forms provided by the State Division of Labor Standards Enforcement, or shall contain the same information as the forms provided by the Division. The Contractor shall file a certified copy of the payroll records with the entity that requested the records within 10 days after receipt of a written request. Any copy of

records made available for inspection as copies and furnished upon request to the public or any public agency by the District, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated in a manner so as to prevent disclosure of an individual's name, address, and social security number. The name and address of the Contractor shall not be marked or obliterated. The Contractor shall inform the District of the location of the payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address. The Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this section. In the event that the Contractor fails to comply with the 10-day period, he or she shall, as a penalty to the District, forfeit one hundred dollars ($100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

5.40 EMPLOYMENT OF APPRENTICES

The Contractor's attention is directed to California Labor Code sections 1777.5, 1777.6 and 1777.7 pertaining to employment of indentured apprentices, which are hereby incorporated by reference into this Contract. As applicable, the Contractor or any subcontractor employed by it in the performance of the Contract work shall take such actions as necessary to comply with the provisions of sections 1777.5, 1777.6 and 1777.7.

5.41 WATER POLLUTION

5.41.1 The Contractor shall exercise every reasonable precaution to protect streams, lakes, reservoirs, and canals from pollution with fuels, oils, bitumens, calcium chloride, and other harmful materials and shall conduct and schedule its operations so as to avoid or minimize muddying and silting of said streams, lakes, reservoirs, and canals. Care shall be exercised to preserve vegetation beyond the limits of construction. The Contractor shall comply with California Fish and Game Code section 5650 and all other applicable statutes and regulations relating to the prevention and abatement of water pollution.

5.41.2 Not Used

5.42 PATENTS

The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated into the work, and agrees to indemnify, defend, protect and save harmless the District, the Engineer, and all of their officers, directors, employees, and other representatives, from all suits at law, or actions of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

5.43 PUBLIC CONVENIENCE

5.43.1 This section defines the Contractor's responsibility with regard to convenience of the public and public traffic in connection with its operations.

5.43.2 The Contractor shall conduct its operations as to offer the least possible obstruction and inconvenience to the public; and it shall have under construction no greater length or amount of work than it can prosecute properly with due regard to the rights of the public.

5.43.3 Unless otherwise provided in the Contract Documents, all public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible.

5.43.4 Spillage resulting from hauling operations along or across any publicly traveled way shall be removed immediately by the Contractor at its expense.

5.43.5 Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

5.43.6 Convenient access to driveways, houses and buildings along the line of the work shall be maintained and temporary approaches to crossings or intersecting highways shall be provided and kept in good condition. When the abutting property owner's access across the right of way line is to be eliminated, or to be replaced under the Contract by other access facilities, the existing access shall not be closed until the replacement access facilities are usable.

5.43.7 Water shall be supplied at Contractor's expense if ordered by the Engineer for the alleviation or prevention of dust nuisance as provided in the Contract Documents.

5.43.8 In order to expedite the passage of public traffic through or around the work, the Contractor shall install signs, lights, flares, barricades, and other facilities for the sole convenience and direction of public traffic. Also, the Contractor shall provide and station competent flagpersons whose sole duties shall consist of directing the movement of public traffic through or around the work. The cost of furnishing and installing such signs, lights, flares, barricades, and other facilities, and the cost of providing and stationing such flagpersons, all for the convenience and direction of public traffic, will be considered as included in the Contract price and no additional compensation will be allowed.

5.43.9 Flagpersons and guards, while assigned to traffic control, shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flagmen" of the California Department of Transportation. The equipment shall be furnished and kept clean and in good repair by the Contractor at its expense.

5.44 UNDERGROUND UTILITIES

Prior to conducting any excavation, the Contractor shall contact the appropriate regional notification center as required by and shall otherwise comply with California Government Code section 4216, et seq. In accordance with Government Code section 4215, the Contractor shall be compensated for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating existing main or trunkline utility facilities not indicated in the Contract Plans and Specifications with reasonable accuracy, and for the equipment on the project necessarily idled during such work; provided that the Contractor shall

first notify the Engineer before commencing work on locating, repairing damage to, removing or relocating such utilities.

5.45 SAFETY AND TRENCHING

5.45.1 The Contractor shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety procedures and practices shall conform to all applicable Federal, State, and local laws, ordinances, and codes, and to the rules and regulations established by OSHA and Cal/OSHA, and to other rules of law applicable to the work. Any District obligations relating to safety of the work are separate from and do not alter the Contractor's primary responsibility for safety as provided in this Contract.

5.45.2 The Contractor shall have an Injury/Illness Prevention Program ("IIPP") in place to protect the safety of its employees and ensure that its subcontractors also have an IIPP or comply with Contractor's program. The Contractor's IIPP shall comply with and be at least as effective as the requirements of section 3203 of Title 8 of the California Code of Regulations. Upon request, the Contractor will submit a copy of its IIPP to the District.

5.45.3 The services of the Engineer in conducting construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing or scaffolding or safety measures, in, on, or near the construction site, and shall not be construed as supervision of the actual construction nor make the Engineer or the District responsible for providing a safe place for the performance of work by the Contractor, subcontractors, or suppliers; or for access, visits, use work, travel or occupancy by any person.

5.45.4 All work and materials shall be in strict accordance with all applicable State, Federal and local laws, rules, regulations, and codes. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instruction as is necessary to prevent injury to personnel and damage to property. Special care shall be exercised relative to electrical work, work involving excavation and in pump sump work.

5.45.5 Nothing in this Contract is to be construed to permit work not conforming to governing law. When Contract Documents differ from governing law, the Contractor shall furnish and install the higher standards called for without extra charge. All equipment furnished shall be grounded and provided with guards and protection as required by applicable federal and state safety regulations and orders.

5.45.6 Shoring and Trench Safety Plan Attention is directed to California Civil Code section 832 relating to lateral and subjacent support, and the Contractor shall comply with this law.

5.45.7 In accordance with California Labor Code section 6705, if the total amount of the contract is in excess of $25,000 and if the work involves the excavation of any trench or trenches five feet or more in depth, the Contractor shall submit to the District for

acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any such trench or trenches.

5.45.7.1 In accordance with California Labor Code section 6705, if the total amount of the contract is in excess of $25,000 and if the work involves then excavation of any trench or trenches five feet or more in depth, the Contractor shall submit to the District for acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any such trench or trenches.

5.45.7.2 The District or the Engineer or their consultants may have made investigations of subsurface conditions in areas where the work is to be performed. If so, these investigations are identified in the Contract Documents and the records of such investigations are available for inspection at the office of the Engineer. The detailed plan showing the design of shoring, etc., which the Contractor is required to submit to the District for acceptance of excavation will be not accepted by the District if the plan is based on subsurface conditions which are more favorable than those revealed by the investigations made by the District or the Engineer or their consultants; nor will the plan be accepted if it is based on soils-related criteria which is less restrictive than the criteria set forth in the report on the aforesaid investigations of subsurface conditions.

5.45.7.3 The detailed plan showing the design of shoring, etc., shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loadings. The plan shall indicate for all trench conditions the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.

5.45.7.4 Nothing contained in this section shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other provisions which are adequate for worker protection. Review of the plan by the District and/or Engineer is only for general conformance to OSHA and Cal/OSHA requirements. Their failure to note exception(s) to the submittal does not relieve Contractor of any responsibility or liability for the plan. Contractor remains solely and completely responsible for all trench safety and for the means, methods, procedures, and materials therefor.

5.45.7.5 In accordance with California Public Contract Code section 7104, in the event that the work involves digging trenches or other excavations that extend deeper than four (4) feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the District 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 and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;

b. Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids; or,

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.

The District shall promptly investigate the conditions reported by the Contractor, and if it 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 shall issue a change order under the procedures described in the Contract. In the event that a dispute arises between the District and the Contractor about 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 the contracting parties.

5.46 PROTECTION OF PERSON AND PROPERTY

5.46.1 The Contractor shall take whatever precautions are necessary to prevent damage to all existing improvements, including above ground and underground utilities, trees, shrubbery that is not specifically shown to be removed, fences, signs, mailboxes, survey markers and monuments, buildings, structures, the District's property, adjacent property, and any other improvements or facilities within or adjacent to the work. If such improvements or property are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored, at the Contractor's expense, to a condition at least as good as the condition they were in prior to the start of the Contractor's operations.

5.46.2 The Contractor shall adopt all practical means to minimize interference to traffic and public inconvenience, discomfort or damage. The Contractor shall protect against injury to any pipes, conduits or other structures crossing the trenching or encountered in the work and shall be responsible for any injury done to such pipes or structures, or damage to property resulting therefrom. The Contractor shall support or replace any such structures without delay and without any additional compensation to the entire satisfaction of the Engineer. All obstructions to traffic shall be guarded by barriers illuminated at night. The Contractor shall be responsible for all damage to persons and property directly or indirectly caused by its operations and, under all circumstances, it must comply with the laws and regulations of the County and the State of California relative to safety of persons and property and the interruption of traffic and the convenience of the public within the respective jurisdictions.

5.46.3 The Contractor is cautioned that it must replace all improvements in rights of way and within the public streets to a condition equal to what existed prior to its entry onto the job.

5.46.4 Type and time of construction required at any road subject to interference by Contract work will be determined by those authorities responsible for maintenance of said road. It shall be the responsibility of the Contractor to determine the nature and extent of all such requirements, including provision of temporary detours as required; however, any construction right of way obtained by the District at affected roadways will be adequate for provision of all required detours. As required at any road crossing, the Contractor shall provide all necessary flagpersons, guardrails, barricades, signals, warning signs and lighting to provide for the safety of existing roads and detours. Immediately after the need for temporary detours ceases, or when directed, the Contractor shall remove such detours and perform all necessary cleanup work, including replacement of fences, and removal of pavement. Included shall be all necessary replacement of existing roadway appurtenances, grading work, soil stabilization and dust control measures, as required and directed. The cost of all work specified under this section shall be borne by the Contractor.

5.46.5 The Contractor shall examine all bridges, culverts, and other structures over which it will move its materials and equipment, and before using them, it shall properly strengthen such structures as necessary for their safe operation and use. The Contractor shall be responsible for any and all injury or damage to such structures caused by reason of its operations.

5.47 HAZARDOUS MATERIALS; HAZARD COMMUNICATION

5.47.1 Proposition 65 and the California Health and Safety Code requires businesses to provide warnings prior to exposing individuals to materials listed by the Governor as chemicals "known to cause cancer or reproductive toxicity." The District may use chemicals on the Governor's list at many of its facilities. In addition, many of these chemicals are present at non-District-owned facilities and locations. Accordingly, in performing the work or services contemplated under this Contract, Contractor, its employees, agents, and subcontractors may be exposed to chemicals on the Governor's list. Except as provided in section 5.47.2, Contractor is responsible for notifying its employees, agents, and subcontractors that work performed hereunder may result in exposures to chemicals on the Governor's list.

5.47.2 Before starting work, the Contractor shall have a written Hazard Communication Program ("HCP") in place that complies with the requirements of section 5194 of Title 8 of the California Code of Regulations, including the requirements of 8 C.C.R. section 5194(e). The information in the Contractor's HCP must include the methods by which the Contractor will communicate to the District which hazardous substances it will use and store on the job site(s) to which the District's and Contractor's employees and subcontractors may be exposed. The Contractor will submit its HCP to the District at the same time as submittal of its initial project schedules as provided in section 5.29 of these General Conditions. The Contractor also will provide copies of safety data sheets ("SDS") for all hazardous substances brought onto and used or stored on the job site(s). The Contractor also will ensure that all hazardous substances are marked with Proposition 65 and any other visible warning labels as required by law. Whenever possible, the Contract shall provide SDS for all hazardous substances to the District prior to bringing a hazardous substance onto a job site, but will provide all SDS by no later than the time the hazardous substance is physically brought onto the site. The District will communicate the Contractor's HCP and SDS information to the District's employees who work on or will enter the

job site(s). The District will provide the Contractor with a copy of the District's HCP and SDS information specific to District operations on the job site(s). The Contractor shall, in turn, convey this information to its employees and subcontractors. During the course of the work, the Contractor will keep copies of both its and the District's HCP, SDS and other relevant information at Contractor's office on the job site(s).

5.47.3 If the Work includes the construction, alteration, improvement, or maintenance of electric power generation, control, transformation, transmission or distribution lines or equipment within the meaning of Code of Federal Regulations title 29, section 1910.269 or 1926.950, then the Contractor will implement and comply with the requirements of the "contract employer" as described and set forth in sections 1910.269 and 1926.950, including, but not limited to, the obligations to properly train the Contractor workers on safety-related work practices and procedures, exchange information with the District concerning unique hazardous conditions presented by the Work, instruct the Contractor workers about the hazardous conditions relevant to the Work, and coordinate with the District on safety-related work rules and procedures. The Contractor also shall be responsible for transmitting safety-related information under sections 1910.269 and 1926.950 with any subcontractors retained by it to perform electrical-related Work under the Contract.

5.48 RESPONSIBILITY FOR REPAIR OF FACILITIES

All public or private facilities, including but not limited to canals, structures, telephone cables, roadways, curbs, gutters, parking lots, private drives, levees and embankments for creeks, ponds and reservoirs disturbed during construction of the work shall be repaired and/or replaced by the Contractor to match facilities existing prior to construction. In addition, the Contractor shall be responsible for any settlement damage to such facilities or adjoining areas for a period of one year after acceptance of such required facilities.

5.49 DISTRICT'S REPAIR

In the event the Contractor refuses or neglects to make good any loss or damage for which it is responsible under this Contract, the District may itself, or by the employment of others, make good any such loss or damage, and the cost and expense of doing so, including any reasonable engineering, legal and other consultant fees, and any costs of administrative and managerial services, shall be charged to the Contractor. Such costs and expenses may be deducted by the District from claims for payment made by the Contractor for work completed or remaining to be completed.

5.50 CONTRACTOR'S LICENSE NOTICE

STATEMENT REQUIRED BY CALIFORNIA BUSINESS & PROFESSIONS CODE SECTION 7030: "CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS STATE LICENSE BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED WITHIN FOUR YEARS OF THE DATE OF THE ALLEGED VIOLATION. A COMPLAINT REGARDING A

LATENT ACT OR OMISSION PERTAINING TO STRUCTURAL DEFECTS MUST BE FILED WITHIN 10 YEARS OF THE DATE OF THE ALLEGED VIOLATION. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA 95826."

5.51 PUBLIC WORKS CONTRACTOR REGISTRATION

In accordance with California Labor Code Section 1771.1(a), a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this Division 2, Part 7, Chapter 1 of the Labor Code (commencing with Section 1720), unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. In accordance with Labor Code section 1771.4(a)(1), this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

5.52 INSURANCE

5.52.1 The Contractor shall procure and maintain for the duration of the Contract, and for five years thereafter, the following insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, its agents, representatives, employees or subcontractors.

5.52.1.1 General Liability - Commercial General Liability (CGL) - Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 00 01) including products and completed operations, property damage, bodily injury, personal and advertising injury with limit of at least five million dollars ($5,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (coverage as broad as the ISO CG 25 03, or ISO CG 25 04 endorsement provided to District) or the general aggregate limit shall be twice the required occurrence limit.

District, its directors, officers, employees, and authorized volunteers are to be given insured status (at least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 10 01 and CG 20 37 10 01, with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor’s insurance.

5.52.1.2 Automobile Liability - Insurance Services Office (ISO) Business Auto Coverage (Form CA 00 01), covering Symbol 1 (any auto) with limit of one million dollars ($1,000,000) for bodily injury and property damage each accident.

5.52.1.3 Workers' Compensation Insurance - The Contractor shall provide workers’ compensation coverage as required by the State of California, with Statutory Limits, and Employer’s Liability Insurance with limit of no less than $1,000,000 per accident for bodily injury or disease.

5.52.1.4 Builder's Risk – (Course of Construction) - insurance utilizing an "All Risk" (Special Perils) coverage form with limits equal to the completed value of the project and no coinsurance penalty provision. Notwithstanding the policy duration required in section 5.52.1, the insurance coverage required by this section 5.52.1.4 shall be maintained at least until Final Completion occurs and the Project is accepted by District as provided in section 5.61.

The above minimum insurance coverage limits can be met through provision of umbrella or excess policy insurance coverage consistent with the provisions of this section 5.52.

5.52.2 Any deductibles or self-insured retentions must be declared to and approved by the District. At the option of the District, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officers, officials, employees and volunteers; or the Contractor shall procure a bond or other security guaranteeing payment of losses and related investigations, claim administration and defense fees, costs and expenses. All policies that include a self-insured retention shall include a provision that payments of defense costs and damages (for bodily injury, property damage, personal injury or any other coverages included in the policy) by any party, including additional insureds and insurers, shall satisfy the self-insured retention limits.

5.52.3 The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

5.52.3.1 Waiver of Subrogation (also known as Transfer of Rights of Recovery Against Others to Us): The Contractor hereby agrees to waive rights of subrogation to obtain endorsement necessary to affect this waiver of subrogation in favor of the District, its directors, officers, employees, and authorized volunteers, for losses paid under the terms of this coverage which arise from work performed by the Named Insured for the District; this provision applies regardless of whether or not the District has received a waiver of subrogation from the insurer.

5.52.3.2 The District, its officers, officials, employees, agents and volunteers are to be covered as additional insureds 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 District, its officers, officials, employees, agents or volunteers. The additional insured coverage or endorsement shall comply with California Insurance Code section 11580.04.

5.52.3.3 For any claims related to this project, the Contractor's insurance general and automobile liability coverage shall be primary insurance as respects the District, its officers, officials, employees, agents and volunteers. Any insurance or self-insurance maintained by the District, its officers, officials, employees, agents or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

5.52.3.4 Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the District, its officers, officials, employees, agents or volunteers.

5.52.3.5 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.

5.52.3.6 Each insurance policy required by this section shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, or reduced in coverage or in limits except after 30 days' prior written notice by U.S. mail has been given to the District, or after 10 days' written notice in the case of cancellation for non-payment of premium.

5.52.4 Course of Construction Coverage Requirements. Course of construction policies shall contain, or be endorsed to contain, the following provisions: (a) District shall be named as loss payee; and (b) The insurer shall waive all rights of subrogation against the District.

5.52.5 Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A-:VII or equivalent and that are authorized to do business and in good standing in California, unless otherwise approved by District. In the case of Workers' Compensation and Employer's Liability insurance, coverage provided by the California State Compensation Insurance Fund is acceptable.

5.52.6 Verification of Coverage. Before commencing work, Contractor shall provide to District the following proof of insurance: (a) certificate(s) of insurance on ACORD Form 25-S (or insurer's equivalent) evidencing the required insurance coverages; and (b) endorsement(s) on ISO Form CG 20 10 (or insurer's equivalent), signed by a person authorized to bind coverage on behalf of the insurer(s) and certifying the additional insured coverages, or equivalent additional insured blanket endorsement. The District reserves the right to require complete copies of all required insurance policies and/or endorsements affecting required insurance coverage at any time.

5.52.7 Subcontractors. The Contractor shall include all actions and activities of its subcontractors as insureds under its policies, or shall require each subcontractor to provide insurance coverage consistent with the foregoing and to furnish separate endorsements or certificates to the District. All coverages for subcontractors shall be subject to all of the requirements stated in this section.

5.52.8 Obligation to Maintain Coverage. Contractor shall maintain all required insurance coverages for the period provided in this section 5.52. If any of the required coverages expire during the coverage period, Contractor shall obtain renewal or replacement coverages and deliver certificates for the renewed or replacement coverages and any required endorsements to the District at least 10 days before the expiration date of the existing coverage.

5.52.9 Survival of Guarantee. Any products/completed operations insurance coverage shall be maintained after completion of the project for the full guarantee period.

5.52.10 The requirements as to the types, limits, and the District's approval of insurance coverage to be maintained by the Contractor are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor under the Contract.

5.52.11 In addition to any other remedy the District may have, if the Contractor or any of the subcontractors fails to maintain the insurance coverage as required in this section 5.52, the District may obtain such insurance coverage as is not being maintained, in form and amount substantially the same as required herein, and the District may deduct the cost of such insurance from any amounts due or which may become due the Contractor under this Contract.

5.53 INDEMNITY AND DEFENSE OBLIGATION

5.53.1 To the fullest extent permitted by law, Contractor shall protect, defend, indemnify and hold harmless the District and Engineer, and their respective officers, directors, agents, employees, volunteers, representatives, boards, and consultants from and against all penalties and fines imposed by law and all loss, claim, cause of action, demand, suit, judgment, cost, damage, expense, and liability (including but not limited to court or arbitration costs and reasonable attorneys' and expert witness fees) resulting from injury to or death of persons, including without limitation employees of the District, Engineer and Contractor, or damage to or loss of property, caused by, arising out of or in any way connected with the Contractor's or its subcontractors' or suppliers' performance, operations or activities under this Contract, except to the extent the sole negligence, active negligence or willful misconduct of an indemnified party proximately causes the loss, claim, demand, cost, suit, judgment, penalty, fine, cause of action, damage, expense, or liability.

5.53.2 Contractor's duty to defend is a separate and distinct obligation from Contractor's duty to indemnify. Upon the request of an indemnified party hereunder, Contractor shall defend any suit asserting a claim covered by this indemnity and shall pay any costs and expenses that may be incurred by an indemnified party in enforcing this indemnity. The Contractor shall be obligated to defend, in all legal, equitable, administrative, or special proceedings, the District and/or Engineer, and their respective officers, directors, agents, employees, volunteers, representatives, boards, and consultants, immediately upon tender to Contractor of the claim in any form or at any stage of an action or proceeding, whether or not liability has been established. The obligation to defend extends through final judgment, including exhaustion of any appeals. In all cases, the indemnified party shall have the right to approve counsel selected by Contractor in the defense of any legal action or with respect to any claim, which approval shall not be unreasonably withheld. In addition, the indemnified party shall have the right to participate in and be represented by counsel of its own choice and at its own expense in any legal action or with respect to any claim. The defense obligation includes an obligation to provide independent defense counsel if the Contractor asserts that liability is caused in whole or in part by the negligence or willful misconduct of an indemnified party.

5.53.3 The District may withhold from payment due Contractor hereunder such amounts as, in the District's opinion, are sufficient to provide security against all loss, damage, expense, penalty, fine, cost, claim, demand, suit, cause of action, judgment, or liability covered by the foregoing indemnity provision.

5.53.4 In any and all claims against the District or the Engineer and his consultants, and each of their officers, directors, employees and agents by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this section shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable under Workers' Compensation statutes, disability benefit statutes or other employee benefit statutes.

5.53.5 Neither termination of this Contract, completion of the acts to be performed under this Contract, nor the Engineer's approval or the District's acceptance of the work shall release Contractor from its obligations to indemnify and defend the District, and the Engineer, and their respective officers, directors, agents, employees, volunteers, representatives, boards, and consultants, as provided in sections 5.53.1 and 5.53.2, so long as the event upon which the claim is predicated shall have occurred prior to the effective date of any such termination or completion and arose out of or was in any way connected with performance of operations under this Contract by Contractor, its employees, agents, suppliers or subcontractors, or the employee, agent or subcontractor of any one of them,.

5.53.6 Submission of insurance certificates or submission of other proof of compliance with the insurance requirements in this Contract does not relieve Contractor from liability under this indemnification and hold harmless clause. The obligations of this indemnity section shall apply whether or not such insurance policies shall have been determined to be applicable to any of such damages or claims for damages.

5.53.7 In accordance with California Public Contract Code section 9201(b), if District receives any written third-party claim relating to work performed under this Contract, then District agrees to promptly notify Contractor about the third-party claim.

5.54 PROTECTION OF WORK

5.54.1 The Contractor shall be responsible for the care of all work until its completion and final acceptance; and it shall, at its own expense, replace damaged or lost material and repair damaged parts of the work or the same may be done at its expense by the District and the Contractor and its sureties shall be liable therefor. The Contractor shall make its own provisions for properly storing and protecting all material and equipment against theft, injury, or damage from any and all causes. Damaged material and equipment shall not be used in the work. The Contractor shall take all risks from floods and casualties except as provided by law, and shall make no charge for the restoration of such portions of the work as may be destroyed or damaged by flood or other casualties or because of danger from flood or other casualties or for delays from such causes. The Contractor may, however, be allowed a reasonable extension of time on account of such delays, subject to the conditions hereinbefore specified.

5.54.2 The Contractor shall effectively secure and protect adjacent property and structures, livestock, crops and other vegetation. If applicable, the Contractor shall open fences on or crossing the right of way and install temporary gates of sound construction thereon so as to prevent the escape of livestock. Adjacent fence posts shall be adequately braced

to prevent the sagging or slackening of the wire. Before such fences are opened, the Contractor shall notify the owner or tenant of the property and, where practicable, the opening of the fence shall be in accordance with the wishes of said owner or tenant. The Contractor shall be responsible that no loss or inconvenience shall accrue to the owner or tenant by virtue of its fences having been opened or the gate not having been either shut or attended at all times. Where special types of fences are encountered, the Contractor shall install temporary gates made of similar materials and of suitable quality to serve the purposes of the original fences. In all cases when the Contractor removes fences to obtain work room, it shall provide and install temporary fencing as required, and on completion of construction shall restore the original fence to the satisfaction of the Engineer. All costs of providing, maintaining and restoring gates and fencing shall be borne by the Contractor. The Contractor shall provide and maintain all passageways, guard fences, lights and other facilities for protection required by public authority or local conditions.

5.54.3 The Contractor shall use extreme care during construction to prevent damage from dust to crops and adjacent property. The Contractor, at its own expense, shall provide adequate dust control for the right of way and take other preventative measures as directed by the Engineer.

5.54.4 The Contractor shall be responsible for all damage to any property resulting from trespass by the Contractor or its employees in the course of their employment, or subcontractors or their employees in the course of their employment, or anyone directly or indirectly employed by any of them, where such trespass was committed with or without the consent or knowledge of the Contractor.

5.54.5 The Contractor shall see that the worksite is kept drained and free of all ground water and any other water which may impede the progress or execution of the Contract work.

5.54.6 The Contractor shall be responsible for any damage caused by drainage or water runoff from construction areas and from construction plant areas.

5.54.7 In an emergency affecting the safety of life, or of the work, or of adjoining property, the Contractor, without special instruction or authorization from the Engineer, is hereby permitted to act at its discretion to prevent such threatened loss or injury, and it shall so act without appeal if so instructed or authorized. Should the Engineer deem an emergency condition to exist, the Contractor shall immediately do those things and take those steps ordered by the Engineer. The decision of the Engineer in this respect shall be final and conclusive. Any claims for compensation made by the Contractor on account of emergency work shall be determined as specified under section 5.3.

5.54.8 Except as provided by California Government Code section 4215, the Contractor shall be responsible for the removal, relocation and protection of all public and private utilities, including irrigation facilities in the nature of utilities, located on the site of the construction project if and to the extent that the same are identified in the Contract Documents; and the Contractor shall not be entitled to any extension of time or claim for damages for extra compensation in connection therewith. If and to the extent that such utilities or facilities are not identified in the Contract Documents, as between the Contractor and the District, the District will

be responsible for the cost of their removal, relocation or protection, as the case may be, but the Contractor shall perform any such work in conformance with applicable provisions of section 5.3, if so directed by the Engineer and in such situation the Contractor shall not be responsible for delay in completion of the project caused by the failure of the District or the owner of the utility to provide for such removal or relocation. If the Contractor, while performing the Contract, discovers utility or irrigation facilities not identified by the District in the Contract Documents, it shall immediately notify the Engineer in writing.

5.54.9 When the work to be performed under the Contract crosses or otherwise interferes with existing streams, watercourses, canals, farm ditches, pipelines, drainage channels, or water supplies, the Contractor shall provide for such watercourse or pipelines and shall perform such construction during the progress of the work so that no damage will result to either public or private interests; and the Contractor shall be liable for all damage that may result from failure to so provide during the progress of the work.

5.55 ACCIDENTS

5.55.1 The Contractor shall provide and maintain, in accordance with California Labor Code section 6708 and Cal/OSHA requirements, adequate emergency first aid treatment for its employees and anyone else who may be injured in connection with the work.

5.55.2 The Contractor shall promptly report in writing to the Engineer all accidents of any nature arising out of, or in connection with, the performance of the work, on or adjacent to the site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injury or serious damage are caused, the accident shall be reported immediately by telephone or messenger to the District and the Engineer.

5.55.3 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.

5.56 NO PERSONAL LIABILITY

Neither the District, the Engineer, nor any of their officers, directors, agents, or employees shall be personally responsible for any liability arising under the Contract, except such obligations as are specifically set forth herein.

5.57 MEASUREMENT OF QUANTITIES

Where the Contract provides for payment on a lump sum price basis, no measurement of quantity will be made. Where the Contract provides for payment on a unit price basis, the quantities of work performed will be computed by the Engineer on the basis of measurements taken by the Engineer, and these measurements shall be final and conclusive. All quantities of work computed under the Contract shall be based upon measurements by the Engineer according to United States Measurements and Weights. Methods of measurement are specified herein and in the Specifications.

5.58 SCOPE OF PAYMENT

5.58.1 The Contractor shall accept the compensation provided in the Contract as full payment for furnishing all labor, materials, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced under the Contract; also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the acceptance by the District and for all risks of every description connected with the prosecution of the work; also for all expenses incurred in consequence of the suspension or discontinuance of the work as provided in the Contract; and for completing the work according to the Specifications and Plans. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

5.58.2 No compensation will be made in any case for loss of anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as provided in such agreements.

5.59 PROGRESS ESTIMATE

For each calendar month of Contract work, the Engineer will prepare a progress estimate of all work performed under the Contract. Within the first ten (10) days of each succeeding calendar month, the Engineer will prepare in writing and certify to the District, an estimate which in his opinion is a fair approximation of the value of all work done under the Contract, including any amounts due the Contractor for extra work and change orders. In arriving at the value of the work done, the Engineer will give consideration to the value of labor and materials which have been incorporated into the permanent work by the Contractor during the preceding month. Consideration will not be given to preparatory work done or for materials or equipment on hand. In order to assist the Engineer, the Contractor shall furnish the Engineer with copies of invoices for all such items delivered to the job site and incorporated into the work.

5.60 PROGRESS PAYMENTS

5.60.1 Unless otherwise provided for at a different rate in the Invitation to Bid and the Contract, the District will pay the Contractor ninety-five (95%) percent of the amount of each properly submitted and undisputed progress payment request. Five (5%) percent, or any higher rate specified in the Invitation to Bid and the Contract, of the amount of each payment request shall be retained by the District until final completion and acceptance of all work under the Contract; provided, however, that if the Engineer, at any time after fifty (50%) percent of the work has been completed, finds that satisfactory progress is being made, the District may, in its sole discretion, pay any or all of the remaining progress payments in full or at a lower retention. In no case shall the District make a progress payment to the Contractor that exceeds one hundred percent (100%) of the value of the work actually completed to the date of the payment request.

5.60.2 The Contractor may invoice the District for no more than seventy-five (75%) percent of the cost of materials and equipment stored onsite, as long as the material or equipment has been inspected and approved by the Engineer or the District's representative, the quantity of material or equipment can be determined to the District's

satisfaction after Contractor delivery of a paid invoice for such materials or equipment, and the materials or equipment are properly stored and protected in accordance with the manufacturer's recommendations. The Contractor retains liability for any damage or degradation of the quality of stored materials and equipment until after they are incorporated into the work and the work is approved by the District in accordance with the applicable requirements of the Contract Documents.

5.60.3 In accordance with California Public Contract Code section 20104.50, a written payment request from the Contractor shall be reviewed by the Engineer as soon as practicable in order to determine whether it is proper. If it is determined not to be a proper payment request suitable for payment, then the Engineer shall return it to the Contractor with a written explanation of the deficiencies as soon as practicable, but not later than 7 days after receipt of the payment request. If the payment request is determined to be properly submitted and is undisputed, the Engineer will certify the payment as provided above and the District shall make the payment to the Contractor within 30 days after receipt of the payment request. If a properly submitted and undisputed payment request is not paid within this 30 day period, then the District shall pay interest on the overdue amount to the Contractor at the legal rate set forth at California Code of Civil Procedure section 685.010. This section shall not apply if District funds are not available for payment of the payment request or if payment is delayed due to an audit inquiry by the financial officer of the District.

5.60.4 The Contractor may, in accordance with California Public Contract Code section 22300, substitute securities for any monies which the District may withhold to insure performance under the Contract. Alternatively, on written request of the Contractor and at its expense, the District shall make payments of the retention earnings directly to an escrow agent pursuant to an escrow agreement entered into consistent with the terms of Public Contract Code section 22300.

5.60.5 When, in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the Contract, or when in his judgment the total amount of the work done since the last estimate amounts to less than $1,000, no pay estimate will be prepared and no progress payment will be made.

5.60.6 No progress estimate or payment shall be considered to be an approval or acceptance of any work, materials or equipment. Estimated amounts and values of work done and materials and equipment incorporated into the work will be conformed with actual amounts and values as they become available in subsequent progress estimates, progress payments and the final estimate and payment. All estimates and payments will be subject to correction in subsequent progress estimates and payments and the final estimate and payment.

5.60.7 It is mutually agreed between the parties to the Contract that no payments made under the Contract, including progress payments and the final payment, shall be evidence of the performance of the Contract, either wholly or in part, and no payment shall be construed to be an acceptance of any defective or incomplete work or improper materials.

5.60.8 District reserves the right to make payments jointly to the order of the Contractor and to any of its subcontractors or suppliers that might have a right to file a stop

notice with the District. The District shall have no obligation to pay or to ensure the payment of money to a subcontractor or supplier, except as may otherwise be required by law.

5.60.9 Each progress payment made to the Contractor in accordance with the Engineer's determination of progress payment requests is contingent upon the Contractor furnishing the District with a signed written waiver and release of all claims against the District arising out of or in any way connected to the Contract. Disputed Contract claims must be specifically stated and excluded by the Contractor from the operation of the waiver and release. The waiver and release shall be substantially in the form provided in Civil Code sections 8132 (Exhibit A) or 8134 (Exhibit B). The Contractor may only use the conditional waiver and release if the District does not pay all or a portion of a progress payment estimate submitted by the Contractor and the Contractor disputes the District's determination.

In the event that the Contractor fails or refuses to furnish the District with a signed written waiver and release of all claims against the District arising out of or in any way connected to the Contract, Contractor's acceptance of each progress payment shall be Contractor's release of all claims against the District in relation to all work paid to date to the fullest extent permitted by law.

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT (EXHIBIT A)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____
Name of Customer: _____
Job Location: _____
Owner: _____
Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____
Amount of Check: $ _____
Check Payable to: _____

Exceptions

This document does not affect any of the following:

(1) Retentions.

(2) Extras for which the claimant has not received payment.

(3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:
Date(s) of waiver and release: _____
Amount(s) of unpaid progress payment(s): $ _____

(4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature

Claimant's Signature: _____
Claimant's Title: _____
Date of Signature: _____

UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT (EXHIBIT B)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information

Name of Claimant: _____
Name of Customer: _____
Job Location: _____
Owner: _____
Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment:
$ _____.

Exceptions

This document does not affect any of the following:

(1) Retentions.

(2) Extras for which the claimant has not received payment.

(3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature
Claimant's Signature: _____
Claimant's Title: _____
Date of Signature: _____

5.61 COMPLETION AND FINAL ACCEPTANCE

5.61.1 The following definitions govern in interpreting this article and wherever such terms may appear in the Contract Documents:

5.61.1.1 "Final Completion" means the time when the work has been fully completed in accordance with the Contract Documents and is ready for acceptance and final payment by the District.

5.61.1.2 "Final Inspection" means the inspection conducted by the District after to verify that the work has reached Final Completion.

5.61.1.3 "The Final Punch List" is the listing of items that, in the Engineer's opinion, remain uncompleted after Substantial Completion but that must be completed by the Contractor prior to Final Completion.

5.61.1.4 "Semi-Final Inspection" means that inspection conducted by the Engineer to determine if the work is Substantially Complete.

5.61.1.5 "Substantial Completion" means the work has progressed to the point that: (1) the work is ready for beneficial use and occupancy by the District for the intended purpose, (2) all fire and life safety work has been completed, inspected and accepted, (3) all mechanical and process systems and equipment are complete and have been put in automatic operation, (4) the total value of uncompleted work is less than one-half of one percent of the Contract Price and any approved cost extensions and (5) completing the work will not significantly interfere with the District's convenience, or use or cost of operating the work.

5.61.2 When specifically provided for in the Contract Documents or when agreed to in writing by the District and the Contractor, the District may begin using a portion of the work even though it is not Substantially Complete. In such a case, the Contractor, the District and the Engineer shall first agree on and document responsibilities for security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that portion of the work being used by the District. The District, the Contractor and the Engineer shall inspect such portion of the work and shall prepare a list of work to be completed or corrected before final acceptance. The District's use of any portion of the work shall not constitute final acceptance of that portion of the work prior to Final Completion and acceptance of the work as a whole. The District shall allow the Contractor reasonable access to complete or correct work in areas being used by the District. Partial beneficial occupancy shall not relieve the Contractor of Liquidated Damages or waive any of the District's rights under the Contract unless the Contract Documents expressly provide for and identify such portion of the work to be considered Substantially Complete before the remaining portions of the work or waiver of specific District rights.

5.61.3 When the Contractor considers the work nearly complete, the Contractor shall review the Contract Documents, inspect the work and prepare a list of deficiencies (Punch List). When the Punch List is prepared, the Contractor will deliver copies to the Engineer and the District. The Contractor shall complete or correct the items on the Punch List until, in the Contractor's opinion, the work is Substantially Complete and ready for occupancy and use by the District. The Contractor shall then deliver the completed Punch List to the Engineer and notify the

Engineer in writing that the Contractor believes the work is Substantially Complete and ready for Semi-Final Inspection.

5.61.4 After the Contractor notifies the Engineer in writing that it believes the work is substantially complete, the Engineer will conduct the Semi-Final Inspection and may add additional items to the Contractor's Punch List. As a result of this inspection, the Engineer may determine that: (1) the work is not sufficiently complete to warrant a Semi-Final Inspection, additions to the Contractor's Punch List, or the preparation of a Final Punch List; (2) the work is sufficiently complete for the Engineer to prepare a Final Punch List but certain incomplete or Defective work prohibits use of the work for its intended purpose and therefore, the work is not Substantially Complete; or (3) that the work is Substantially Complete and usable for its intended purpose and the Engineer can prepare a Final Punch List. In preceding cases (1) and (2), the Contractor shall continue the work and call for a second Semi-Final Inspection when it believes the work is ready. If the Contractor does not achieve Substantial Completion on the second attempt, it shall reimburse the District the cost of the Engineer's services for additional inspections. In case (3), the Engineer will prepare a Final Punch List and a notice of Substantial Completion, which shall state the time agreed to by the District and the Contractor, not to exceed 30 days, in which the Contractor shall complete all remaining Punch List items and ready the work for Final Inspection. The Engineer shall attach a copy of the Final Punch List to the notice of Substantial Completion. Time to complete punch list items provided in this section 5.61.4 is for the convenience of the District and is intended as a deadline; and therefore, nothing in this section shall extend the time of completion for the fixed in the Contract Documents or excuse the failure of the Contractor to timely deliver the work as complete in accordance with the Contract Documents.

5.61.5 When the Contractor has completed or corrected all items on the Engineer's Final Punch List and has made all required final submittals, the Contractor shall give the Engineer written notice that the work is ready for Final Inspection and acceptance and upon receipt of a final Application for Payment, the Engineer shall make a Final Inspection. If the Engineer finds the work is not fully complete, it shall notify the Contractor of items still requiring completion or correction. The Contractor shall immediately correct these deficiencies and call for a re-inspection. When, on the basis of its knowledge of the work, observations and inspections, the Engineer finds that the work is acceptable and fully complete in accordance with the Contract Documents, and when all final submittals have been made, the Engineer will recommend that the District issue and file a Notice of Completion designating Final Completion of the work, make Final Payment and accept the work in accordance with the terms and conditions of the Contract Documents.

5.61.6 The Engineer's failure to include an item on the Final Punch List, to make the Semi-Final or the Final Inspection, or to recommend final acceptance shall not alter the Contractor's responsibility to complete all work in accordance with the Contract Documents. If any lien or stop notice remains unsatisfied, the Contractor shall immediately take all steps necessary to remove any such lien or stop notice before Final Payment is made.

5.61.7 The making of Final Payment shall constitute a waiver of claims by the Contractor except those arising from:

5.61.7.1 Liens, claims, security interests or encumbrances arising out of the Contract and unsettled;

5.61.7.2 Failure of the work to comply with the requirements of the Contract Documents; or

5.61.7.3 Terms of the one-year guarantee period and special warranties required by the Contract Documents.

5.61.7.4 Any of the Contractor's continuing obligations under the Contract Documents.

5.62 FINAL PAYMENT

Within 10 days after the date of completion and Contractor's delivery to the District of a complete release of all liens arising out of this Contract, or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory of the District to defend and indemnify the District against such liens, the District shall accept the work and file in the office of the County Recorder, a Notice of Completion of the work herein agreed to be done by the Contractor. On the expiration of 40 days after the recordation of such Notice of Completion and there being no liens or stop notices filed, the difference between said final estimate and all payments theretofore made to the Contractor shall be due and payable to the Contractor, subject to any requirements concerning the furnishing of a maintenance bond, and excepting only such sum or sums as may be withheld or deducted in accordance with the provisions of this Contract or as required by law. All prior certifications upon which partial payments may have been made, being merely estimates, shall be subject to correction in the final certificate. In accordance with California Public Contract Code section 7107(c), in the event of a dispute between the District and the Contractor, the District may withhold from the final payment an amount not to exceed 150% of the disputed amount. If any liens are filed or exist after Final Payment is made, the Contractor shall refund to the District all money that the District may be compelled to pay in discharging such liens, including all costs and reasonable attorney's fees.

5.63 FINAL RELEASE

Final payment to the Contractor in accordance with the approved final estimate is contingent upon the Contractor furnishing the District with a signed written waiver and release of all claims against the District arising out of or in any way connected to the Contract. Disputed Contract claims in stated amounts may be specifically excluded by the Contractor from the operation of the waiver and release. The waiver and release shall be substantially in the form provided in Civil Code sections 8138 (Exhibit A) or 8136 (Exhibit B). The Contractor may only use the conditional waiver and release form if the District does not pay all or a portion of the final payment estimate submitted by the Contractor and the Contractor disputes the District's determination on such estimate. In the event the Contractor fails to furnish the District with a signed written waiver and release of all claims against the District arising out of or in any way connected to the Contract, Contractor's acceptance of final payment is Contractor's release of all claims against the District to the fullest extent permitted by law.

UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT (EXHIBIT A)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information

Name of Claimant: _____
Name of Customer: _____
Job Location: _____
Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions
This document does not affect any of the following:
Disputed claims for extras in the amount of: $ _____

Signature
Claimant's Signature: _____
Claimant's Title: _____
Date of Signature: _____

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT (EXHIBIT B)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information
Name of Claimant: _____
Name of Customer: _____
Job Location: _____
Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:
Maker of Check: _____
Amount of Check: $ _____
Check Payable to: _____

Exceptions
This document does not affect any of the following:
Disputed claims for extras in the amount of: $_____

Signature
Claimant's Signature: _____
Claimant's Title: _____
Date of Signature: _____

5.64 RIGHT TO WITHHOLD PAYMENTS

In addition to all other rights and remedies of the District hereunder and by virtue of law, the District may withhold or nullify the whole or any part of any progress payment or withhold up to 150% of the disputed amount from the final payment (see Public Contract Code section 7107(c)) to such extent as may reasonably be necessary to protect the District from loss on account of:

5.64.1 Defective work not remedied, irrespective of when any such work be found to be defective;

5.64.2 Claims or liens filed or reasonable evidence indicating probable filing of claims or liens including, but not limited to, claims under California Labor Code sections 1775, 1776, or 1777.7;

5.64.3 Failure of the Contractor to make payments properly for labor, materials, equipment, or other facilities, or to subcontractors and/or suppliers;

5.64.4 A reasonable doubt that the work can be completed for the balance then unearned;

5.64.5 A reasonable doubt that the Contractor will complete the work within the agreed time limits;

5.64.6 Costs to the District resulting from failure of the Contractor to complete the work within the proper time; or

5.64.7 Damage to work or property.

Whenever the District shall, in accordance herewith, withhold any monies otherwise due the Contractor, written notice of the amount withheld and the reasons therefor will be given the Contractor. After the Contractor has corrected the enumerated deficiencies, the District will promptly pay to the Contractor the amount so withheld. When monies are withheld to protect the District against claims or liens of mechanics, suppliers, materialmen, subcontractors, etc., the District may at its discretion permit the Contractor to deliver a surety bond in terms and amount satisfactory to the District, indemnifying the District against any loss or expense, and upon acceptance thereof by the District, the District shall release to the Contractor monies so withheld.

5.65 WAIVER OF INTEREST

The District shall have no obligation to pay and the Contractor hereby waives the right to recover interest with regard to monies that the District is required to withhold by reason of judgment, order, statute or judicial process, or may withhold pursuant to the provisions of this Contract.

5.66 SATISFACTION OF CLAIMS AND LIENS

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the District, a complete release of all liens and claims

arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as it has knowledge or information the releases and receipts include all the labor and material for which a lien or claim could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the District, to indemnify the District against any lien or claim. If any lien or claim remains unsatisfied after all payments are made, the Contractor shall refund to the District all monies that the latter may be compelled to pay in discharging such a lien, or claim, including all costs and reasonable attorney's fees.

5.67 ASSIGNMENT OF ANTI-TRUST CLAIMS

In accordance with California Public Contract Code section 7103.5, the Contractor hereby offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 U.S.C. section 15) or under the Cartwright Act (Chapter 2 (commencing with section 16700) of part 2 of division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Contract Documents. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

5.68 AVAILABILITY AND AUDIT OF INFORMATION

5.68.1 The District's duly authorized representatives shall have, during the term of the Contract and for three years thereafter, the right to inspect, copy and audit all of the Contractor's and its subcontractors' books, accounts, records, and other material of all description, including but not limited to source documents and computer files, and to interview personnel, pertaining to the Contract to verify or review the quantity, quality, work program and progress of the work, reimbursable costs, amounts claimed by the Contractor, pricing data, estimates of cost for fixed rates including those applicable to proposed changes, and for any other reasonable purposes. “Books,” “accounts,” and “records” as used herein shall include, but not be limited to, original estimates, subcontracts, bids, proposals, purchase orders, books, documents, accounting records, papers, correspondence, project files and scheduling information, including the original Bid and all documents related thereto and to its preparation, the as-planned construction schedule and any related documents.

5.68.2 The Contractor's and its subcontractors' accounts shall be kept in accordance with generally accepted accounting principles in the particular industry and shall be kept in such a manner and in sufficient detail to clearly disclose the nature and amounts of the different items of service and cost pertaining to the Contract and the basis for charges or allocations to the Contract. The Contractor and its subcontractors shall preserve all such accounts and records for a period of three years after the term of the Contract.

5.68.3 The Contractor shall include the necessary provisions in its subcontracts to ensure that its subcontractors comply with this provision.

5.68.4 The parties acknowledge that this Contract, and performance and payments under this Contract, are subject to examination and audit by the State Auditor

General for three years following final payment under this Contract pursuant to California Government Code section 8546.7.

5.69 INTEGRATION

The Contract Documents constitute the sole, final, complete, exclusive and integrated expression and statement of the terms of this contract among the parties concerning the subject matter addressed herein, and supersedes all prior negotiations, representations or agreements, either oral or written, that may be related to the subject matter of this Contract, except those other documents that are expressly referenced in the Contract Documents.

5.70 COUNTERPARTS AND ELECTRONIC SIGNATURES

The Contract Documents may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute the same instrument or instruments. Counterparts may be delivered by facsimile, electronic mail (including PDF or any electronic signature complying with California's Uniform Electronic Transactions Act (Cal. Civ. Code, §1633.1, et seq.) or any other applicable law) or other transmission method. The parties agree that any electronic signatures appearing on the Contract Documents are the same as handwritten signatures for the purposes of validity, enforceability, and admissibility.

5.71 WAIVER

The waiver at any time by any party of its rights with respect to a default or other matter arising in connection with this Contract shall not be deemed a waiver with respect to any subsequent default or matter.

5.72 REMEDIES NOT EXCLUSIVE

The remedies provided in this Contract are cumulative and not exclusive, and are in addition to any other remedies that may be provided by law or equity. The exercise by either party of any remedy under this Contract shall be without prejudice to the enforcement of any other remedy.

5.73 SEVERABILITY

The invalidity, illegality or unenforceability of any provision of the Contract Documents shall not render the other provisions unenforceable, invalid or illegal.

5.74 GOVERNING LAW AND VENUE

Except as otherwise required by law, this Contract shall be interpreted, governed by, and construed under the laws of the State of California. The County shall be venue for any litigation concerning the enforcement or construction of this Contract.

5.75 NOTICES

Any notice, demand, invoice or other communication required or permitted to be given under this Contract shall be in writing and either served personally or sent by prepaid, first class U.S. mail and addressed as follows: for the District, either to the Engineer or the District at the addresses set forth in the Invitation to Bid; for the Contractor, at the address set forth in its Bid. Any party may change its address by notifying the other party in writing of the change of address.

(END OF GENERAL CONDITIONS.)

Attachment B

Xylem Water Solutions USA, Inc.
Flygt Products

790-A Chadbourne Rd
Fairfield, CA 94534
Tel (707) 422-9894
Fax (707) 422-9808

January 9, 2025

RANCHO MURIETA COMMUNITY SERV
15160 JACKSON RD
PO BOX 1050
RANCHO MURIETA CA 95683

Quote # 2024-FFB-0516
Project Name: Rancho Murieta
Job Name: Alameda LS

Flygt, a Xylem brand, is pleased to provide a quote for the following equipment.

Equipment

Qty	Part Number	Description	Unit Price	Extended Price
1	3069.070-0134	Flygt Model NX-3069.070 2.5" volute Submersible pump equipped with a 208 Volt / 3 phase / 60 Hz 2.7 HP 3550 RPM motor, 276 impeller50 Ft. length of SUBCAB 4G2,5+2x1,5 submersible cable, FLS leakage detector	$ 6,391.30	$ 6,391.30
1	807 11 60	KIT,INSTALLATION	$ 216.00	$ 216.00
1	444 68 05	CONNECTION,DISCH 3X3" CI	$ 1,027.80	$ 1,027.80
1	14-59 00 00	KIT,HARDWARE 3/8IN SS (2X)	$ 83.70	$ 83.70
1	14-58 91 06	HOOK,SAFETY ASSEMBLY SS	$ 180.00	$ 180.00
10	14-48 71 13	CHAIN,3/16" 316L	$ 9.90	$ 99.00
1	14-58 72 08	KIT,CHAIN FITTING 3067-3127+ 316SS	$ 164.70	$ 164.70
1	14-48 51 46	COVER,ACCESS 36X36 FLEC-7AOSH+ ALUM	$ 1,920.60	$ 1,920.60
1	14-40 71 29	MINI-CASII/FUS 120/24VAC,24VDC	$ 721.80	$ 721.80
1	14-40 71 30	SOCKET,11-PIN BACK MOUNTING	$ 119.70	$ 119.70

Services

Qty	Part Number	Description	Unit Price	Extended Price
1	14-69 00 09A	START UP,FLYGT,NO TAX 1-TP MODELS: 3000,7000,8000	$ 1,489.50	$ 1,489.50

Spares

Qty	Part Number	Description	Unit Price	Extended Price

FLYGT
a xylem brand

Qty	Part Number	Description	Unit Price	Extended Price
1	3069.070-0134	Flygt Model NX-3069.070 2.5" volute Submersible pump equipped with a 208 Volt / 3 phase / 60 Hz 2.7 HP 3550 RPM motor, 276 impeller50 Ft. length of SUBCAB 4G2,5+2x1,5 submersible cable, FLS leakage detector	$ 6,391.30	$ 6,391.30
1	801 01 01	KIT,REPAIR BASIC 3069	$ 831.60	$ 831.60
1	84 37 98	GROMMET,NBR 18.5ID 35OD 24L	$ 16.20	$ 16.20
1	678 58 18	CLIP,CABLE PLASTIC	$ 33.30	$ 33.30
1	14-40 71 29	MINI-CASII/FUS 120/24VAC,24VDC	$ 721.80	$ 721.80
		Total Price		**$ 20,408.30**
		Freight Charge		**$ 998.00**
		Total Price		**$ 21,406.30**

Terms & Conditions

This order is subject to the Standard Terms and Conditions of Sale – Xylem Americas effective on the date the order is accepted which terms are available at http://www.xyleminc.com/en-us/Pages/terms-conditions-of-sale.aspx and incorporated herein by reference and made a part of the agreement between the parties.

As of October 14, 2024, all orders must meet a minimum dollar value of $1,200. Xylem reserves the right to refuse to process any order that does not meet the minimum order value requirement. Xylem will support order adjustments to meet the minimum order value threshold.

Purchase Orders: Please make purchase orders out to: Xylem Water Solutions USA, Inc.

Freight Terms: 3 DAP - Delivered At Place 08 - Jobsite (per IncoTerms 2020)
See Freight Payment (Delivery Terms) below.

Taxes: State, local and other applicable taxes are not included in this quotation.

Back Charges: Buyer shall not make purchases nor shall Buyer incur any labor that would result in a back charge to Seller without prior written consent of an authorized employee of Seller.

Tariff Changes: The prices quoted herein are based on the current tariff rates, duties, government charges, and trade regulations as of the date of this quote. If any new tariffs, duties, taxes, or similar charges are imposed, or any existing tariffs, duties, or charges are increased or modified by any government or regulatory authority (collectively, "Tariff Changes"), and such Tariff Changes result in an increase in the cost of goods, Xylem reserves the right to adjust the pricing of the affected goods to reflect the increased costs.

Shortages: Xylem will not be responsible for apparent shipment shortages or damages incurred in shipment that are not reported within two weeks from delivery to the

jobsite. Damages should be noted on the receiving slip and the truck driver advised of the damages. Please contact our office as soon as possible to report damages or shortages so that replacement items can be shipped and the appropriate claims made.

Time of delivery: Please consult your local Flygt Branch Office to get fabrication and delivery lead times.

Terms of delivery: PP/Add Order Position

Terms of payment: 100% Net 30 days following shipment date.

Schedule: Please consult your local Flygt Branch Office to get fabrication and delivery lead times.

Validity: This Quote is valid for thirty (30) days.
Please note that this pricing is valid for 30 days and contingent upon final approval of submittals and release to fabrication by (within 90 days of bid date).
This quotation is subject to change if any changes to the specifications or plans are made that alter the scope of supply.

We thank you for your interest in Flygt equipment from Xylem Water Solutions USA, Inc., and look forward to being of service to you in the near future.

Sincerely,

Adrian Gutierrez
Sales Representative
Phone: 508-274-4643

adrian.gutierrez@xylem.com

FLYGT
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Customer Acceptance

This order is subject to the Standard Terms and Conditions of Sale – Xylem Americas effective on the date the order is accepted which terms are available at http://www.xyleminc.com/en-us/Pages/terms-conditions-of-sale.aspx and incorporated herein by reference and made a part of the agreement between the parties.

A signed copy of this Quote is acceptable as a binding contract.

Purchase Orders: Please make purchase orders out to: Xylem Water Solutions USA, Inc.

Quote #:	2024-FFB-0516
Customer Name:	RANCHO MURIETA COMMUNITY SERV
Job Name:	Alameda LS
Total Amount: (excluding freight)	$ 20,408.30

Signature: _____ Name:_____
(PLEASE PRINT)

Company/Utility:_____ PO:_____

Address:_____ Date:_____

_____ Phone:_____

_____ Email:_____

_____ Fax:_____

FLYGT

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Introducing the Xylem Preventative Maintenance Agreement

Don't forget to protect your new assets

Thank you for considering Xylem for your pumping equipment needs. We appreciate the significance of your purchase decision and want to ensure you get the most out of your investment. The most cost-effective way to do this is to sign-up for a preventative maintenance agreement (PMA) that we tailor to your specific requirements and budget. A Xylem PMA offers a proven method to extend your equipment life, prevent expensive repairs and minimize unplanned failures. It's also ensures you remain in compliance with environmental, health and other government regulations – critical to maximizing operation uptime.

Our Flygt Gold PMA Includes:

- One scheduled preventative maintenance service visit with multi-point inspection, 12 months after purchase and discounted access to Xylem's rental fleet
- An additional 12-month warranty when purchased with your new or replacement Flygt pump(s)
- The option to renew annually or on a multi-year basis following the first service visit
- Priority service on repairs and field service calls

** Flat-Rate Pricing is available for new and replacement Flygt models 3069, 3085, 3102, 3127, 3153, 3171, 3202, 3301 & 3315 starting at $500 per pump.*

Multi-year PMA packages are available as well.
Contact your Xylem Sales Representative today for more information.

Visit our PMA site for more info

xylem
Let's Solve Water

WARRANTY
Xylem Water Solutions USA, Inc.

For the period defined, Xylem Water Solutions USA, Inc. offers a commercial warranty to the original End Purchaser against defects in workmanship and material on Flygt Products. Warranty covers Flygt parts and labor as outlined in **ADDENDUM – A**.

COVERAGE:
Xylem Water Solutions USA, Inc. will pay the cost of parts and labor during the warranty period, provided that the Flygt product, with cable attached, is returned prepaid to a Xylem Water Solutions USA, Inc. Authorized Service Facility for Flygt Product repairs. Coverage for Flygt parts and labor will be provided for the period shown in **ADDENDUM - A.** The warranty period will begin from date of shipment or date of a valid Start-up (For permanently installed pumps only). In cases where the Start-up date is used as the beginning of the warranty on a permanently installed Flygt pump, a Start-up Report completed by an approved service technician from a Xylem Water Solutions USA, Inc. Authorized Service Facility for Flygt products must be received by the Xylem Water Solutions USA, Inc. Area Service Manager for Flygt Products within thirty (30) days of the initial onset of the unit placed into service. If not received, the beginning of the warranty coverage will default to the Flygt product ship date. A Start-up for a permanently installed Flygt pump must occur within one (1) year from the date of shipment from a Xylem Water Solutions USA, Inc. authorized facility for Flygt Products or warranty will automatically default to ship date as start of warranty. (See **STORAGE** section) When using the start-up date as the beginning of the warranty, a copy of the Start-up Report will be required to support any Warranty Claims. Warranty on Flygt Dewatering pumps will begin with ship date only. No other date on Flygt Dewatering pumps will be considered.

Xylem Water Solutions USA, Inc.'s sole obligation under this Warranty for Flygt Products shall be to replace, repair or grant credit for Flygt Products upon Xylem Water Solutions USA, Inc.'s exclusive determination that the Flygt Product does not conform to the above warranty. In the event that the Flygt product is replaced, warranty on the replacement product will be equal to the balance remaining on the original product or ninety (90) days, which ever is greater.

MISUSE:
This Warranty shall not apply to any Flygt product or part of Flygt product which (i) has been subjected to misuse, misapplication, accident, alteration, neglect, or physical damage (ii) has been installed, operated, used and/or maintained in a manner which is in an application that is contrary to Xylem Water Solutions USA, Inc.'s printed instructions as it pertains to installation, operation and maintenance of Flygt Products, including but without limitation to (iii) operation of equipment without being connected to monitoring devices supplied with specific products for protection; or (iv) damaged due to a defective power supply, improper electrical protection, faulty installation or repair, ordinary wear and tear, corrosion or chemical attack, an act of God, an act of war or by an act of terrorism; or (v) has been damaged resulting from the use of accessory equipment not sold by Xylem Water Solutions USA, Inc. or not approved by Xylem Water Solutions USA, Inc. in connection with Flygt products.

WEAR PARTS:
This warranty does not cover costs for standard and/or scheduled maintenance performed, nor does it cover Flygt parts that, by virtue of their operation, require replacement through normal wear (aka: Wear Parts), unless a defect in material or workmanship can be determined by Xylem Water Solutions USA, Inc.. Wear Parts are defined as Cutters, Cutting Plates, Impellers, Agitators, Diffusers, Wear Rings (Stationary or Rotating), Volutes (when used in an abrasive environment), oil, grease, cooling fluids and/or any items deemed necessary to perform and meet the requirements of normal maintenance on all Flygt equipment.

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WARRANTY
Xylem Water Solutions USA, Inc.

DISCLAIMERS:
(i) Xylem Water Solutions USA, Inc.'s warranties are null and void when Flygt Products are exported outside of the United States of America without the knowledge and written consent of Xylem Water Solutions USA, Inc.; (ii) Xylem Water Solutions USA, Inc. makes no independent warranty or representation with respect to parts or products manufactured by others and provided by Xylem Water Solutions USA, Inc. (however, Xylem Water Solutions USA, Inc. will extend to the Purchaser any warranty received from Xylem Water Solutions USA, Inc.'s supplier for such parts or products).

LIMITATIONS:
XYLEM WATER SOLUTIONS USA, INC. NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON OR COMPANY TO ASSUME FOR XYLEM WATER SOLUTIONS USA, INC., ANY OTHER OBLIGATION IN CONNECTION WITH THE SALE OF ITS FLYGT EQUIPMENT. ANY ENLARGEMENT OR MODIFICATION OF THIS WARRANTY BY A FLYGT PRODUCT DISTRIBUTOR, OR OTHER SELLING AGENT SHALL BECOME THE EXCLUSIVE RESPONSIBILITY OF SUCH ENTITY.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, GUARANTEES, CONDITIONS OR TERMS OF WHATEVER NATURE RELATING TO FLYGT PRODUCT(S), INCLUDING AND WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED. PURCHASER'S EXCLUSIVE REMEDY AND XYLEM WATER SOLUTIONS USA, INC.'S AGGREGATE LIABILITY FOR BREACH OF ANY OF THE FOREGOING WARRANTIES IS LIMITED TO REPAIRING OR REPLACING FLYGT PRODUCTS AND SHALL IN ALL CASES BE LIMITED TO THE AMOUNT PAID BY THE PURCHASER HEREUNDER. IN NO EVENT IS XYLEM WATER SOLUTIONS USA, INC. LIABLE FOR ANY OTHER FORM OF DAMAGES, WHETHER DIRECT, INDIRECT, LIQUIDATED, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF PROFIT, LOSS OF ANTICIPATED SAVINGS OR REVENUE, LOSS OF INCOME, LOSS OF BUSINESS, LOSS OF PRODUCTION, LOSS OF OPPORTUNITY OR LOSS OF REPUTATION.

XYLEM WATER SOLUTIONS USA, INC. WILL NOT BE HELD RESPONSIBLE FOR TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR'S FEES, OR ANY EXPENSES ASSOCIATED WITH A FLYGT PRODUCT REPAIR SHOP NOT AUTHORIZED BY XYLEM WATER SOLUTIONS USA, INC. U.S.A., INC. REIMBURSEMENT COSTS FOR CRANES AND/OR ANY SPECIAL EQUIPMENT USED IN CONJUNCTION FOR THE REMOVAL AND/OR REINSTALLATION OF ANY FLYGT EQUIPMENT IS NOT COVERED UNDER THIS WARRANTY.

ANY UNAUTHORIZED ALTERATIONS TO SUPPLIED FLYGT EQUIPMENT USED WITHOUT XYLEM WATER SOLUTIONS USA, INC. SUPPLIED FLYGT BRAND CABLE OR CONTROLS WILL NOT BE COVERED UNDER THIS WARRANTY, UNLESS IT CAN BE PROVEN SUCH ANCILLARY EQUIPMENT IS SUITABLE FOR THE PURPOSE AND EQUAL TO XYLEM WATER SOLUTIONS USA, INC. SUPPLIED FLYGT BRAND CABLES OR CONTROLS THAT WOULD ORIGINALLY HAVE BEEN SUPPLIED WITH THE TYPE OF EQUIPMENT IN USE.

REQUIREMENTS:
A copy of Electrical System Schematics of the Control used (including a Control's Bill of Material) could be required to support a Warranty Claim when a non Flygt Brand Control is used. In addition, a written record, hereby known as "the log", will be associated with each unit serial number and must be maintained by the organization having product maintenance responsibility. The log must record each preventative maintenance activity and any repair activity during the life of the warranty or verification that a Xylem Water Solutions USA, Inc. authorized Service Contract for Flygt Products is in force and must be available for review and/or auditing. Failure to meet these conditions could render this warrant null and void. Such logs could be required to determine warranty coverage.

WARRANTY
Xylem Water Solutions USA, Inc.

STORAGE:
Should a delay occur between ship date and the date of start-up, maintenance as outlined in Xylem Water Solutions USA, Inc.'s Care & Maintenance Manual for Flygt Products must be performed by the "CONTRACTOR" and/or "OWNER" during any such period of storage. Documentation providing proof and outlining what maintenance was performed must be provided to Xylem Water Solutions USA, Inc. or its Flygt Products representative within thirty (30) days of said maintenance, or the Xylem Water Solutions USA, Inc. warranty for Flygt Products could be considered void.

CONTROLS:
Warranty coverage for permanently installed controls will start for the end purchaser on the date of shipment. This warranty does not apply to controls that have been damaged due to a defective and/or improper input power supply, improper electrical protection, accidental damage, improper or unauthorized installation and/or repair, unauthorized alteration, negligence, environmental corrosion or chemical attack, improper maintenance or storage of control, any act of God, an act of war, an act of terrorism or damage resulting from the use of accessory equipment not approved by Xylem Water Solutions USA, Inc.. Further, this warranty does not apply in the event an adjustment is found to correct the alleged defect.

Solid state devices will be covered for a period of one (1) year except in the Flygt Standard Control Panel (FSCP) where the solid state devices will be covered for the full warranty period of the control panel. Electrical control panels containing controllers, PLC's, drives, soft starts, and other computerized equipment will require Transient Voltage Surge Suppression (TVSS) protection in order to satisfy the requirements of this warranty. The protection equipment associated with the control must be kept in working condition during the life of the warranty. Auxiliary equipment supplied with the control (air-conditioners etc.) is limited by the respective original equipment manufacturer's warranty offered. Consumable items such as: light bulbs, fuses, and relays are covered under normal operating conditions. Electrical surges experienced during startups and/or during normal operating use of the control panel will cause the consumable items not to be covered under this warranty policy. Components not supplied by Xylem Water Solutions USA, Inc. will not covered by this warranty.

TOP (The Optimum Pump Station)
Xylem Water Solutions USA, Inc. will warrant the Flygt TOP pre-engineered fiberglass pump station components against defects in material and workmanship for a period of one (1) year from date of start-up or eighteen (18) months from date of shipment and is valid only to the original owner of the station. Warranty shall cover the cost of labor and materials required to correct any warrantable defect, excluding any removal and reinstallation costs, FOB Xylem Water Solutions USA, Inc.'s authorized warranty service location for Flygt's TOP.

Flygt Products contained within a TOP pre-engineered fiberglass pump station will carry the standard Xylem Water Solutions USA, Inc. warranty for Flygt products and/or accessories installed in the TOP pre-engineered fiberglass pump station.

All Flygt Product restrictions and/or limitations as outlined and described within the context of this warranty are germane to all sections of this Xylem Water Solutions USA, Inc. Warranty document.

Xylem Water Solutions USA, Inc.
National Quality Assurance - US Corporate

WARRANTY
Xylem Water Solutions USA, Inc.

ADDENDUM – WARRANTY COVERAGE BY PRODUCT

PRODUCT	PRODUCT SERIES AND CONFIGURATION	Months 1 - 12	Months 13 - 18	Months 19 - 36	Months 37 - 39	Months 40 - 60
Axial Flow/ Mixed Flow/ Centrifugal Pumps & Mixers	3000 Series (CP, NP, DP, CT, NT, CZ, NZ, LL) 4000 Series (SR, PP) 7000 Series (PL)	100%		50%		25%
Flygt Standard Control Panels (FSCP)	Standard Control Panels (FSCP – permanently installed)	100% (From Ship Date)				
ETO Electrical Control Panels	Engineered to Order, Xylem Manufactured Control Panels (permanently installed) - 3 Years	100% - 1 YR	LIMITED - 2 - YR			
Abrasion/Corrosion Resistant & Chopper/ Grinder Pumps	3000 Series (MP, MF, MH, FP, FS, FT, HP, HS) 5000 Series (HP, HS) 8000.280 Series (DP, DZ, DT, DS, DF)	100%				
Dewatering Pumps	2000 Series (BS, KS) 3000 Series (CS, NS, DS) 8000.280 Series (DS, DF)	100% (From Ship Date)				
TOPS	Fiberglass Pump Station	100% (From Ship Date)				
Accessories	Permanent / Portable	100% (From Ship Date)				
Hydro ejectors/ Aerators	HE, JA	100%				
Portable Pump Controls TOPS Control Panels	Control Boxes (Nolta, MSHA etc.) TOPS control panels (permanently installed)	100% (From Ship Date)				
Small Pumps	3045, 3057, SX	100% (From Ship Date)				
Parts - *	All new Flygt parts (mechanical & electrical)	100% (From Ship Date)				

* - Parts that fail where used in a repair are warranted for one (1) year from the date of the repair for the failed part only – no labor; This Includes Flygt pump controllers, Flygt supervision equipment, Flygt submersible level transducers, etc.

Attachment C

SECTION 02 00 00
SITE CONDITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Location
2. Weather Conditions
3. Elevations
4. Naturally Occurring Asbestos

1.02 LOCATION

A. Approximate Coordinates: N 38.494° W 121.089°

1.03 WEATHER CONDITIONS

A. Below freezing conditions may exist during the winter months.

B. 100 degree plus temperatures exist during the summer months.

1.04 ELEVATION

A. Approximately 175 ft.

1.05 NATURALLY OCCURRING ASBESTOS (NOA)

A. The lift station site is located inside an area moderately likely to contain asbestos or fault line.

B. If while excavating the contractor sees any materials which appear to contain asbestos fibers, the Contractor is to stop excavation and report the findings to the District immediately.

END OF SECTION

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SECTION 02 00 70

CONSTRUCTION PHOTOGRAPHY

PART 1 - GENERAL

1.01 DESCRIPTION

A. Construction photography is required to document:

1. Pre-construction conditions
2. Construction activities
3. Post-construction conditions.

B. Photographs will be particularly useful in documenting the pre-construction conditions of private properties, landscaping, streets, existing facilities, etc.

1.02 RELATED REQUIREMENTS

A. General Conditions

B. Special Provisions

1.03 USE OF PHOTOGRAPHY

A. Pre-Construction photography will be used in part to establish pre-construction conditions. Disputes with property owners will be settled through the use of construction photos that will document pre-construction conditions. In the event that the Contractor fails to adequately document pre-construction conditions, the Contractor will be obligated to restore disputed landscaping, yards improvements, etc. to the satisfaction of the property owner.

B. Contractor shall provide a high-definition video of the work area prior to construction to document the condition of the roadways, driveways and other facilities along the construction corridor.

PART 2 - PRODUCTS

2.01 FORMAT

A. Format of the photography shall be as follows:

1. All photographs shall be in digital format (.jpg) with date stamp, delivered to the District on a USB device.
2. Photographs shall be color photos and be taken with a high-quality camera rated at a minimum of 10 megapixels.
3. Video shall be in digital format with date stamp on a USB device.

2.02 DATABASE

A. The photos shall be described in a spreadsheet, (MS-Excel) that will be used for indexing digital photographs.

B. The spreadsheet shall have the following tabs:

1. Pre-construction photographs,
2. Construction photographs,
3. Post-construction photographs.

C. Each tab shall have the following fields:

1. Location (Address or coordinates)
2. Filename
3. Approximate direction picture was taken
4. Notes

D. The Contractor shall populate the fields indicated for each of the digital photos. Accurate information is especially needed for photos which depict:

1. Each residence affected by the project,
2. Public rights-of-way,
3. Other sensitive areas as necessary.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION DOCUMENTATION

A. Prior to construction, the Contractor will document the conditions of all surface features of the affected areas. This documentation shall be in the format as noted above.

B. The Contractor is obligated to document the Pre-Construction conditions sufficiently to avoid disputes with property owners and the County regarding the quality of post-construction repairs.

C. The photographer shall use signs in each photograph that clearly identify each photo by location for properties and street name and station number for road work.

D. Pre-Construction video coverage shall include (at a minimum):

1. The ground surface above all pipes to be placed.
2. All driveways in the project vicinity which construction equipment may access.
3. All curb, gutter and road shoulders, and other surface features in the project vicinity that construction equipment might damage.

E. Submit one pre-construction video to the Rancho Murieta Community Services District prior to beginning construction. Video shall be labeled with the title, “Pre-Construction Video”, the name of the project, name of the Contractor, and date(s) of videotaping. The video photographer should include enough narrative to let a viewer know the time, date, and location of each separate area shown.

F. Pre-Construction photographs shall include a minimum of two photos from all residential properties that will be excavated. Photos should focus on areas that will be disturbed by the work.

G. Prior to the beginning of construction, the Contractor shall submit a USB device to the Engineer containing the following information:

1. Photography table with an index as described above.
2. All photographs taken

3.02 CONSTRUCTION PHOTOGRAPHS

A. The Contractor shall use construction photographs to document the progress of construction activities, unusual situations, repairs made to buried improvements, accidents, construction disputes, and any other conditions that may be useful in the future. The use of construction photographs should be for the Contractor’s benefit to document work completed.

B. The Contractor shall supply photographs each time a utility is exposed with location and details of the condition noted.

3.03 POST CONSTRUCTION DOCUMENTATION

A. Provide Post-Construction photographs. Post-Construction photographs will include photos of the completed and repaired work areas. Photos will include enough detail to demonstrate that the Contractor has performed repair and clean-up work. At a minimum, each site that was photographed for a pre-construction photo shall be re-photographed for the post-construction documentation.

B. Following completion of construction, the Contractor shall submit to the District a USB device with the following information:

   1. Photography table with links to color photographs for each location. Links to pre-construction photographs, construction photographs, and post-construction photographs are all required to be completed at this time. This final submittal shall contain all photographs taken and is to replace all USB devices previously submitted to the District.

C. Post-Construction video shall be made that documents the post-construction conditions of the project sites. Again, the video should include footage of all areas shown in the pre-construction video. Also, the video should include any sensitive areas as indicated by property owner's feedback and concerns.

D. Submit one copy of each post-construction video to the Engineer immediately following completion of the work and prior to the final payment. Video shall be labeled with title, "Post-Construction Video", the name of the project, name of the Contractor, and date(s) of videotaping. The video photographer should include enough narrative to let a viewer know the time, date and location of each separate area shown.

END OF SECTION

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SECTION 02 11 50
EXISTING FACILITIES

PART 1 - GENERAL

1.01 SCOPE

A. This work shall consist of identifying, protecting, and relocating existing facilities within the area of work. No relocation shall occur without written approval from the affected agency.

B. Any relocation work required shall be performed to comply with the details and specifications of the affected agency.

PART 2 - MATERIALS

2.01 SCOPE

A. The Contractor shall provide all materials and equipment to accomplish the work described. Materials shall comply with the governing agency specifications.

PART 3 - EXECUTION

3.01 PROTECTION OF FACILITIES

A. The Contractor shall take all necessary measures to avoid injury to existing surface and underground utility facilities in and near the site of the work. No error or omission on the drawings shall be construed to relieve the Contractor from his responsibility to protect all underground pipes, conduits, cables or other structures. The Contractor shall indemnify the District and the Design Engineer and hold it harmless from any and all claims, demands, or liability made or asserted by any person or entity on account of, or in connection with any damage to such surface or underground facilities caused by the Contractor or any of his agents or subcontractors.

3.02 EXISTING UTILITIES

A. The drawings for the work show the underground utilities on the site insofar as they are known. The drawings may not show facilities apparent from visual inspection of the site or service laterals or appurtenances, the existence of which can be inferred from the presence of other visible facilities such as buildings, meters, junction boxes, etc., on or adjacent to the construction site.

3.03 RELOCATION OF EXISTING UTILITIES

A. The Contractor shall make all arrangements for, and pay all costs connected with, any necessary relocation of existing surface and underground utility facilities (including without limitation, services, conduits, pipes, and mains) affecting the project or the work to be performed under these specifications.

3.04 UNIDENTIFIED EXISTING UTILITIES

A. If, in the performance of the work, an existing facility is encountered which is not shown on the drawings and is not apparent or inferable from visual inspection of the site, the Inspector shall be notified immediately. The District will determine whether the drawings or specifications shall be modified, or whether existing utility shall be

relocated or whether the Contractor shall work around the existing utility. If appropriate, the determination of the District shall be incorporated in a Change Order for extra work pursuant to the General Conditions. This in no way releases the requirement that all existing utilities must be potholed.

END OF SECTION

SECTION 02 40 00

DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Demolition, removal, saw-cutting and disposal of onsite materials.

1.02 JOB CONDITIONS

A. The Contractor shall determine the actual condition of the site as it affects the Work.

B. In General, the demolition will include:

1. The saw-cutting, removal and disposal of any material, debris and appurtenances as required to complete the work.
2. Other demolition as required to complete the work.

1.03 QUALITY ASSURANCE

A. General: All work shall be performed in accordance with the local building codes, State Industrial Safety Orders and requirements of the Occupational Safety and Health Act requirements.

B. Schedule

1. Demolition must be scheduled to allow all existing services and utilities to remain in continuous operation as long as possible.
2. No interruption in operation will be permitted without prior authorization from the District.
3. Contractor shall provide any temporary means and facilities required to keep the required services in operation when the normal means requires interruption. This includes pumping sewage around the worksite.

C. Protection

1. Demolition shall be performed in such a manner as to not harm adjacent structures, equipment, existing landscaping or natural vegetation.
   a. The Contractor shall assume full responsibility for such disturbance.
   b. All costs of any such repair, rehabilitation, or modifications shall be borne by the Contractor.
   c. Existing facilities not scheduled for demolition, which are damaged by construction activities, shall be repaired or replaced at the District's discretion and at the Contractor's expense.
2. The Contractor shall provide such protection and means as may be required to transfer material to the ground.
   a. Throwing, dropping or permitting the free fall of material and debris from heights which would cause damage to other work, existing structures, or equipment; undue noise or nuisance; or excessive dust is expressly prohibited.

D. Protect existing trees and other vegetation to remain against damage.

1. Do not smother trees by stockpiling construction materials or excavated materials within drip line.
2. Do not permit foot or vehicular traffic or parking of vehicles within drip line.
3. Provide temporary protection as required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall notify the District when demolition is complete.

3.02 REMOVED MATERIAL, DEBRIS AND DISPOSAL

A. Where Contractor is directed on the Drawings to “Demolish” or “Remove” material or facilities it is understood that the material will be removed and disposed of offsite unless specifically stated otherwise or directed by the Owner’s Representative.

B. All removed material and debris shall become the property of the Contractor and shall be removed from the site.

C. Materials and debris generated by demolition activities shall not be allowed to accumulate. Debris shall be removed daily and disposed of in a lawful manner.

D. Contractor shall legally haul and dispose of debris material from demolition operations. No additional payment will be made for hauling or disposal costs.

3.03 RESTORATION

A. Restore adjacent structures and facilities damaged during demolition or other construction to original or better condition.

END OF SECTION

SECTION 02 49 10

LANDSCAPE REPAIRS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, equipment, and materials necessary to perform the following work as indicated on the drawings and specified herein:

1. Finish Grading
2. General Restoration
3. Soil Preparation
4. Clean Up
5. Maintenance
6. Guarantee

1.02 EXISTING CONDITIONS

A. Before submitting bid, the Contractor shall visit the site and become familiar with all conditions relative to landscaping, elevations, soils, area of work, clearances, etc.; no extra payment will be allowed for work occasioned by improper appraisal of existing conditions. Contractor shall document existing conditions with photographs and video per Specification 02 00 70 and the Contract Documents.

B. Existing landscaping shall be preserved wherever possible.

1.03 WORK ON PRIVATE PROPERTY

A. Contractor shall document existing conditions with photographs and video per Specification 02 00 70 and the Contract Documents.

B. The Contractor is made aware that portions of the project require work on private property. The Contractor is responsible for coordinating with individual property owners and ensuring that all property is restored to pre-construction conditions. Contractor shall provide evidence of private property owner final approval of restored conditions prior to final completion. No final payment or release of retention will be allowed until approvals are submitted.

1.04 LIKE LANDSCAPING

A. Contractor shall replace all damaged landscaping with vegetation similar in variety, size, and shape to the existing landscaping. In the event that like landscaping is not commercially available, the Contractor shall coordinate with the property owner for a replacement.

1.05 HARDSCAPING

A. Concrete, asphalt, and other hardscaping shall be sawcut as appropriate and replaced per the approved property owner agreement to the limits provided.

B. Where saw cutting of driveways is necessary, the effected portion shall be replaced with asphalt or concrete to match existing material to the limits provided in the approved property owner agreement.

C. Contractor’s personnel physically performing this replacement work shall have a minimum of five (5) years experience in performing related hardscape work and shall demonstrate a high level of competence.

1.06 RELATED WORK AND REFERENCES

A. Section 02 22 10 - Trenching Excavation, Backfilling and Compacting

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

B. Deliver vegetation to the site in a protective manner to ensure it is intact and alive.

PART 2 - MATERIALS

2.01 SOIL CONDITIONER

A. Shall be treated bark, 1/4" size, Vita-Bark Nursery Mix, or equal.

2.02 GROWING MEDIA

A. Topsoil: Natural, fertile, agricultural soil capable of sustaining vigorous plant growth, not in frozen or muddy condition, containing not less than six (6) percent organic matter, and corrected to pH value of 5.9 to 7.0. Free from subsoil, slag, clay, stones, lumps, live plants, roots, sticks, crabgrass, coughgrass, noxious weeds, and foreign matter. Not exceeding twelve (12) inches in depth.

B. Fertilizer: Use commercial fertilizer formulation required by soil analysis. Deliver fertilizer mixed as specified in standard size bags showing weight, analysis, name of manufacturer. Store in a weatherproof storage location in such a manner that it will be kept dry and its effectiveness will not be impaired.

2.03 HYDRO MULCH AND SEEDING

A. Provide hydro-mulch and seeding for any lawn or landscape area disturbed as directed by the Engineer.

B. Hydro-mulch and seed mixtures to be approved by the Engineer.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION DOCUMENTATION

A. Prior to construction, the Contractor will document the conditions of all surface features of the affected areas through photographs and video per Specification 02 00 70.

3.02 FINISH GRADING

A. Drainage: make entire area within contract lines smooth and even and insure adequate drainage of all areas. There shall be no depressed areas where water is trapped creating wet areas. Should this be discovered by the District before or after completion of the landscape, the Contractor shall correct the problem at no expense to the District.

B. Finish Grades: Insure that finish grades shall be 1/2" below surface of paved areas.

C. Scars: Eliminate any erosion or construction scars.

3.03 SOIL PREPARATION

A. All areas to be seeded or shrub planting beds shall be cleared and weeded. Fertilizer shall be applied in accordance with the recommendations of the nursery supplying the plants.

3.04 PLANTING

A. Trees: Plant and stake trees in accordance with supplying nursery recommendations.

B. Shrubs: Plant and support shrubs in accordance with supplying nursery recommendations.

3.05 WEED CONTROL

A. Apply pre-emergent weed control to all shrub planting beds after completion of all planting. Follow manufacturer's direction. Do not allow any weed control in the seeded areas. After applying the pre-emergent weed control, do not over-water any areas to prevent the washing away of pre-emergent weed control.

3.06 MAINTENANCE

A. Until District Acceptance:

1. A two-month maintenance period will commence upon completion of the repairs and/or tree and shrub planting as verified by the District as a result of an on-site visit. The Contractor shall request this on-site visit, in writing, five days in advance.
2. Completion of the maintenance period shall be verified by another on-site visit. The Contractor shall also request this on-site visit, in writing, five days in advance. If landscaping or maintenance is unacceptable, the maintenance period shall continue until final acceptance of the work by the District.

B. Replacements: All dead plant materials and all plants not in a vigorous growing condition at the end of the maintenance period shall be replaced as weather conditions permit. Plants used for replacement shall be of the same variety and size (where possible) as those originally planted and shall be planted as specified.

C. Maintenance: Maintenance shall include all watering, reseeding, spraying, pruning, and weeding necessary to keep the planting areas neat and attractive throughout the maintenance period.

D. The Contractor is not expected to engage in long term maintenance of the newly planted areas. However, he shall maintain the plants until the completion of the two-month maintenance period. While the Contractor is maintaining the plants, the following conditions shall be met.

1. Water as needed to promote growth and health of the plants. Deep watering of the plants/shrubs shall comply with supplier’s recommendation.
2. Replant damaged areas.
3. Control growth of weeds. When using herbicides, apply in accordance with manufacturer's recommendations. Remedy damage resulting from negligent or improper use of herbicides. Only use herbicides with the permission of the property owner. If the property owner does not allow the use of herbicides, Contractor will not be liable for weed control for that individual property.

E. SPRINKLER SYSTEMS

1. Contractor shall coordinate with the property owner to identify if a sprinkler system exists that may be impacted by the Contract work. Contractor shall document

whether or not a sprinkler system exists and report the status to the District Representative.

2. If a sprinkler system will be impacted, the Contractor shall coordinate with the owner and operate the system both pre- and post-construction to demonstrate proper working order.
3. With cooperation of the owner, ensure sprinkler system settings are adequate to ensure adequate watering of the newly placed vegetation.
4. Contractor shall submit a report of findings to the inspector.

3.07 POST CONSTRUCTION DOCUMENTATION

A. Produce Post-Construction photographs per Section 02 00 70.

END OF SECTION

SECTION 02 57 50

PAVEMENT RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work in this section includes reconstruction of all curbs, gutters, driveways, road shoulders, pavement and similar items removed or damaged as a result of the work. Reconstruction shall match the original materials and dimensions subject to the minimum requirements of the Contract Documents. All work shall match the appearance of the existing improvements. Work covered in this section shall be completed in accordance with these specifications, County Standard Specifications and Encroachment Permits.

B. Related Documents: The General and Supplementary Conditions and the applicable sections of Division 1, form a part of this section. All pavement shall be restored within limits as described within the standard details shown on the contract drawings.

1.02 REFERENCE DOCUMENTS

A. Reference Specifications:

1. Whenever the words "Standard Specifications" are referred to in the Specifications, the reference is to the State of California, Department of Transportation (CALTRANS), Standard Specifications (latest edition). Standard Specification paragraphs concerning measurement and payment are excluded.

1.03 SUBMITTALS

A. General:

1. Submit sufficient information to allow the District to confirm the materials proposed meet the specification requirements and are of good quality.

B. Certification:

1. Certification from the material supplier that the materials supplied for this project meets the Specifications.

PART 2 - PRODUCTS

2.01 CONCRETE

A. Concrete shall meet the requirements of Section 03 30 00 CONCRETE CAST IN PLACE.

2.02 HOT MIX ASPHALT (HMA) PAVEMENT

A. All Hot Mix Asphalt Pavement shall meet the requirements of Section 39 of the 2018 Caltrans Standards Specifications and approved County Encroachment Permits.

1. The asphalt temperature at the time of asphalt delivery, and the ambient air temperature at the time of asphalt delivery must meet the requirements of Section 39 of the 2018 Caltrans Standards Specifications.
2. Asphalt binder used in HMA Type A shall be PG 64-16.
3. Aggregate used in HMA Type A shall comply with the ½-inch HMA Types A and B gradation.

4. Asphalt concrete pavement shall consist of a subgrade as shown. The finish course shall consist of Type B, PG 64-10 asphalt concrete, of at least 6 inches thickness or as shown on the Drawings, whichever is thicker.
5. Asphalt concrete shall be provided with an emulsion-aggregate slurry seal applied on the completed finish course of the asphalt pavement.
6. A minimum of 9 inches of aggregate base or to match existing or as shown on the Drawings, whichever is thicker, will be placed below all new asphalt paving unless otherwise noted.

2.03 TRAFFIC STRIPES AND PAVEMENT MARKINGS

A. Traffic stripes and pavement markings shall be thermoplastic per County and Caltrans standards of Section 84.

PART 3 - EXECUTION

3.01 CONCRETE RESTORATION

A. Restore all concrete items per these specifications and County Encroachment Permits and Standards.

B. Restore all other concrete items to the same dimensions, thickness and reinforcing as the original items. Place concrete in accordance with the requirements of Section 03 30 00 CAST IN PLACE CONCRETE. Upper 9 inches of subgrade shall be compacted to a minimum 95 percent relative density prior to placement of concrete. Surface finish shall match existing surrounding surface.

3.02 TEMPORARY PAVEMENT

A. Temporary resurfacing consisting of not less than 6 inches of hot mix asphalt concrete shall be placed and maintained wherever an excavation is made through an existing pavement. The temporary resurfacing shall be maintained to provide for the safety and convenience of the public. Temporary pavement shall be placed as soon as the condition of the trench backfill is considered by the District to be suitable to receive resurfacing.

3.03 PERMANENT PAVEMENT

A. Permanent hot mix asphalt (HMA) resurfacing and striping shall be placed in accordance with Section 39 of the Caltrans 2022 Standards Specifications and the County Encroachment Permits and Standards.

B. Install paving mat per County and CalTrans standards.

3.04 ASPHALT CONCRETE REMOVAL AND INSTALLATION

A. All asphalt concrete pavement surface that has been removed, broken or damaged shall be re-paved. Removal of existing pavements shall be by saw cutting and in accordance with the project Contract Documents and Caltrans Standard Specification.

B. All asphalt paving shall be cut to a neat, straight line and the exposed edge shall be tacked with emulsion prior to paving. The exposed base material shall be graded, re-compacted, and resealed prior to paving.

C. Removed asphalt shall be disposed of off the Work site. Removed asphalt shall not be used as backfill material on-site.

D. Install asphalt concrete in accordance with Caltrans Standard Specification Section 39.

E. The asphalt concrete pavement shall be placed against a saw cut edge after the application of a prime coat on the base course.

3.05 COMPACTION OF ASPHALT CONCRETE PAVING

A. Compact until roller marks are eliminated and a density of 92% minimum to 98% maximum has been attained per ASTM D2041.

B. Compacting equipment shall conform to the provisions of Caltrans Standard Specification Section 39-5.02.

3.06 PREPARATION OF SUBGRADE

A. Subgrade shall be prepared in accordance with Section 02 20 00 herein.

B. Shape subgrade to line, grade, and cross section shown in the drawings.

C. The finished subgrade shall be within a tolerance of 0.05 of a foot of the grade and cross section shown and shall be smooth and free from irregularities and at the specified relative compaction.

3.07 PLACEMENT OF AGGREGATE BASE COURSE

A. Place aggregate base course to a minimum thickness as required. Compact to 95% relative compaction and install in accordance with Caltrans Standard Specification Section 26.

3.08 PRIME COAT APPLICATION

A. Apply prime coat to the surface of the base course of the aggregate base at the rate of 0.25 gallon per square yard per Caltrans Standard Specification Section 39-4.02.

3.09 TACK COAT APPLICATION

A. Apply tack coat on surfaces to receive finish pavement per Caltrans Standard Specifications 39-4.02. Apply tack coat to metal or concrete surfaces that will be in contact with the asphalt concrete paving.

3.10 SEAL COAT APPLICATION

A. Apply slurry seal at end of project after all paving and major construction is complete.

B. Apply slurry seal to new, overlay and existing asphalt as indicated on the Drawings.

C. Apply slurry seal coat at the rate of 8 to 12 pounds of dry aggregate per square yard.

D. Apply slurry seal per Caltrans Standard Specification Section 37-2.06.

3.11 ASPHALT CONCRETE OVERLAY

A. Provide asphalt concrete overlay in areas indicated on the Drawings and Details.

B. The limits of the overlay are subject to the approval of the Engineer and the County Inspector.

C. Repair or replace existing asphalt concrete pavement surfaces damaged or removed by construction activities prior to overlay.

D. Milling of the existing asphalt pavement is required to provide a smooth transition where overlay meets existing pavement surfaces.

E. Contractor shall be responsible for raising or lowering all manholes, valve boxes or any at grade structure to remain to match new final grade of asphalt overlay.

F. Install pavement reinforcing fabric on existing pavement to receive overlay. Installation of fabric, binder/tack coat and overlay shall be per Caltrans Standard Specification Section 39-4.03.

G. Asphalt concrete overlay thickness shall be a minimum of 2 inches or as shown on the Drawings.

3.12 SURFACE TOLERANCE

A. Finished grade shall not deviate more than 0.02 foot in elevation from the grade indicated in the drawings. Slopes shall not vary more than ¼ inch in 10 feet from the slopes shown in the drawings.

END OF SECTION

SECTION 03 15 19
ANCHOR BOLTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Equipment anchor bolts.
2. Structural anchor bolts.
3. Epoxy set anchor bolts.
4. Expansion anchors, Not allowed.

1.02 REFERENCES

A. Reference standards:

1. ASTM A307: Carbon Steel Externally Threaded.
2. ASTM A153: Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM A164: Electrodeposited Coatings of Zinc on Steel.
4. ASTM A36: Structural Steel.
5. ASTM A276: Stainless Steel.
6. ANSI B94.12: Epoxy Set Anchors.

1.03 SYSTEM DESCRIPTION

A. Contractor's option:

1. If cast-in anchor bolts are shown, then cast-in anchor bolts shall be used.
2. If epoxy-set anchors are shown, the Contractor may use cast-in anchor bolts or epoxy-set anchors.

1.04 SUBMITTALS

A. Shop Drawings and Product Data:

1. Sufficient to verify compliance with specifications, to include manufacturer's literature on sizes, material and installation procedures.

1.05 QUALITY ASSURANCE

A. Compliance with the requirements specified herein may necessitate modification to the manufacturer's standard materials or equipment.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver anchor bolts and templates in time to permit setting when structural concrete is placed.

1.07 PROJECT/SITE CONDITIONS

A. See Specification Section 02 00 00.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Generally, all fasteners shall be stainless steel.

B. Bolts:

1. Stainless steel: ASTM 276, Grade 303, 304, 305 or 316.

C. Nuts:

1. Same material as bolts.
2. Carbon steel: ASTM A307, Grade B heavy hexagonal.
3. Stainless Steel: ASTM 276, Grade B heavy hexagonal.
4. Self-locking: Prevailing torque, IFI-100, grade A.
5. Use anti-seize compound on stainless steel threads.

D. Washers:

1. Same material as bolts.
2. Flat: ANSI B27.2.
3. Locking: Spring type ANSI B27.1.

E. Epoxy set anchors:

1. In hardened concrete and fully grouted masonry:
   a. Ceramic 6 epoxy threaded rod anchors.
   b. Stainless steel studs, nuts and washers.
   c. Approved manufacturers:
      1) Hilti, Inc., RE 500 w/ HAS anchors
      2) Ramset/Red Head.
      3) Or equal.

2.02 FABRICATION

A. Cast-in anchor bolts:

1. 3/4-inch minimum, except as indicated on the Drawings.
2. Type:
   a. General use: L or U-shaped hook type.
   b. Where indicated on Drawings or specified:
      1) Straight bolt with square head.
      2) Straight bolt with square plate welded to bolt and nut welded to plate and bolt.
      3) Through-bolt with sleeve and square plate assembly.
      4) Coupled bolt with sleeve welded to square plate and bolt.

B. Epoxy set anchors:

1. 3/4-inch minimum.
2. Where indicated on Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that holes for anchor bolts in forms and templates match applicable equipment Shop Drawings or templates.

3.02 INSTALLATION

A. Anchor bolts:

1. Where installed in cast-in-place concrete, install a nut on the concrete side of the form or supporting template.
2. Provide three (3) nuts for each anchor bolt.
3. Through bolts:
    a. Sleeved with bearing plates.
    b. Bearing plates welded to bolt and plate welded to sleeve.
    c. Dimensions: As specified for sleeved anchor bolts.

B. Epoxy set anchors:

1. Install as per manufacturer's recommendation.
2. Clean hole and inspect prior to installation.
3. Minimum hole depth:
    a. As shown on the drawings
    b. As per manufacturer's recommendation
    c. If not shown, not less than 6-5/8 inches.
4. Diameter of drilled holes: As per ANSI B94.12.

3.03 SCHEDULES

A. Anchorage materials to be as noted on plans.

B. If materials are not noted on plans, the materials shall be:

1. 316 stainless steel.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Description of Work: Provide concrete work, complete in-place in accordance with the Contract Documents, including formwork, placement and finishing.

1.02 REFERENCE DOCUMENTS

A. Standard Specifications: Whenever the words "Standard Specifications" are referred to in this Specification, the reference is to the State of California, Department of Transportation (CAL-TRANS), Standard Specifications Latest Edition. Standard Specifications paragraphs regarding measurement and payment are excluded.

1.03 SUBMITTALS

A. Submit all items specified in this Paragraph:

1. Cement Certification
2. Aggregate Certification
3. Curing Method and Curing Material Proposed
4. Admixtures (if any)
5. Mix Design
6. Current (within the last 6 months) break data

1.04 QUALITY ASSURANCE

A. All concrete for the project shall be controlled concrete of specified strengths, of uniform color, and free from defects liable to adversely affect strength or durability of the structure or its components.

B. Workmanship: Materials and methods used for the production and placement of concrete shall be such as to assure the specified quality and shall conform to applicable requirements of the Building Code for Reinforced Concrete (ACI 318 and ACI 614) of the American Concrete Institute, except as otherwise specified in this Section.

C. Defective Concrete Surfaces shall be repaired or replaced as directed at no additional expense to the District.

D. Uniformity of Concrete: All aggregates shall be measured by weight or by an equivalent accurate method and the proportion of water to cement shall be accurately controlled by either automatic measuring devices or calibrated containers. All concrete placed shall be of uniform strength and color appearance as well as surface texture.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Portland Cement: ASTM C150, Type II, low alkali. All cement used shall be of one manufacturer.

B. Water: Clean and free from deleterious amounts of acids, alkalis, salts and organic matter.

C. Sand: Clean, washed river sand.

D. Air Entraining Agents shall be used where specified hereinafter.

1. Approved agents are Sika AER, Master Buildings MBAE-10, Darex AERA and Protex AEA.
2. For concrete exposed to freeze/thaw cycles, de-icing chemicals or other chemicals, entrained air content shall be between 5 and 7 percent by volume.

E. Curing Compound: Liquid membrane, ASTM C309, Type I.

F. Curing Sheet Material: ASTM C171.

G. Admixtures: Except for air entraining agents and water-reducing admixtures, no other admixtures shall be used without written approval from the Engineer.

1. Calcium chloride will not be permitted for use in concrete under any circumstances.

H. Concrete Mixing

1. Ready-Mixed Concrete: ASTM C94 except as otherwise specified herein.
2. Temperature of concrete shall be 80 degrees Fahrenheit maximum at time of placing.

I. Concrete Adhesive

1. Concrete adhesive shall be "Concresive" epoxy polysulfide or equivalent Sika product or equal.

2.02 MIX DESIGN

A. Cement Content shall contain not less than six 94 lb sacks of Portland cement per cubic yard.

B. Aggregate Size: 3/4"

C. Maximum Slump: 4” for all concrete as determined by ASTM C143.

D. Contractor may substitute fly ash for up to 15 percent of cement at a rate of 1.5 lbs fly ash for each 1 lb of cement.

E. Water cement ratio:

1. Shall not exceed 0.40 for water containment structures.
2. Shall not exceed 0.45 for other structures.

F. Volume ratio of fine to total aggregates:

Coarse Aggregate Size	Minimum Ratio	Maximum Ratio
3/8"	0.45	0.50
1/2"	0.40	0.50
3/4"	0.35	0.50
1"	0.30	0.46
1-1/2"	0.25	0.42

G. Initial set:

1. 5-1/2 hours ±1 hr after water and cement are added to the aggregates as determined by ASTM C403.

2. Adjust retarder quantities to compensate for temperature and job condition variations.

H. Admixtures:

1. Content, batching method, and time of introduction in accordance with the manufacturer's recommendations for compliance with this specification.
2. Include a water reducing admixture.
3. Calcium chloride is not permitted.
4. Superplasticizer may be required. A separate submittal and approval are required. Slump tests shall be taken at the batch plant prior to addition, if a superplasticizer is used.

I. Strength: Minimum compressive strength as determined by ASTM C39 for concrete structures:

Age	Concrete Structures Minimum Strength	Thrust Block Minimum Strength
7 days	2,500 psi	2,000 psi
28 days	3,000 psi	3,600 psi

J. Consistency:

1. Suitable for the placement conditions.
2. Slump uniform.
3. Aggregate floating uniformly throughout the concrete mass.
4. Flow sluggishly when vibrated or spaded.

2.03 FORM MATERIALS

A. Forms shall be new materials of Douglas Fir, Construction Grade, S1S2E, or Douglas Fir Plywood, five-ply, 5/8-inch, B-B Plyform, Class 1 Exterior Type with mill-oiling treatment omitted.

B. Adequacy of the form, bracing, and shoring shall be the sole responsibility of the Contractor. The design shall meet the requirements of ACI 301.

C. Forms shall be mortar tight.

D. Lumber: Straight; uniform width and thickness; and free from knots, offsets, holes, dents, and other surface defects.

E. Form coating: Industrial lubricants "Nox-crete Form Coating," W. R. Meadows "Durogard," PRECO "Reebol Form Cote," or equal.

F. Form ties: Removable end, permanently embedded body type not requiring auxiliary spreaders, with cones on outer ends, embedded portion 1-inch minimum back from concrete face. If not provided with threaded ends, then they shall be constructed for breaking off ends without damage to concrete.

2.04 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A615, Grade 60.

B. All reinforcing bars shall be stored so as to prevent contact with the earth.

C. Insert Anchor: Red Head as manufactured by ITT Phillips Drill Division.

2.05 EXPANSION JOINT FILLER

A. Unless otherwise shown on the Drawings, expansion joint filler shall be asphalt saturated fiber in accordance with ASTM-D 1751. Joint filler shall be 1/2-inch thick by depth of slab minus 1/2-inch, unless otherwise noted.

2.06 SEALANT

A. Sealant to seal expansion joints and crack control joints shall be as follows:

1. W.R. Meadows #164 Polymer Sealing Compound or Sof-Seal or equal.

PART 3 - EXECUTION

3.01 ACCEPTANCE AT SITE:

A. Prepare a delivery ticket for each load of ready-mixed concrete.

B. Truck operator shall hand ticket to District Representative at the time of delivery.

C. Ticket to show actual:

1. Quantity delivered in cubic yards
2. Actual amount of each material in batch.
   a. Cement - lbs
   b. Water – lbs
   c. Coarse aggregate
   d. Fine aggregate
   e. Additives
3. Outdoor temperature in the shade.
4. Time at which cement was added.
5. Truck, project, and mix design identification number.
6. Time water was added to the load.

D. Failure to provide the delivery ticket will be cause to reject the load.

E. Time Limits:

1. Mix designs <u>including</u> retarder: Failure to arrive at jobsite within 90 minutes after the addition of water will be cause to reject the load.
2. Mix designs <u>not including</u> retarder: Failure to arrive at jobsite within 60 minutes after the addition of water will be cause to reject the load.

3.02 FIELD QUALITY CONTROL

A. District Representative furnished:

1. Perform field control test:
   a. Tests by qualified personnel.
   b. Make tests in presence of District Representative.
   c. Provide all equipment, supplies, and the services of one (1) or more employees, as required.
   d. The test frequencies specified are minimum, perform additional tests as required by the job conditions.
2. Aggregate gradation: Sample and test in accordance with ASTM D75 and C136.
   a. Fine aggregates: Each 100T.
   b. Coarse aggregates: Each 200T.
3. Fly ash: Sample and test each 25T in accordance with ASTM C143.

4. Slump: perform a test for each truck load in accordance with ASTM C143.
5. Compression tests:
    a. Make one (1) set of four (4) cylinders from each truck load.
    b. Test one (1) cylinder in each set at seven (7) days.
    c. Test two (2) cylinders in each set at twenty eight (28) days.
    d. The other cylinder is to be a spare to be tested at the District Representative's discretion.
    e. District Representative will evaluate in accordance with ACI 214 and ACI 318.
    f. Make cure, store, and deliver cylinders in accordance with ASTM C31.
    g. Test in accordance with ASTM C39.
    h. Mark or tag each set of test cylinders with the date and time of day the cylinders were made, the location in the work where the concrete represented by the cylinders was placed, the delivery truck or batch number, the air content, and the slump.

B. Contractor furnished:

1. Provide materials from each truck for test cylinders.
2. Cooperate with testing agency to provide test prior to placement of each load.
3. Provide all mix design testing.
4. Pay for all retesting of concrete which does not meet specifications during the initial test.

3.03 FORMS

A. Build and erect forms to conform to the required shapes, patterns, lines, grades and dimensions indicated. Forms shall be substantial and tight to prevent leakage of mortar and shall be properly braced and tied together to maintain position and shape. Provide chamfered corners where indicated.

B. Concrete work out of alignment, level or plumb, will be cause for rejection of the whole work affected, and if so, rejected such work shall be removed and replaced at no increase in cost to the District.

C. Conform to ACI 347 as modified herein.

D. Surfaces exposed to view.

1. Prefabricated plywood panel forms, job-built plywood forms, or forms lined with plywood or fiberboard.
2. Laid out in a regular and uniform pattern with long dimensions vertical and joints aligned.
3. Produce finished surfaces free from offsets, ridges, waves, and concave or convex areas.
4. Maximum deviation from a true plane: 1/8-inch in 6 feet.

E. Plywood or lined forms are not required for surface (buried by backfill) not normally submerged or not normally exposed to view.

F. Other types of forms may be used:

1. For surfaces not restricted to plywood or lined forms.
2. As backing for form lining.

G. Provide forms above all extended footings.

H. When placing concrete against gravel or crushed rock not containing 25 percent minimum material passing a No. 4 sieve:

1. Provide polyethylene film to protect concrete from water loss.
2. Lap joints 4 inches.

I. Size and space walers, studs, internal ties and other form supports so proper working stresses are not exceeded.

J. Form concrete column supported beams and slabs so column forms may be removed without disturbing beam and slab form supports.

K. Where the top of a wall will be exposed to weathering, stop form on at least one side at true line and grade.

L. Other locations to be finished to a specified elevation, slope, or contour, bring form to true line and grade and provide a wooden guide strip at the proper location in the forms for finishing the top surface with a screed or template.

M. At horizontal construction joints in walls, stop the forms on one side not more than 2 feet above the joint.

N. Provide temporary opening at the bottom of columns and wall forms and wherever necessary for cleaning and inspection.

O. Install form ties on exposed surfaces in uniformly spaced vertical and horizontal rows.

P. Provide chamfer strips.

1. To bevel salient edges and corners.
2. To bevel salient edges of equipment bases.
3. 3/4-inch bevel.

Q. Do not remove or disturb until concrete has attained sufficient strength to safely support all dead and live loads.

R. Leave shoring beneath beams and suspended slabs in place and reinforce as required by construction equipment and materials.

S. Remove forms carefully to prevent surface gouging, corner or edge breakage and other damage.

3.04 REINFORCEMENT FABRICATION

A. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of the bars for bending or flame cutting will not be permitted.

3.05 REINFORCEMENT PLACEMENT

A. Placement: All reinforcement shall be accurately formed and set in place, lapped, spliced, space rigidly and securely held in place, tied with the specified wire at all splices and crossing points.

B. Cleaning: Reinforcing steel, at the time the concrete is placed around it, shall be cleaned of rust, scale, mill scale or other coatings that will destroy or reduce bond.

C. Except at contact splices, minimum clear distance between bars, is to be the greater of:

1. Nominal diameter of bars.
2. 1.5 times maximum size of coarse aggregate.
3. 1-1/2 inch in columns.
4. 1-inch in beams.

5. 2 inches in other locations.

D. Where beam reinforcement is placed in 2 layers, place bars in upper layer directly above bars in lower layer.

E. Do not install reinforcement for beams and slabs that are supported by concrete columns until after the concrete for the column has been placed.

F. Fabricate in accordance with ACI 315 and ACI 318 except as specified or indicated on Drawings.

G. Splices:

1. As indicated on the Drawings.
2. Do not weld or tack weld reinforcing steel except where specifically indicated on Drawings.
3. Remove and replace steel upon which any unauthorized welding has been performed.
4. When splicing bars in tie beams subject to tensile loading, splice no more than half the bars within a length of 40 bar diameter and hook each spliced bar end 180 degrees.

H. Do not bend or re-bend reinforcing steel at job site. Bending of steel in locations not shown on Drawings shall be cause for rejection of work.

3.06 EMBEDMENTS:

A. Accurately position and securely anchor in forms all anchor bolts, casting, steel shapes, conduit, sleeves, masonry anchorages, and other materials to be embedded in concrete.

B. Anchor bolts:

1. Provide sufficient threads on anchor bolts to permit a nut on the concrete side of the form or template.
2. Install a second nut on the other side of the form or template.
3. Adjust the nuts to hold the bolt rigidly in the proper position.

C. Clean embedments before installation.

D. Clean concrete spatter and other foreign substances from surfaces not in contact with concrete.

3.07 EXPANSION JOINTS

A. Provide expansion joints of the size and location as shown on the Drawings or as specified. Expansion joint filler shall be installed 1/2-inch below surface of concrete where applicable and sealed with sealant unless otherwise noted.

3.08 CONCRETE PLACEMENT

A. Surrounding Conditions: Before any concrete is placed, the following items of work shall have been completed in the area of placing.

1. Reinforcing steel shall have been placed, tied and supported.
2. Embedded work of all trades shall be in place in the forms and adequately tied and braced.
3. The entire area of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter.

4. Concrete surfaces to which fresh concrete is to be bonded shall be saw-cut and broken away. Surfaces shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.

B. Conveying concrete from mixer to forms shall be as rapid as possible but shall in no case be longer than one hour from when the cement was added to the aggregate.

C. Placing Concrete:

1. Before starting new pour on or against concrete that has hardened, the hardened concrete shall be roughened and thoroughly cleaned of foreign matter and any laitance.
2. No adjustment of steel reinforcement will be permitted during the placement of concrete.
3. The concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. Location of construction joints shall be as indicated on the Drawings or if not shown on the drawings, per ACI standards as interpreted by the Engineer.

D. Cold weather concreting:

1. Comply with ACI 306 and 306.1, except as modified herein.
2. Minimum concrete temperature at the time of mixing:

Outdoor Temperature at Placement (in shade)	Concrete Temperature at Mixing
Below 0° F	70° F
Between 0° F & 30° F	65° F
Between 30° F & 45° F	60° F
Above 45° F	45° F

3. Do not place heated concrete which is warmer than 80 degrees F.
4. If freezing temperatures are expected during curing, maintain the concrete temperature at or above 50 degrees F for five (5) days or 70 degrees F for three (3) days.
5. Do not allow concrete to cool suddenly.
6. Do not place concrete on frozen subgrade.

E. Hot weather concreting:

1. Comply with ACI 305, except as modified herein.
2. If the air temperature is expected to be 90 degrees F or greater in the next 24 hours.
   a. Keep concrete as cool as possible before, during, and after placement.
   b. Do not allow concrete temperature to exceed 80 degrees F at placement.
   c. Prevent plastic shrinkage cracking due to rapid evaporation of moisture.
   d. Addition of ice, or other cooling methods, will be required to meet temperature requirements.
3. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 lbs/sq ft/hr as determined from ACI 305.

3.09 CRACK CONTROL JOINTS

A. Construction joints:

1. Locations:
    a. As indicated on the Drawings, and if not shown, joint spacing shall not exceed ACI recommendations as interpreted by the Engineer.
    b. In columns and walls:
        1) At the underside of beams, girders, haunches, drop panels, column capitals, and at floor panels.
        2) Haunches, drop panels, and column capitals are considered part of the supported floor or roof and shall be placed monolithically therewith.
        3) Column bases need not be placed monolithically with the floor below.
    c. In beams and girders:
        1) At the middle of the span unless a beam intersects a girder at this point.
        2) If the middle of the span is at an intersection of a beam and girder, offset the joint in the girder a distance equal to twice the beam width.
        3) Provide satisfactory means for transferring shear and other forces through the construction joint.
    d. In suspended slabs:
        1) At or near the center of span in flat slab or T-beam construction.
        2) Do not locate a joint between a slab and a concrete beam or girder unless so indicated on the Drawings.
    e. Install construction joints in beams, slabs, and girders perpendicular to the planes of their surfaces.

B. Expansion and contraction joints:

1. Contraction joints:
    a. Provide as indicated on Drawings.
    b. Seal accessible edges.
    c. Waterstop embedment equal on each side of the joint.
    d. Splice water stops in strict conformity with the manufacturer's instructions.
2. Expansion material:
    a. Provide as indicated on Drawings.
    b. Firmly bond to previously poured joint. Face with a suitable adhesive.
    c. Pour new concrete directly against joint filler.
    d. Seal accessible edges.

3.10 CONCRETE FINISHES

A. All Concrete Work: except as otherwise specified, shall be of a quality that will present a finished appearance upon the stripping of the forms. Only a minimum of patching and finishing should be necessary as required to fill holes left by form ties and to remove any fins or minor irregularities left by the joints in the forms.

B. Finishing unformed surfaces:

1. Do not finish buried or permanently submerged concrete not forming an integral part of a structure except as required to attain surface elevations, contours, and freedom from laitance.
2. Screed and initial float finish followed by additional floating, and troweling as required, all other surfaces.
    a. Screeding:
        1) Screed concrete surfaces to the proper elevation and contours with all aggregates completely imbedded in mortar.
        2) Surface free of irregularities of height or depth more than 1/4 inch measured from a 10-foot straightedge.

b. Floating:
    1) Float finish screeded surfaces as soon as the concrete has stiffened sufficiently for working.
    2) Remove and replace with mortar any coarse aggregate which is disturbed by the float or which causes a surface irregularity.
    3) Initial floating to produce a surface of uniform texture and appearance without unnecessary working of the surface.
    4) Follow initial floating with a second floating at the time of initial set.
    5) Second floating to produce a finish of uniform texture.
    6) Except as otherwise specified, the second floating finish is the final finish.
    7) Use hand floats or mechanical compactor floats.

3. Broom finish:
    a. Broom finish exterior slabs.
    b. Broom after second floating and at right angles to normal traffic.
4. Troweling:
    a. Steel trowel finish interior floor surface which will be exposed at the completion of construction, the exposed portion of the equipment bases, interior curbs, and where indicated on the Drawings.
    b. Do not trowel floor surfaces which will be normally submerged.
    c. Trowel after the second floating when the surface has hardened adequately to prevent drawing an excess of fines to the surface.
    d. Trowel to produce a dense, smooth, uniform surface free from blemishes and trowel marks.
5. Aggregate exposure:
    a. Remove surface mortar from surfaces to be covered later with concrete or mortar topping.
    b. Expose coarse aggregates to improve bonding.
6. Unless specified to be beveled, edge floated or troweled surfaces with a tool having a 1/4-inch radius.

C. Finishing formed surfaces:

1. Remove fins and other surface projections from all formed surfaces except exterior surfaces that will be in contact with earth backfill and are not specified to be damp-proofed.
2. Use a power grinder, if necessary, to remove projections and provide a flush surface.
3. Remove fins and fill tie hole on surfaces to be damp-proofed but do not do any other finishing of those surfaces.
4. Tie holes:
    a. Clean, wet and fill with patching mortar.
    b. Finish flush to match the texture of adjacent concrete.
5. Grout - cleaned finish:
    a. ACI 301, 5.3.3.4.b.
    b. Grout clean surfaces to produce a smooth uniform surface free of marks, voids, surface glaze, and cement dust.
    c. Grout clean all surfaces exposed to view, interior of tanks and surfaces indicated on Drawings.
    d. Fill all voids regardless of location that are 1/4-inch deep or 1/2-inch diameter.

3.11 CONCRETE CURING

A. Carefully and thoroughly cure all newly placed concrete.

B. Concrete Slabs: Apply the specified liquid curing compound and hardener according to manufacturer's written directions. Apply at maximum rate of 300 square feet per gallon for smooth surfaces and 200 square feet per gallon for rough surfaces.

C. Protect concrete from moisture loss for at least seven (7) days after placement.

D. Cure concrete by methods that will keep concrete surfaces adequately wet during curing.

   1. Water curing: May be used for all concrete.
      a. Begin water saturation as quickly as possible after initial set.
      b. Regulate water application to provide complete surface coverage with a minimum of runoff.
      c. Use absorptive blankets to hold moisture to concrete or flood the surface.
   2. Membrane curing:
      a. Membrane curing compound may be used in lieu of water curing on concrete which will not be covered later with mortar or concrete where water curing is not specifically called for.
      b. Apply the specified liquid curing compound and hardener according to manufacturer's written directions. Apply at minimum rate of 300 square feet per gallon for smooth surfaces and 200 square feet per gallon for rough surfaces.
      c. Cover unformed surfaces within 30 minutes of final finishing.
      d. If forms are removed before the end of the curing period, immediately apply curing compound to the formed surfaces before they dry out.
      e. Protect curing compound against abrasion during the curing period.

3.12 MISCELLANEOUS WORK

A. Patchwork: Where concrete requires patching, filling, or tying into, concrete shall be mixed, placed and finished in the same manner as specified for new concrete. Surfaces to which new concrete must bond shall be thoroughly cleaned and coated with concrete adhesive. Carefully rod or vibrate concrete to eliminate air pockets and ensure concrete is filling holes full. Use low slump concrete to minimize shrinkage.

3.13 CLEANING AND PROTECTION

A. Clean all surfaces and leave in satisfactory condition.

B. Protect concrete surfaces from damage by tools, equipment, materials and workmen. No traffic, shoring or other loading will be permitted on concrete until it has hardened sufficiently to prevent injury to finish and strength. In any case, all concrete shall be cured a minimum of seven days before the removal of shoring or allowing any loading, including backfill.

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SECTION 03 40 00

PRE-CAST CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall provide and install all pre-cast items as required including all appurtenances necessary to make a complete installation.

1.02 REFERENCES

A. Reference Standards:

1. ACI 318: Building Code Requirements for Structural Concrete
2. ACI 350: Code Requirements for Environmental Engineering Concrete Structures and Commentary
3. ACPA: Concrete Pipe Handbook
4. ACPA: Design Manual
5. AWS D1.1: Structural Welding Code – Steel
6. AWS D1.4: Structural Welding Code – Reinforcing Steel
7. NPCA: QC Manual Quality Control Manual for Precast Concrete Plants
8. PCI: Design Handbook
9. Greenbook: Standard Specifications for Public Works Construction, Latest Edition

1.03 GENERAL REQUIREMENTS

A. Precast concrete units shall be designed and fabricated by an experienced and acceptable precast concrete manufacturer. The manufacturer shall have been regularly and continuously engaged in the manufacture of precast concrete units similar to that indicated in the project specifications or drawings for at least 5 years.

1.04 SUBMITTALS

A. The Contractor shall provide submittals as required hereunder.

1. Quality control procedures established by the precast manufacturer in accordance with the NPCA - Quality Control Manual for Precast Concrete Plants.
2. Shop Drawings
   a. The shop drawings for precast concrete units shall be furnished by the precast concrete producer for approval by the owner's representative and engineer of record.
   b. These drawings shall demonstrate that the applicable industry design standards have been met. These drawings shall show complete design, exact dimensions, installation, and construction information in such detail as to enable the owner's representative and engineer of record to determine the adequacy of the proposed units for the intended purpose.
   c. Deviations from the primary construction documents shall be clouded. The precast concrete units shall be produced in accordance with the approved drawings.
3. Precast Concrete Unit Data
   a. The precast concrete producer shall supply data sheets showing conformance to project drawings and requirements and to applicable industry design standards listed in this specification. The precast concrete producer shall

provide sufficient information as to demonstrate that such products will perform the intended task.

4. Anchorage, Lifting Inserts and Devices
    a. For anchors, lifting inserts and other devices, the precast concrete producer shall provide product data sheets and proper installation instructions upon request. The precast concrete unit dimensions and safe working load shall be clearly indicated.
    b. Steel anchors exposed to long term weather shall be protected by hot dip galvanization.
5. Accessory Items
    a. For items including, but not limited to sealants, gaskets, pipe entry connectors, steps, racks, lids, frames and other items installed before or after delivery, the precast concrete producer shall include proper installation instructions and relevant product data upon request.

B. Design Data

1. Upon request, the precast concrete producer shall supply precast concrete unit design calculations and concrete mix design proportions and appropriate mix design test data. Structural design calculations shall be signed by a licensed professional engineer.

C. Test Reports

1. Upon request, the precast concrete producer shall supply copies of material certifications and/or laboratory test reports, including mill tests and all other test data, for Portland cement, blended cement, pozzolans, ground granulated blast-furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this project.
2. Upon request, the precast concrete producer shall submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the project conditions. Such tests may include compressive strength, flexural strength, plastic or hardened air content, freeze-thaw durability, abrasion and absorption.
3. Upon request, the precast concrete producer will supply copies of in-plant QA/QC inspection reports.

D. Certificates

1. Submit quality control procedures established in accordance with NPCA Quality Control Manual for Precast Concrete Plants or verification of current NPCA Plant Certification.

1.05 DESIGN

A. Precast Concrete Unit Design

1. Design standard precast concrete units to withstand indicated design load conditions in accordance with applicable industry design standards ACI 318, ACI 350, ACPA Design Manual, PCI MNL-120, and AASHTO. Design must also consider stresses induced during handling, shipping and installation in order to avoid product cracking or other handling damage. Design loads for precast concrete units shall be indicated on the shop drawings. All calculations shall be prepared by a registered engineer.

2. Minimum design loading for soil: Not less than 100 psf / foot depth, with 2'-0" soil surcharge.

B. Joints and Sealants

1. Joint Sealing Compound - Joint sealing compound shall be impermeable to water; have high bonding strength to steel, concrete, etc., maintain permanent plasticity; resistant to applicable chemical exposure; and complies with the applicable Federal Specifications.

C. Durability and performance requirements

1. Concrete Compressive Strength-
   a. Precast concrete units shall have a 28-day compressive strength (f'c) of 5,000 psi, except where otherwise noted on the approved drawings.

D. Water-Cement Ratio

1. Concrete that will be exposed to weather shall contain entrained air and shall have water-cement ratios of 0.40 or less.
2. Concrete which is required to be watertight, shall have a water-cement ratio of 0.40 or less.
3. For corrosion protection, reinforced concrete exposed to deicer salts, brackish water or seawater shall have a water-cement ratio of 0.40 or less.
4. All other concrete shall have a water-cement ratio of 0.45 or less

E. Air Content

1. The air content of concrete that will be exposed to weather conditions shall be 6% +/- 1%.

1.06 QUALITY ASSURANCE

A. Precast concrete producer shall demonstrate adherence to the standards set forth in the NPCA Quality Control Manual for Precast Concrete Plants.

B. The precast concrete producer shall be certified by the NPCA Plant Certification Program prior to and during production of the products for this project.

1.07 HANDLING, STORAGE AND DELIVERY

A. Handling: Precast concrete units shall be handled and transported in a manner to minimize damage. Lifting devices or holes shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose as indicated on shop drawings.

B. Storage-precast concrete units shall be stored in a manner that will minimize potential damage.

C. Delivery: Precast concrete units shall be delivered to the site in accordance with the delivery schedule to avoid excessive build-up of units in storage at the site. Upon delivery to the jobsite all precast concrete units shall be inspected by the customer or customer's agent for quality and final acceptance.

D. Acceptable crack dimensions: In addition to the criteria specified under ASTM 1433, the maximum crack length under service conditions is 1/64" wide x 2" long. Precast members with cracks wider and longer are subject to rejection and re-casting at precaster's expense

PART 2 - PRODUCTS

2.01 MANUFACTURES

A. Pre-cast Manufactures

1. Jensen Precast
2. Oldcastle
3. Forterra
4. Cook

B. General Design Requirements

1. Design Loads: Design loads shall consist of live load, dead load, impact load, hydrostatic load, and other loads that may occur unless otherwise indicated on the drawings. Live loads for the lid shall be 300 lbs/ft2.
2. Floors: Unless otherwise indicated on the drawings, pre-cast vaults shall have concrete floors.
3. Forms: All forms used in placing concrete shall be sufficiently designed and braced to maintain alignment under pressures of concrete placement.
4. Concrete
   a. Aggregates used in the concrete mix either coarse or fine, excluding light-weight aggregates, shall conform to specifications as outlined by ASTM C33.
   b. All light-weight aggregates, fine or coarse, shall conform to specifications as outlined by ASTM C330.
   c. Both types of aggregates shall be properly graded and free of any deleterious substances so as to produce a homogeneous concrete mix when blended with cement.
   d. Cement: The cement shall be Type II low alkali Portland Cement and shall meet ASTM C150 Type V
   e. Compressive Strength: Sufficient cement content shall be used per batch so as to produce a minimum strength of 5,000 psi at 28 days or other strength by design when required.
   f. Placing: per ACI 301.
   g. Curing: Concrete while still in the forms may be steam cured after an initial set has taken place. Steam temperature shall not exceed 160°F, nor raised from normal ambient temperature at a rate exceeding 40°F per hour. Steam curing shall be considered complete after sufficient time has elapsed to produce adequate strength to withstand any structural strain that may be subjected during the form stripping operation. Additional curing may be applied by means of water spraying or membrane curing compound to reach the ultimate strength requirements.
   h. Reinforcing Steel: ASTM A615 grade 60 or A706.
5. Preformed Joint Sealant: The joint sealing compound shall be a preformed, cold applied, ready to use plastic joint sealing compound as supplied by Quikset Utility Vaults, Santa Ana, California; Ram-Neck by K.T. Snyder Company; or approved equal.

2.02 CONCRETE VAULTS

A. General

1. Pre-cast vault shall be manufactured to the configuration and dimension as shown in the Plans.

PART 3 - EXECUTION

3.01 PRE-CAST VAULTS

A. Pre-cast vaults shall be installed in accordance with the manufacturer's recommendations, unless otherwise required by the drawings. All joints shall be sealed by the use of preformed sealant and mortar or non-shrink grout so as to be watertight.

3.02 CONNECTIONS

A. Connections to manufactured, pre-cast items shall be made by casting sections of pipe into the items, using non-shrink grout as shown on the drawings, and/or using an approved resilient connector. All such connections shall be watertight.

3.03 SOIL BACKFILL

A. Engineered soil backfilling operations next to precast concrete structures shall follow the same requirements as cast-in-place structures. Backfill soils shall be placed in lifts where the highest lift on one side of the structure is not more than 1'-0" higher than the lowest lift.

END OF SECTION

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SECTION 03 60 00

GROUT

PART 1 - GENERAL

1.01 SUMMARY

A. The work of this Section includes providing grout other than that required for masonry work.

B. The following types of grout are included in the work of this Section:

1. Non-Shrink Grout: This type of grout shall be used wherever grout is required, unless another type is specifically indicated.
2. Cement Grout
3. Epoxy Grout
4. Topping Grout and Concrete Fill

C. Except as otherwise indicated, the current versions of the following apply to the work of this Section:

Reference	Title
CRD-C 621	Corps of Engineers Specification for Non-shrink Grout
ASTM C109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50-mm Cube Specimens)
ASTM C531	Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical- Resistant Mortars, Grouts, and Monolithic Surfacings
ASTM C579	Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacings
ASTM C827	Test Method for Early Volume Change of Cementitious Mixtures
ASTM D696	Test Method for Coefficient of Linear Thermal Expansion of Plastics

1.02 SUBMITTALS

A. The Contractor shall provide submittals as required hereunder.

1. Manufacturer's literature containing instructions and recommendations on the mixing, handling, placement, and appropriate uses for each type of non-shrink and epoxy grouts proposed for use in the work.
2. Certified test results verifying the compressive strength, shrinkage, and expansion properties.

1.03 QUALITY CONTROL

A. Field Tests

1. When a product is used without documentation, compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the Engineer to ensure continued compliance with these specifications.
2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109. A set of three specimens will be made for testing at 7 days, 28 days, and each additional time period as appropriate.

3. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during construction as selected by the Owner's representative. A set of three specimens will be made for testing at 7 days, and each earlier time-period as appropriate.

B. The cost of all laboratory tests on grout will be borne by the Owner, but the Contractor shall assist the Owner's representative in obtaining specimens for testing. However, the Contractor shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The Contractor shall supply all materials necessary for fabricating the test specimens.

PART 2 - PRODUCTS

2.01 CEMENT GROUT

A. Cement grout mix design shall satisfy the same requirement as structural concrete, except that cement grout has no large aggregate requirement when the grout thickness is less than 3".

2.02 PREPACKAGED GROUTS

A. Non-Shrink Grout

1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout indicated herein shall be that recommended by the manufacturer for the particular application.
2. Class A non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi; shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C827; and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.
3. Class B non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi and shall meet the requirements of CRD C 621.

B. Application

1. Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill material, grouting under all equipment base plates, and at all locations where grout is specified in the contract documents; except, for those applications for Class B non-shrink grout and epoxy grout indicated herein. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.
2. Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil or other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place.

2.03 TOPPING GROUT AND CONCRETE FILL

A. Grout for topping of slabs and concrete fill for built-up surfaces of manhole, tank, channel, and basin bottoms shall be composed of cement grout. All materials and procedures specified for concrete in Section 03 30 00 – Cast-in-Place Concrete shall apply except as indicated otherwise herein.

B. Topping grout and concrete fill shall contain a minimum of 564 pound of cement per cubic yard with a maximum water cement ratio of 0.45. Where grout fill is thicker than 3 inches, concrete as indicated in Section 03 30 00 – Cast-in-Place Concrete may be used.

C. Strength: Minimum compressive strength of topping grout and concrete fill at the end of 28 days shall be 4000 psi.

2.04 CURING MATERIALS

A. Curing materials shall be as indicated in Section 03 30 00 – Cast-in-Place Concrete for cement grout and as recommended by the manufacturer of prepackaged grouts.

2.05 CONSISTENCY

A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application.

B. Unless otherwise noted on contract drawings, grout for base plates and equipment leveling shall have flowable, semi-flowable, and dry pack viscosities.

1. Flowable and semi-flowable consistencies require formwork.
2. Dry pack consistency is such that the grout is plastic and moldable but will not flow.

2.06 MEASUREMENT OF INGREDIENTS

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement is not an acceptable method of measurement.

PART 3 - EXECUTION

3.01 GENERAL

A. All surface preparation, curing, and protection of cement grout shall be as required. The finish of the grout surface shall be troweled smooth unless noted otherwise.

B. Where pre-packaged products are used, the manufacturer's representative shall provide on-site technical assistance upon request.

C. Base concrete or masonry must have attained its design strength before grout is placed. When bonding to an existing cementious material is expected, waterblasting or abrasive blasting to roughen the substrate is required.

3.02 GROUTING PROCEDURES

A. Base Plate Grouting

1. For base plates, the original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a grout thickness not exceeding 2x the anchor bolt diameter.
2. After the base plate has been set in position at the proper elevation and double nutted on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout. The grout shall be placed so there a no voids between the bottom of the base plate and the concrete.

B. Topping Grout

1. All mechanical, electrical, and finish work shall be completed prior to placement of topping or concrete fill. The base slab shall be given a roughened textured surface by abrasive blasting or water blasting to ensure bonding to the base slab.
2. The minimum thickness of grout topping and concrete fill shall be one inch. Where the finished surface of concrete fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2-inches wide by 1-1/2-inches deep.
3. The base slab shall be thoroughly cleaned and wetted prior to placing topping and fill. No topping concrete shall be placed until the slab is complete free from standing pools or ponds of water. The topping and fill shall be compacted by rolling or tamping, brought to established grade, and floated. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.
4. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping and fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement or mixture of dry cement and sand shall be applied to the surface.

END OF SECTION

SECTION 05 00 00
MISCELLANEOUS METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Items fabricated from metal shapes, plates, sheets, rods, bars or castings.
2. Structural steel.

1.02 REFERENCES

A. Reference standards:

1. AISC “Steel Construction Manual.”
2. AISC “Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.”
3. ASTM A1: Carbon Steel Tee Rails.
4. ASTM A36: Structural Steel.
5. ASTM A366: Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
6. ASTM A569: Steel, Carbon (0.15 Max, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
7. ASTM A325: High Strength Bolts for Structural Joints.
8. ASTM A307: Carbon Steel Externally Threaded Standard Fasteners
9. ASTM A490: Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.
10. FS WW-F-461: Floor Plate, Steel, Rolled.
11. ASTM A500: Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
12. ASTM A501: Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
13. ASTM 48: Gray Iron Castings.
14. ASTM A167: Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
15. ASTM B36: Brass Plate, Strip and Rolled Bar.
16. ASTM B61: Steamor Valve Bronze Castings.
17. ASTM B140: Copper-Zinc-Lead (leaded Red Brass or Hardware Bronze) Rod, Bar, and Shape.
18. ASTM B97: Copper-Silicon-Alloy Plate, Strip and Rolled Bar for General Purposes.
19. ANSI A202.1: Metal Bar Grating Manual for Steel and Aluminum Gratings and Stair Treads.
20. ASTM A120: Pipe, Steel, Black and Hot-Dipped, Zinc Coated (Galvanized) Welded and Seamless for Ordinary Uses.
21. AWS D1.1-77: Structural Welding Code, American Welding Society.

1.03 SUBMITTALS

A. The Contractor shall provide submittals as required hereunder.

B. Product Data and Shop Drawings:

1. Product Data describing each manufactured metal specialty.
2. Shop Drawings describing each fabricated item.
3. Erection Drawings for structural steel.

1.04 QUALITY ASSURANCE

A. Compliance with the requirements specified herein may necessitate modification to the manufacturer's standard materials or equipment.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store on blocking so that no metal touches the ground and water cannot collect thereon.

B. Protected from bending under its own weight or superimposed loads.

1.06 PROJECT/SITE CONDITIONS

A. See Specification Section 02 00 00

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel:

1. Plates and shapes: ASTM A36, Fy-50 Ksi.
2. Sheets: ASTM A366 or A569, zinc coated.
3. Pipe: ASTM A120.
4. Bolts:
   a. High strength: ASTM A325.
   b. Unfinished: ASTM A307.
   c. Self-locking nuts: Prevailing torque type; IFI-100, Grade A.
   d. Flat washers: ANSI B27.2.
   e. Lock washers: Spring type, ANSI B27.1.
   f. Beveled washers: Table 1 of Specifications for Structural Joints Using ASTM A325 or A490 Bolts, AISC Steel Construction Manual.
5. Welds:
   a. Part 5 Specifications and Codes, AISC Steel Construction Manual.
   b. AWS D1.1-77 American Welding Society.
   c. Welding Electrodes: AWS 5.20 E70XX.
6. Checkered plate: FS QQ-F-461.
7. Structural tubing: ASTM A500 or A501.

B. Cast iron: ASTM A48, Class 25 or better.

C. Stainless steel: 316L.

1. Plates: ASTM A167.
2. Bolts: IFI-104, Grade 303 or 305.

D. Shop coatings:

1. Provides shop coatings per Section 09900:
   a. Rust inhibitive shop primer for steel.
   b. Zinc rich primer.
   c. Coal tar paint.
2. Galvanizing:
   a. Hot-dip process: ASTM A123, A133, A385.
3. Bolt galvanizing:
   a. Zinc: ASTM A164, Type GS.
   b. Cadmium: ASTM A165, Type NS.
4. Aluminum.
   a. Standard mill finish.
   b. Clear anodize.

2.02 FABRICATION

A. General:

1. In accordance with dimensions, arrangement, sizes and weights or thicknesses indicated on drawings or specified.
2. All member free of winds, warps, local deformations or unauthorized bends.
3. Holes and other provisions for field connection accurate and shop checked for proper fit.
4. Mark each piece according to the erection Drawing.
5. Provide all field connection materials.

B. Connections:

1. General:
   a. As indicated on the Drawings.
   b. Welds:
      1) Part 5, Specifications and Codes AISC.
      2) AWS D1.1-77, Structural Welding Code.
   c. Where welding is permitted or required:
      1) Butt, miter, and fillet welds continuous.
      2) Exposed welds ground smooth.
      3) Intermittent welds:
         a) Two (2) inch minimum effective length.
         b) Six (6) inch minimum spacing.
2. Structural:
   a. If not indicated on the Drawings, as defined in Part 4 “Connections” of the AISC Manual Ninth Edition.
   b. Shop connections may be bolted, welded or riveted.
   c. Bolted connections for girts with slotted or oversized holes for adjustment.
3. All others: If not indicated on the Drawings, unfinished bolts with self-locking nuts or lock washers.

C. Shop coating:

1. Preparation:
   a. All surfaces to be at the proper temperature, dry and free of grease, oil, dirt, dust, grit, rust, loose mill scale, weld flux, slag, weld spatter and other objectionable substances.
   b. Scrape, chip and brush welds as required to remove all spatter.

c. Dull sharp corners of cut or sheared edges with at least one pass of a power grinder.
2. Galvanizing: Hot-dipped galvanizing after fabrication.
3. Castings: Hot dip in asphalt varnish or coat with coal tar paint, 6 mils minimum.
4. Steel:
   a. Unless otherwise indicated or specified, coat with rust inhibitive primer, 1-1/2 mils minimum.
   b. Apply after fabrication.
   c. Coat as soon after cleaning as practicable.
   d. Apply in a heated structure if outside air temp is below 50 degrees F.
   e. Do not move or handle until coating is dry and hard.
5. Aluminum: Coat all surfaces to come in contact with concrete, cement, mortar, or dissimilar metals with coal tar paint, 6 mils minimum.
6. Other surfaces: Do not shop coat galvanized steel, stainless steel or bronze.
7. Hot-dip galvanize after fabrication steel frames to be cast in concrete.

PART 3 - EXECUTION

3.01 PREPARATION

A. Before assembly, thoroughly clean all parts that will be in contact with each other.

3.02 INSTALLATION

A. General:

1. Assemble all parts accurately as indicated on the Drawings.
2. Set baseplates level and grout in place.

B. Connections:

1. General.
   a. As indicated on the Drawings.
   b. Where welding is permitted or required.
      1) Butt, miter and fillet welds continuous.
      2) Exposed welds ground smooth.
      3) Intermittent welds.
         a) Minimum effective length: 2 inches.
         b) Maximum spacing: 6 inches.
   c. Light drifting is permitted to draw parts together.
   d. No drifting to match unfair holes.
   e. Enlarge holes, if necessary, by reaming with twist drills.
   f. No burning to enlarge holes.
2. Structural steel.
   a. High strength bolts.
      1) Turn-of-nut tightening as described in “Specifications for Structural Joints Using ASTM A325 or A490 Bolts” in the AISC manual.
      2) Use beveled washers when the bearing faces of bolted parts have a slope of 1:20 or greater with respect to a plane perpendicular to the bolt axis.
   b. No field welding of structural steel, except as indicated on the drawings.
   c. Tolerances:
      1) All members level, plumb and aligned within 1:500.

2) Top elevation of members within 1/16-inch of that indicated on Drawings.

3.03 FIELD QUALITY CONTROL

A. Structural steel connections:

1. Provide a platform or other means of access for inspection of each field connection.
2. Leave in place until inspected by Engineer.

END OF SECTION

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SECTION 07 90 00

SEALANTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

1. Clean and prepare joint surfaces.
2. Sealant and backing materials.

1.02 REFERENCES

Reference	Title
ASTM C834	Specification for Latex Sealing Compounds
ASTM C920	Standard Specifications for Elastomeric Sealers
ASTM D1056	Flexible Cellular Materials Sponge or Expanded Rubber

1.03 SUBMITTALS

A. The Contractor shall provide submittals as required hereunder.

B. Product Data and Samples

1. Submit manufacturer's written surface preparation and installation instructions.
2. Submit samples of sealant colors.

1.04 WARRANTY

A. Provide a one-year warranty in accordance with manufacturer’s standard warranty. Replace sealants which fail because of loss of cohesion or adhesion, or do not cure.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers listed below are approved with regards to their specific products.

2.02 MATERIALS

A. Two-Part Urethane: ASTM C920, Type M, Self-Leveling, Class 25.

1. Bostik Construction Products: Chem-Calk 550.
2. Pecora Corporation: Urexpan NR-200.
3. Sonneborn Building Products: Isolastic SL-2, Paving joint sealant.
4. Sika Corporation: Sikaflex 2c SL.

B. Two-Part Urethane: ASTM C920, Type M, Non-Sag.

1. Bostik Construction Products: Chem-Calk 500.
2. Pecora Corporation: Dynatrol II.
3. Sonneborn Building Products: Sonolastic NP-2.
4. Sika Corporation: Sikaflex 2c NS

C. One-Part Urethane: ASTM C920, Type S, Non-Sag, Class 25.

1. Bostik Construction Products: Chem-Calk 900.
2. Pecora Corporation: Dynatrol I-XL.

3. Sonneborn Building Products: Sonolastic NP-1.
4. Sika Corporation: Sikaflex 1a

D. One-Part Silicone: ASTM C920, Type S, Non-Sag, Class 25.

1. Dow-Corning Corporation: 795.
2. General Electric Company: SCS 1000.
3. Pecora Corporation: 895
4. Sonneborn Building Products: Omniseal 50.
5. Sika Corporation: Sika Sil C-995.

E. Latex-Acrylic Sealant: ASTM C834, Non-Sag, Class 25.

1. Pecora Corporation: AC-20.
2. Schnee and Morehead, Inc.: S-M 8200.
3. Sonneborn Building Products: Sonolac.
4. W.R. Meadows, Inc.: Esaply.

F. Immersed Service Sealant:

1. Sika Corporation: Sikaflex 2C.
2. Polymeric Systems, Inc.: PSI 270.
3. Pacific Polymers International: Elasto-Thane 227 R

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Filler: ASTM D1056; round, closed cell foam rod; oversized 30 to 50 percent; Grey Flex manufactured by Emseal.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify joint dimensions, physical and environmental conditions are acceptable to receive work of this Section.

B. Do not begin installation until conditions are acceptable to the Owner’s representative.

3.02 PREPARATION

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

B. Verify that joint shaping materials and release tapes are compatible with sealant.

C. Examine joint dimensions and size materials to achieve required width / depth ratios.

D. Use joint filler to achieve required joint depths, to allow sealants to perform properly.

E. Use bond breaker where required.

3.03 INSTALLATION

A. Perform work in accordance with ASTM C834 for latex compounds and C920 for elastomeric sealants.

B. Install sealant in accordance with manufacturer's written instructions. Apply primer where recommended by manufacturer.

C. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.

D. Tool joints as indicated.

E. Joints: Free of air pockets, foreign embedded matter, ridges, and sags.

3.04 SCHEDULE

A. This schedule reflects sealant materials specified in 2.02 of this Section. This schedule denotes sealant generic type and use or location.

Specification Paragraph Number	Sealant	Use or Location	Joint Tooling
2.02 A	Two-part Urethane: Self Leveling.	Horizontal concrete joints	Flat, 1/8” to 1/4” below finished concrete surface
2.02 B	Two-part urethane non-sag	Vertical joints in CMU and Concrete	Concave
2.02 C	One part urethane	General purpose	Concave
2.02 D	One-Part Silicone	Not used	
2.02 E	Latex-Acrylic	Wood joints and trim to be painted	Flush to concave
2.02 F	Immersed service	Submerged or partially submerged conditions	Concave

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SECTION 08 31 13

ALUMINUM ACCESS HATCHES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

1. Aluminum access hatches, operable hardware and safety grate.

1.02 RELATED SECTIONS

A. The following list of related sections is provided for the convenience of the Contractor. It includes the commonly referenced sections that are in-general applicable to all equipment supplied. This list does not excuse the Contractor from any requirement given in sections not specifically listed below. Where there is a difference between this specification and any other specifications the conflict shall be resolved at the sole discretion of the Engineer.

1. Section 11 01 00 - General Requirements for Equipment
2. Section 11 05 00 - Equipment Mounting

1.03 SYSTEM DESCRIPTION

A. Self-contained fabricated aluminum access hatches designed for use in municipal wastewater facilities applications.

B. Manufacturer to provide mounts, supports, and anchorage hardware as called for in Section 11 05 00.

C. Load Rating: 300 pounds per square foot uniform live load with maximum allowable deflection of 1/150 of the span.

D. Provide a drain channel with coupling to divert rainwater. Pipe the drain to the sump.

1.04 SUBMITTALS

A. The Contractor shall provide the following submittals, in accordance with submittals procedures, in addition to the submittals required by Section 11 01 00 – General Requirements for Equipment.

1. Shop drawings for each unit.
2. Outline installation drawings and written installation instructions for each unit.
3. Material list and catalog information showing the details of construction.

1.05 QUALITY ASSURANCE

A. Shop Inspection and Adjustment:

1. The fully assembled system shall be shop inspected and adjusted before shipping.
2. The system shall be assembled as much as practical in the shop. Field assembly shall be kept to a minimum.

1.06 WARRANTY

A. Provide written warranty.

B. The complete access hatch and safety grate assembly shall be warranted against defects in material and workmanship for a period of 10 years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Bilco

B. U.S.F. Fabrications

C. Halliday Products

D. Or equal

2.02 MATERIALS

A. Cover leaf: 1/4-inch minimum aluminum diamond plate.

B. Frame: Angle frame with continuous anchor flange and EPDM or neoprene odor reduction gasket. Provide drainage channel to collect drain water and provide 1-1/2-inch drainage coupling in a corner of the channel.

C. Hinge: heavy duty, 316 SST hinge with tamper proof 316 SST fasteners.

D. Handle: Recessed non-corrosive lifting handle.

E. Hold Open Assembly:

1. SST and aluminum hold open, SST spring assist assembly with a hold-open arm with red vinyl grip.
2. Hold open assembly to allow locking of cover in the 90 degree open position.

F. Locking System: Non-corrosive locking bar or staple for use with Owner supplied padlock.

G. Safety Grate: Hinged safety grate shall be provided for each hatch.

1. Grate material shall be:
   a. One-piece molded fiberglass grating designed to withstand minimum live load of 300 pounds per square foot.
2. Each grate shall be provided with a permanent hinging system, which will lock the grate in the 90 degree or greater open position.
   a. An aluminum pull rod will be attached to the grate so the operator is positioned with the grate between him and the hatch's opening whenever he pulls on it to raise the grate.
   b. A 316 SS rod will automatically engage to secure the grate in its open position and can be lifted upward to permit the grate to close.
   c. The hatch cover will not be able to shut until the grate is closed, thereby ensuring the grate is in position when the next operator opens the hatch cover.
   d. The grate shall have an OSHA safety orange or safety yellow finish to increase visual awareness of the safety hazard.

2.03 FABRICATION

A. Fabricated components shall be sandblasted to remove all weld burn and discoloration and to provide a uniform finish.

2.04 FINISH

A. Mill finish aluminum.

B. Apply bituminous paint on metal surfaces to be in contact with cementitious materials or dissimilar metals.

PART 3 - EXECUTION

3.01 PREPARATION

A. Ensure that surfaces to receive work are in satisfactory condition.

B. Report any defects detrimental to installation to the Owner's Representative.

3.02 INSTALLATION

A. Install hatches and safety grate in accordance with manufacturer's instructions.

B. Insure top of hatch is not more than 1/8" above adjacent floor.

C. Set access hatches, plumb, level, free of twists.

D. Connect drainpipe to drainage coupling. Route to sump or as shown on the Drawings.

END OF SECTION

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SECTION 09 90 00

PAINTING AND COATING

PART 1 - GENERAL

1.01 SCOPE

A. This section governs materials and application of painting and coating for ferrous surfaces, structural steel and other coated surfaces.

B. Provide all labor, materials, apparatus, scaffolding, and all apparatus work in connection with painting and protective coatings, complete as indicated, specified and required.

C. Work Included in this Section. Principal items include:

1. All new or altered existing structural and miscellaneous steel.
2. Equipment furnished with and without factory finished surfaces.
3. Equipment where factory applied finishes have been marred, abraded, scratched, nicked, or otherwise damaged.
4. Except as hereinafter specifically excluded, repainting of existing interior and exterior painted surfaces from architectural break to architectural break where damaged or altered in performance of work of this General Contract.
5. The Contractor shall furnish to the District, at no charge for use during this Project, the necessary dry film thickness gages and electrical flaw detection equipment required, and inspection equipment to ensure conformance with all specifications and standards included herein.

D. Related Work Not Included in This Section. The following surfaces, in general shall not be painted:

1. Concrete surfaces.
2. Plastic surfaces, except as specified for identification purposes.
3. Nonferrous metals and stainless steel unless otherwise noted or indicated. Galvanized metal shall not be considered a nonferrous metal.

1.02 GUARANTEE

A. A three (3) year guarantee which commences on the date of acceptance against failure of all coatings shall be provided unless otherwise specified; the longer period of warranty shall prevail. Failure of any coating during the guarantee period shall be repaired by the Contractor who shall absorb all costs related to the repair of the coating, including inspection. The contractor shall provide a three-year warranty bond.

1.03 REFERENCE SPECIFICATIONS AND STANDARDS

A. American Society for Testing and Materials (ASTM):

1. D 4262-83 - Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
2. D 4263-83 - Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
3. D4285-83 - Test Method for Indicating Oil or Water in Compressed Air.
4. D4541-93 - Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.

B. NACE International, The Corrosion Society (NACE):

1. RPO188-99 - Discontinuity (Holiday) Testing of Protective Coatings.

C. National Association of Pipe Fabricators (NAPF):

1. NAPF 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.

D. NSF International (NSF):

1. NSF 61 - Drinking Water System Components - Health Effects.

E. SSPC – Society for Protective Coatings:

1. SSPC SP1 - Solvent Cleaning.
2. SSPC SP2 - Hand Tool Cleaning.
3. SSPC SP3 - Power Tool Cleaning.
4. SSPC SP5 - White Metal Blast Cleaning.
5. SSPC SP6 - Commercial Blast Cleaning.
6. SSPC SP7 - Brush-Off Blast Cleaning.
7. SSPC SP10 - Near-White Blast Cleaning.
8. SSPC SP 11 - Power Tool Cleaning to Bare Metal.
9. SSPC-SP 12 - High- and Ultrahigh-Pressure Water Jetting.

F. Unless otherwise specified, all work and materials for the preparation and coating of all metal surfaces shall conform to the applicable requirements specified in the Steel, Structures Painting Manual, Volume-2, Systems and Specifications, latest edition, published by the Steel Structures Painting Council.

1.04 SUBMITTALS

A. Prior to application, the following shall be submitted:

1. Paint or coating manufacturer's product data sheet showing suitability of material for intended use including instruction on surface preparation and application.

B. Samples:

1. Prepare and submit for Owner's approval one (1) copy of color samples on 8-1/2" x 11" size cards for each protective coating system. Each sample card shall clearly show each coat of the finish system, and shall be clearly marked with the manufacturer's name and product identification, and shall be submitted in sufficient time to allow for approval and, if necessary, disapproval and resubmittal without causing any delay of the Project.

C. Manufacturer's Instructions: Include the following:

1. Special requirements for transportation and storage.
2. Mixing instructions.
3. Shelf life.
4. Pot life of material.
5. Precautions for applications free of defects.
6. Surface preparation.
7. Method of application.
8. Recommended number of coats.
9. Recommended dry film thickness (DFT) of each coat.
10. Recommended total dry film thickness (DFT).
11. Drying time of each coat, including prime coat.

12. Required prime coat.
13. Compatible and non-compatible prime coats.
14. Recommended thinners, when recommended.
15. Limits of ambient conditions during and after application.
16. Time allowed between coats (minimum and maximum).
17. Required protection from sun, wind and other conditions.
18. Touch-up requirements and limitations.
19. Material Safety Data Sheet.

D. Quality Assurance Submittals:

1. Quality Assurance plan.
2. Qualifications of coating applicator including List of Similar Projects.

E. Submit Notarized Certificate that:

1. All paints and coatings to be used on this project comply with the State of California Air Resources Board Rule 1113 VOC Regulations effective as of January 1, 2006; and that
2. All paints and coatings to be used on this project comply with the VOC regulations of the State of California Air Management District in which the coatings will be used, effective January 1, 2006.

F. Coating Materials List:

1. The Contractor shall provide two (2) copies of a paint and coating materials list which indicates the manufacturer and paint number, keyed to the Painting and Coating Schedules herein, for approval of the Owner prior to or at the time of submittal of samples required herein.
2. The Contractor shall include with his submittal, his protective coating schedule for shop and field coatings of items to receive protection. The schedule shall conform to the specified requirements for surface preparation, priming, and coating for items covered, and shall follow the same requirements for similar work where such work has not been specifically called out. No bare ferrous nonworking surfaces shall be omitted from the schedule. Particular care shall be taken to cover in sufficient detail the coating of mechanical joints and other mechanical devices which shall conform to the recommended practice of the manufacturer of the joint or other mechanical devices.
3. For all patching of existing surfaces, Contractor shall verify the type of existing coating on the surface whose new coatings are to be applied. Contractor shall include in his submittal documentation that new coatings to be applied are compatible with existing coatings.
4. Submittal shall be sufficiently early to permit Owner's review and then Contractor's coordination with affected material and equipment suppliers to assure their use of approved shop coats of same manufacture as field coats and compatibility with field applied coats for respective coating systems.
5. Coatings to be used on plastic and fiberglass materials shall be certified as acceptable by all plastic and fiberglass manufacturers whose products are to be coated. Certification copies shall be submitted to the Owner. The Contractor shall be certified in writing by the painting and coating material manufacturers as a qualified applicator of their products for the past five years, and copies of the certification submitted to the Owner.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications:

1. Minimum of 5 years' experience applying specified type or types of coatings under conditions similar to those of the Work.
2. Provide qualifications of applicator and references listing five similar projects completed in the past two years.
3. Manufacturer approved applicator when manufacturer has approved applicator program.
4. Approved and licensed by polymorphic polyester resin manufacturer to apply polymorphic polyester resin coating system.
5. Approved and licensed by elastomeric polyurethane (100 percent solids) manufacturer to apply 100 percent solids elastomeric polyurethane system.
6. Applicator of off-site application of coal tar epoxy shall have successfully applied coal tar epoxy on similar surfaces in material, size, and complexity as on the Project.

B. Regulatory Requirements:

1. Comply with governing agencies regulations by using coatings that do not exceed permissible volatile organic compound limits and do not contain lead.
2. Do not use coal tar epoxy in contact with drinking water.

C. Certification: Certify that applicable pigments are resistant to discoloration or deterioration when exposed to hydrogen sulfide and other sewage gases and product data fails to designate coating as "fume resistant."

D. Compatibility of Coatings: Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.

E. Services of Coating Manufacturers Representative: Arrange for coating manufacturer's representative to be on-site, multiple site-visits may be required, when considered necessary at no additional cost to the District to provide consultation services pertaining to proper application of the coating system(s).

1.06 PROTECTION OF WORK.

A. The Contractor shall be responsible for any and all damage to his work or the work of others during the time his work is in progress, including any over spray claims.

1.07 EXTRA STOCK.

A. The Contractor shall deliver to the District a minimum of one (1) one (1) gallon can of the coatings used. Each container shall be unopened and properly labeled for identification.

1.08 RIGHT OF REJECTION.

A. The District shall have the right to reject all material or work that is unsatisfactory and require the replacement of either or both at the expense of the Contractor.

1.09 JOB CONFERENCE.

A. Prior to commencing work a pre-job conference shall be held for the purpose of reviewing and clarifying the painting and coating requirements of the project. The District, Contractor, Applicator, Coatings and Paint Manufacturer's representative, and the District designated Inspector shall be present. A schedule of work to be accomplished will be established.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Packaging and shipping:

1. Deliver paint to the job in original unopened containers with labels intact, and included:
   a. Manufactures name
   b. Type of paint
   c. Manufactures stock number
   d. Color
   e. Instructions for reducing, where applicable
2. Storage and protection:
   a. Store only acceptable project materials on the project site
   b. Store in a suitable location inside and protect from freezing.
   c. Restrict storage to paint materials and related equipment
   d. comply with health and fire regulations
   e. Remover immediately any materials delivered open or subject to improper storage

PART 2 - MATERIALS

2.01 PIPE COATING SYSTEMS

A. Acceptable Manufactures

1. Tnemec
2. Devoe
3. Carboline
4. Or approved equal

B. Epoxy Coating

1. Exterior surface of all exposed ductile-iron sewage pipe, fittings and couplings shall be epoxy coated in accordance with AWWA C116
2. Color to be grey.

C. Bituminous Mastic

1. For buried pipe and as noted.
2. Bituminous mastic shall be coal-tar pitch based and shall have a minimum of 68% solids by volume.

2.02 COLOR SCHEDULE

A. Contractor shall prepare and submit for Owner's approval a color schedule for finish coatings for all piping, mechanical equipment, electrical equipment and other surfaces to be protected. Owner shall approve of color selections prior to Contractors delivery.

PART 3 - EXECUTION

3.01 PROJECT COATINGS

A. Scope: The following governs specific coating systems to be used in each area of work.

1. Exterior surfaces exposed to sunlight or weather
   a. Pipe, fittings and ferrous metal: Urethane

b. Electrical boxes and conduit: Urethane
2. Interior surfaces not exposed to sunlight or weather
   a. Exterior of valves shall be coated with Epoxy
   b. Exterior of fittings shall be coated with Epoxy
3. Miscellaneous Surfaces
   a. Buried valves: Epoxy
   b. Interior of valves: Epoxy

3.02 GENERAL

A. The requirements for painting and coating ferrous surfaces shall generally conform to the SSPC (Steel Structures Painting Council) and to the manufacturer's recommendations. Application of the paint or coating system shall not be permitted if, in the opinion of the District, the equipment, climate, or safety conditions do not meet the above recommendations.

B. The Contractor shall stir, strain, and keep coating materials at a uniform consistency during application. Each coating shall be applied evenly, free of brush marks, sags, runs and other evidence of poor workmanship. Finished surfaces shall be free from defects and blemishes.

C. The Contractor shall not use thinners unless permitted by the District. If thinning is permitted, no more than the maximum allowable amount of thinner per gallon of coating material as recommended by the manufacturer shall be used. Coating materials shall be stirred at all times when adding thinner and the coating material surface shall not be flooded with thinner prior to mixing. The Contractor shall not reduce coating materials more than is absolutely necessary to obtain the proper application characteristics and to obtain the specified dry film thickness.

D. Deliver all paints to the job site in the original, unopened containers.

3.03 SURFACES NOT TO BE COATED

A. The following surfaces shall not be painted and shall be protected during the painting of adjacent areas:

1. Mortar-coated pipe and fittings
2. Concrete surfaces (i.e. vaults)
3. Stainless steel
4. Anodized aluminum
5. Nameplates
6. Manhole frames and covers
7. Grease fittings
8. Glass
9. Brass, copper or bronze
10. Platform gratings
11. Buried pipe, unless specifically required in the piping specifications

3.04 SURFACE PREPARATION

A. The Contractor shall not prepare more surface area than can be coated in one day. Pipe that has already been factory primed or painted shall not be sandblasted. All surfaces shall be prepared in accordance with the manufacturer's recommendations. Ensure the proposed coatings will be compatible with factory applied coatings.

B. Wherever the words "solvent cleaning", "hand tool cleaning", "wire brushing", or "blast cleaning", or similar words are used in these specifications or in paint manufacturer's

specifications, they shall be understood to refer to the applicable SSPC (Steel Structure Painting Council).

3.05 SHOP APPLIED PRIMER

A. Surfaces that are shop primed shall receive a field touchup of primer to cover all scratches or abraded areas. Ensure the proposed coatings will be compatible with factory applied coatings.

3.06 BITUMINOUS MASTIC

A. Buried metal (flanges, non-stainless steel nuts and bolts, flexible couplings, exposed reinforcing steel, etc.) shall be coated with a minimum of 20 mils of bituminous mastic

B. All surfaces coated with bituminous mastic shall be covered with 8 mil polyethylene wrap.

3.07 EPOXY COATING

A. All exposed ductile-iron piping, fitting, and couplings are to have exterior surfaces coated with a urethane over epoxy coating.

B. Metal surfaces shall be epoxy coated and applied as follows:

1. Surfaces to be epoxy coated shall be sandblasted.
2. Sandblasted surfaces shall be coated with primer to a dry film thickness of 3 mils.
3. Two coats of epoxy paint shall be applied (4 mils each) to the primed surface. The manufacturer's recommended drying time between coats shall be followed.
4. The Contractor shall prepare multiple-component coatings using all of the contents of the container for each component as packaged by the paint manufacturer. Partial batches and multiple component coatings that have been mixed beyond their pot life shall not be used. Touchup paint shall be provided. The Contractor shall mix only the components specified and furnished by the paint manufacturer. The Contractor shall not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

3.08 APPLICATION LIMITATION

A. Paint or coating shall not be applied under the following conditions:

1. When the surrounding air temperature or the temperature of the surface to be coated is below 40º F or as recommended by the manufacturer of the specified coating system.
2. When the temperature of the surface to be coated is more than 5º F below the air temperature or when the surface temperature is over 120º F.
3. When the surface to be coated is wet, moist, or contaminated with any foreign matter.
4. During rain, fog, or mist, or when the relative humidity exceeds 80 percent.
5. When the temperature is less than 5º F above the dewpoint.
    a. If above conditions are prevalent, the application of coating shall be delayed or postponed until conditions are favorable. Dew or moisture condensation should be anticipated and if such conditions are prevalent, coating work shall be delayed until mid-morning to be certain that the surfaces are dry.
    b. The day's coating shall be completed in time to permit the film sufficient drying time prior to damage by climatic conditions.

c. If a change in climatic conditions damages a coating application, the Contractor shall repair the damaged coating to its specified condition as directed by the District.
d. Paint shall be applied in such a manner as to assure an even, smooth, uniform adhering coat free from dirt, runs, brush marks and laps, and shall be applied as recommended by the manufacturer. Paint shall not be applied when freshly painted surfaces can become damaged by rain, fog, or condensation or when inclement weather can be anticipated. Fresh paint damaged by the elements shall be replaced by the contractor at his expense. Drop cloths shall be used to protect floors, equipment, piping and other exposed surfaces from spattering and spillage. Paint shall be allowed to dry thoroughly between applications of successive coats. The manufacturer's recommended time between coats will be used as a guide by the District as to when the next coat of paint may be applied. The District must give approval before successive coats are applied.
e. The Contractor shall notify the District after surface preparation and after the application of each coat of paint.

3.09 TESTING

A. The District will perform such tests as are required to ensure compliance with all phases of the work including surface preparation, abrasive blast cleaning, and the application of the coating systems.

1. If the item has an improper finish color or insufficient film thickness, the surface shall be cleaned and top-coated with the specified paint material to obtain the specified color and coverage. Visible areas of chipped, peeled, or abraded paint shall be hand or power-sanded, feathering the edges. The areas shall then be primed and finish coated in accordance with the specifications. Work shall be free of runs, bridges, shiners, laps, or other imperfections.

END OF SECTION

SECTION 09 90 60

WET WELL COATING

PART 1 - GENERAL

1.01 SCOPE.

A. Provide all labor, materials, apparatus, scaffolding, and all apparatus work in connection with protective coatings, complete as indicated, specified and required.

B. Work Included in This Section. Principal items include:

1. Protective coating for the existing drywell to be converted to a storage wet well.
2. Preparation by abrasive blasting of the existing surface.

1.02 GUARANTEE.

A. A three (3) year guarantee which commences on the date of acceptance against failure of all coatings shall be provided unless otherwise specified; the longer period of warranty shall prevail. Failure of any coating during the guarantee period shall be repaired by the Contractor who shall absorb all costs related to the repair of the coating, including inspection. The contractor shall provide a three year warranty bond.

1.03 REFERENCE SPECIFICATIONS AND STANDARDS.

A. American Society for Testing and Materials (ASTM):

1. D4285-83 - Test Method for Indicating Oil or Water in Compressed Air.
2. D4541-93 - Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.

B. NACE International, The Corrosion Society (NACE):

1. RPO188-99 - Discontinuity (Holiday) Testing of Protective Coatings.

C. SSPC – Society for Protective Coatings:

1. SSPC SP1 - Solvent Cleaning.
2. SSPC SP2 - Hand Tool Cleaning.
3. SSPC SP3 - Power Tool Cleaning.
4. SSPC SP5 - White Metal Blast Cleaning.
5. SSPC SP6 - Commercial Blast Cleaning.
6. SSPC SP7 - Brush-Off Blast Cleaning.
7. SSPC SP10 - Near-White Blast Cleaning.
8. SSPC SP11 - Power Tool Cleaning to Bare Metal.
9. SSPC-SP12 - High- and Ultrahigh-Pressure Water Jetting.
10. SSPC-SP13 – Surface Preparation of Concrete

1.04 DEFINITIONS

A. Submerged: Surfaces below tops of structure walls which will contain water, even when above expected water level.

B. Exposed Surface: Any metal or concrete surface, indoors or outdoors that is exposed to view.

C. Dry Film Thickness (DFT): Thickness of fully cured coating, measured in mils.

D. Volatile Organic Compound (VOC): Content of air polluting hydrocarbons in uncured coating product measured in units of grams per liter or pounds per gallon, as determined by EPA Method 24.

E. Ferrous: Cast iron, ductile iron, wrought iron, and all steel alloys except stainless steel.

1.05 SUBMITTALS

A. Shop Drawings: Include schedule of where and for what use coating materials are proposed in accordance with requirements for Product Data.

B. Color Schedule.

1. Coating color for wet well: White.
2. Finish coat colors for all protective-coating systems shall match existing colors as closely as possible unless otherwise specified by Owner.
3. Owner shall approve of color selections prior to Contractor’s delivery of surplus.

C. Product Data Sheets: Contractor shall submit coatings material manufacturers' printed technical data sheets for products intended for use in each coating system. Data sheets shall fully describe material as to its intended use, make-up, recommended surface preparation and application conditions, primers, material mixing and application, minimum and maximum re-coat times (including recommended dry mil thickness), precautions, safety and maintenance cleaning directions.

D. Manufacturer's Instructions: Include the following:

1. Special requirements for transportation and storage.
2. Mixing instructions.
3. Shelf life.
4. Pot life of material.
5. Precautions for applications free of defects.
6. Surface preparation.
7. Method of application.
8. Recommended number of coats.
9. Recommended dry film thickness (DFT) of each coat.
10. Recommended total dry film thickness (DFT).
11. Drying time of each coat, including prime coat.
12. Required prime coat.
13. Compatible and non-compatible prime coats.
14. Recommended thinners, when recommended.
15. Limits of ambient conditions during and after application.
16. Time allowed between coats (minimum and maximum).
17. Required protection from sun, wind and other conditions.
18. Touch-up requirements and limitations.
19. Material Safety Data Sheet.

E. Quality Assurance Submittals:

1. Quality Assurance plan.
2. Qualifications of coating applicator including List of Similar Projects.

F. Submit Notarized Certificate that:

1. All coatings to be used on this project comply with the State of California Air Resources Board Rule 1113 VOC Regulations effective as of January 1, 2006.
2. All coatings to be used on this project comply with the VOC regulations of the State of California Air Management District in which the coatings will be used, effective January 1, 2006.

G. Coating Materials List:

1. For all patching of existing surfaces, Contractor shall verify the type of existing coating on the surface whose new coatings are to be applied. Contractor shall include in his submittal documentation that new coatings to be applied are compatible with existing coatings.
2. Submittal shall be sufficiently early to permit Owner's review and then Contractor's coordination with affected material and equipment suppliers to assure their use of approved shop coats of same manufacture as field coats and compatibility with field applied coats for respective coating systems.

1.06 QUALITY ASSURANCE

A. Applicator Qualifications:

1. Minimum of 5 years of experience applying specified type or types of coatings under conditions similar to those of the Work.
2. Provide qualifications of applicator and references listing five similar projects completed in the past two years.
3. Manufacturer approved applicator when manufacturer has approved applicator program.

B. Regulatory Requirements:

1. Comply with governing agencies regulations by using coatings that do not exceed permissible volatile organic compound limits and do not contain lead.
2. Do not use coal tar epoxy in contact with drinking water.

C. Certification: Certify that applicable pigments are resistant to discoloration or deterioration when exposed to hydrogen sulfide and other sewage gases and product data fails to designate coating as "fume resistant."

D. Compatibility of Coatings: Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.

E. Services of Coating Manufacturers Representative:

1. Arrange for coating manufacturer’s representative to attend pre-installation conferences. Make periodic visits to the project site to provide consultation and inspection services during surface preparation and application of coatings, and to make visits to coating plants to observe and approve surface preparation procedures and coating application of items to be “shop primed and coated”.

1.07 PROTECTION OF WORK.

A. The Contractor shall be responsible for any and all damage to his work or the work of others during the time his work is in progress, including any overspray claims.

1.08 EXTRA STOCK.

A. The Contractor shall deliver to the Owner a minimum of two (2) one (1) gallon cans of each type and color of finish coating used on the project and one (1) one (1) gallon cans of each primer or two (2) percent of each type and color of finish coating used

on the project and one (1) percent of each primer, whichever is greater. Each container shall be unopened and properly labeled for identification.

1.09 RIGHT OF REJECTION.

A. The Owner shall have the right to reject all material or work that is unsatisfactory, and require the replacement of either or both at the expense of the Contractor.

1.10 JOB CONFERENCE.

A. Prior to commencing work a pre-job conference shall be held for the purpose of reviewing and clarifying the coating requirements of the project. The Owner, Contractor, Applicator, Coating Manufacturer's representative, and the Owner designated Inspector shall be present. A schedule of work to be accomplished will be established.

PART 2 - PRODUCTS

2.01 COATING SYSTEMS

A. Systems specified herein may be superseded by the manufacturer during the period of the contract. If a coating system is superseded by the manufacturer, the contractor shall supply in writing a letter from the manufacturer which states the system has been superseded, the new system components, changes in handling, application and preparation necessary.

2.02 GENERAL

A. Surfaces to receive protective coating materials as specified in this Section shall be coated in conformance with the applicable coating systems specified herein. All materials specified by name and/or manufacturer or selected for use under these Specifications, shall be delivered unopened at the job site in their original containers and shall not be opened until inspected by the Owner.

B. No coating shall be over 12 months from manufacturing date. Whenever a manufacturer's brand name is specified, it is intended to define the general type and quality of coating desired. Other coatings of equal quality as judged by the Engineer may be used. Coating materials shall be a product of Carboline, Tnemec, Ameron/PPG, Sherwin-Williams; or equal.

C. All coatings shall be produced and applied as herein called for or, if not specifically called for, shall be applied in accordance with the manufacturer's printed recommendations as approved by Owner.

D. So far as possible, all coating materials shall be provided by a single source supplier.

2.03 COATING MATERIALS

A. The term "coating materials," as used herein, shall include enamels, paints, sealers, epoxy resins, and all other paints and protective coatings, excepting galvanizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.

B. General: Decorative and protective coating materials shall be sealed in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer, all of which shall be plainly legible at the time of use. Pigmented coatings shall be furnished in containers not larger than five (5) gallons. Materials

shall conform to the specifications shown herein and to the requirements hereinafter specified.

C. Compatibility: Only compatible materials shall be used in the Work. Particular attention shall be directed to compatibility of primers and finish coats.

D. Colors: All colors and shades of colors of all coats of protective coating material shall be as selected by the Owner. Each coat shall be of a slightly different shade, as directed by the Owner to facilitate inspection of surface coverage of each coat.

2.04 SERVICE CONDITION SUMMARY

A. Ferrous metals, other than stainless steel, submerged or intermittently submerged in sewage shall be prepared and coated in accordance with the following requirements.

1. Surface Preparation: Per manufactures requirements for the product used.
2. Weld surfaces, edges, and sharp corners shall be ground to a smooth shape and all weld splatter removed.
3. All sharp edges, nuts, bolts, or other items difficult to coat shall receive a brush applied coat of the specified coating prior to application of each coat.
4. Application shall be in strict conformance with the manufacturer's printed recommendations.

B. Acceptable Manufacturers

1. Tnemec
   a. Surface Preparation: SSPC-SP5/NACE No. 1 White Metal Blast Clean to create a dense, uniform, and angular anchor profile of 3.0 mils minimum.
   b. Stripe-Coat Procedure: Series G435 | Perma-Glaze (Series G435 back-brushed wet-on-wet OK); brush-applied to all welds, voids, nuts, bolts and sharp edges referencing Paint Application Guide No. 11 Protecting Corners, Edges, Crevices, and Irregular Steel Geometries by Stripe Coating
   c. Finish Coat: Series G435 | Perma-Glaze; 20.0 to 30.0 mils DFT per coat in one or two coats
   d. Total DFT: 25.0 to 40.0 mils
   e. Mix and precondition coating materials per manufacturer’s direction.
2. Sherwin-Williams
   a. Dura-Plate 6100, 25 to 30 mils DFT
   b. Surface preparation: SSPC-SP13 or per manufacture’s requirements for the product used.
   c. Clean and degrease the surface prior to abrasive blasting per SSPC-SP 1 Solvent Cleaning. Methods described in SSPC-SP 1 include solvents, alkali, detergent/water, emulsions, and steam.
   d. The surface shall be abrasive blasted to SSPC-SP10/NACE No. 2 Near-White Blast Cleaning with a 2 - 3 mil profile. The anchor pattern shall be sharp with no evidence of a polished surface.
   e. The finished surface shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter with no more than 5% staining. After blasting, all dust and loose residue should be removed from the surface by acceptable means.
   f. Mix and precondition coating materials per manufacturer’s direction.
3. Carboline
   a. Plastite 4500 S at 20 mils in a single coat
   b. Mix and precondition coating materials per manufacturer’s direction.

c. Surface Preparation: SSPC-SP13 or per manufacture's requirements for the product used.
d. Steel surfaces: Edges, and sharp corners shall be ground to a smooth shape and all weld splatter removed.
e. All sharp edges, nuts, bolts, or other items difficult to coat shall receive a brush applied coat of the specified coating prior to application of each coat.
f. Application shall be in strict conformance with the manufacturer's printed recommendations.

4. Ameron/PPG
   a. Coating system per manufacturer's recommendation. Shall be of similar quality and purpose as those specified for Tnemec or Sherwin-Williams.
   b. Mix and precondition coating materials per manufacturer's direction.
   c. Surface Preparation: Per manufactures requirements for the product used.
   d. Steel surfaces: Edges, and sharp corners shall be ground to a smooth shape and all weld splatter removed.
   e. All sharp edges, nuts, bolts, or other items difficult to coat shall receive a brush applied coat of the specified coating prior to application of each coat.
   f. Application shall be in strict conformance with the manufacturer's printed recommendations.

PART 3 - EXECUTION

3.01 GENERAL

A. All surface preparation, coating shall conform to applicable standards of the National Association of Corrosion Engineers, the Steel Structures Painting Council, the American Concrete Institute, the Forest Products Research Society and the Manufacturer's printed instructions. Material applied prior to approval of surface by the Owner or owner's representative shall be removed and re-applied to the satisfaction of the Owner or owner's representative at the expense of the Contractor.

B. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice.

C. Dust, dirt, oil, grease or any foreign matter that will affect the adhesion or durability of the finish must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.

D. The coating equipment shall be designed for the application of proposed materials and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. The equipment shall be subject to inspection and approval by the Owner or Owner's representative.

E. Application of the first coat shall follow immediately after surface preparation and cleaning and within an eight hour working day. Any cleaned areas not receiving first coat within eight-hour period shall be re-cleaned prior to application of first coat.

F. Prior to assembly, all surfaces made inaccessible after assembly shall be prepared as specified herein and shall receive the coating system specified.

G. Hazardous waste or hazardous material.

1. Contractor shall test for the presence of existing lead based coatings.
2. Material as defined in Section 25117 of the Health and Safety Code (including, without limitation, asbestos, lead, PCBs, petroleum and related hydrocarbons,

and radioactive material) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law ("hazardous material").

3. Work involving lead and/or zinc are subject to regulation. Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to District.
4. Contractor shall not conduct any Work involving lead-containing materials or zinc unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, bonds required by governmental or quasi-governmental authorities, fees, deposits, tap fees, offsite easements and lead and zinc disposal facilities necessary for the prosecution of the Work shall be procured and paid for by Contractor.
5. Contractor shall give all notices and comply with the Law bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance there with, it shall be responsible for promptly notifying District in writing of such fact. If Contractor performs any Work contrary to the Law without such notice to District, it shall bear all costs arising there from.
6. When applicable, Contractor shall submit and execute a Lead Compliance Program in accordance with CCR Title 8, Section 1532.1 (Cal/OSHA). The plan shall include the following items:
    a. Training, medical, and respirator approval documentation for all employees who will work at the site.
    b. The identity of the Competent Person, as defined by Cal/OSHA.
    c. Material Safety Data Sheets for hazardous materials brought onto the site.
    d. The Contractor's procedures for identifying and reporting unforeseen hazards.
    e. The names and addresses of the waste hauler and the landfill for hazardous and non-hazardous wastes.

3.02 SURFACE PREPARATION, METALLIC SURFACES

A. Concrete shall be designed, placed, cured, and prepared per NACE No. 6/SSPC-SP 13, latest edition. Abrade to remove all laitance, loose concrete, etc. and to create surface profile in accordance with the appropriate ICRI CSP 4-7.

B. Do not apply coating unless concrete has cured at least 28 days @ 70°F (21°C) or equivalent. Voids in concrete may require filling and/or surfacing. Consult Manufacturer’s Technical Service for recommended primer/sealer.

C. Heavy deposits of grease, oil or contaminates shall be removed with solvent oil cleaner or acid etching. Any chemical contamination shall be neutralized and/or flushed off prior to any other surface preparation.

D. Field blast cleaning for all surfaces shall use a dry method unless otherwise directed.

E. Particle size of abrasives used in blast cleaning shall be that which will produce a 3 mil (50.0 microns) or greater surface profile or in accordance with recommendations of the manufacturer of the specified coating system to be applied.

F. Abrasive used in blast cleaning operations shall be new, washed, graded and free of contaminants that would interfere with adhesion of coating and shall not be reused unless specifically approved by the Owner or Owner's representative.

G. During blast cleaning operations, caution shall be exercised to ensure that existing coatings to remain are not exposed to abrasion from blast cleaning.

H. Keep the area of work in a clean condition and do not permit blasting materials to accumulate as to constitute a nuisance or hazard to performance of work or operation of existing facilities.

I. Blast cleaned surfaces shall be cleaned prior to application of specified coatings by a combination of blowing with clean dry air, brushing/brooming and/or vacuuming as directed by the Owner or Owner's representative.

J. Application SSPC specifications are as follows:

1. Solvent Cleaning (SSPC-SP1):
   a. Removal of oil, grease, soil and other contaminants by use of solvents, emulsions, cleaning compounds, steam cleaning or similar materials and methods which involve a solvent or cleaning action.
2. Hand Tool Cleaning (SSPC-SP2):
   a. Removal of loose rust, loose mill scale and other detrimental foreign matter to degree specified by hand chipping, scraping, sanding, and wire-brushing.
3. Power Tool Cleaning (SSPC-SP3):
   a. 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.
4. White Metal Blast Cleaning (SSPC-SP5):
   a. Blast cleaning to a gray-white uniform metallic color until each element of surface is free of all visible residues.
5. Commercial Blast Cleaning (SSPC-SP6):
   a. Blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.
6. Brush-off Blast Cleaning (SSPC-SP7):
   a. Blast cleaning to remove loose rust, loose mill scale and other detrimental foreign matter to degree specified.
7. Near White Blast cleaning (SSPC-SP10):
   a. Blast cleaning to nearly white metal cleanliness, until at least 95 percent of each element of surface area is free of all visible residues.

3.03 MANUFACTURER'S RECOMMENDATIONS

A. Unless otherwise specified herein, the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, minimum and maximum re-coat windows, sweat in times, and protection of coating materials; for preparation of surfaces for coating; and for all other procedures relative to coating shall be strictly observed. Use only manufactures thinners, if allowed, for the application.

B. No substitutions or other deviations will be permitted without written permission of the Owner.

3.04 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver abrasive grit in original moisture-proof bags or airtight bulk containers.
2. Deliver coating system materials in original, unopened containers with seals unbroken and labels intact. Labels shall identify type of material, color, date of manufacture, and batch number. No batch shall be over twelve months from original date of manufacture.

B. Storage:

1. Store materials in a single, approved location.
2. Store coating system materials in enclosed and ventilated structures. Maintain temperature inside the structure within the temperature range recommended by the manufacturer.
3. Coating materials and equipment shall be stored in designated areas. Coating containers shall be opened only when required for use. Coatings shall be mixed only in designated rooms or spaces in the presence of the Owner's Representative. Coating shall be thoroughly stirred, boxed or agitated utilizing air powered or electric drills to uniformly smooth consistency and prepared and handled in a manner to prevent deterioration and inclusion of foreign matter. Unless otherwise specified or approved, no materials shall be reduced, changed, or used except in accordance with the manufacturer's label or data sheet. All coatings shall be VOC compliant.

3.05 SAFETY REQUIREMENTS

A. The contractor is responsible for all worksite safety.

B. In accordance with the requirements of the applicable OSHA Regulations for Construction, the Contractor shall provide and require the use of personal protective lifesaving equipment for all persons working in or about the project site.

C. Respirators shall be worn by all persons engaged in, and assisting in, spray coating. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices meeting the requirements of ANSI Z87.1 latest revision, and approved OSHA Regulations for abrasive blasting operations and approved air-purifying, half-mask or mouthpiece respirator with appropriate filter. All blast line couplings shall be equipped with cable chokers and automatic shut off devices.

D. Ventilation. Where ventilation is used to control potential exposure to workers as set forth in Section 1914.94 of the OSHA Regulations for Construction, ventilation shall be adequate to reduce the concentration of the air contaminant to the degree that a hazard to the worker does not exist. Methods of ventilation shall meet the requirements set forth in ANSI-Z9.2, latest revision.

E. Sound Levels. In accordance with Sections 1926.52 and 1926.101 of OSHA Regulations For Construction, whenever the occupational noise exposure exceeds maximum sound levels as set forth in Table D-2 ear protective devices shall be fitted and determined individually and used, and a continuing, effective hearing conservation program shall be administered.

F. Storage and mixing of coating materials shall be performed only in those areas designated by the Owner. All coatings and thinners shall be stored in a locked container with proper ventilation. All compressors shall be placed in secondary containment.

G. Cloths and cotton waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each workday.

3.06 STORAGE MIXING AND THINNING

A. Coating materials shall be protected from exposure to cold weather, and shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Materials of different manufacturers shall not be mixed together. Packaged materials may be thinned immediately prior to application in accordance with the manufacturer's directions. Only mixing of full kits will be allowed, No splitting of kits.

3.07 WORKMANSHIP

A. Skilled craftsmen and experienced supervision shall be used on all work.

B. All coatings shall be applied in a workmanlike manner so as to produce an even film of specified uniform thickness.

C. Edges, corners, crevices, and joints shall receive special attention to ensure that they have been thoroughly cleaned. Special attention shall be given to ensure that these areas receive a film thickness equivalent to adjacent areas.

D. The finished surfaces shall be free from runs, drops, drips, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The hiding shall be so complete that the addition of another coat would not increase the hiding.

E. Installations shall be protected by the use of drop cloths or other approved precautionary measures.

3.08 PREPARATION FOR PROTECTIVE COATING

A. All surfaces to receive protective coatings shall be cleaned as specified herein prior to application of coating materials. The Contractor shall examine all surfaces to be coated, and shall correct all surface defects before application of any coating material.

B. Beginning the work of this Section without reporting unsuitable conditions to the Owner constitutes acceptance of conditions by the Contractor. Any required removal, repair, or replacement of this work caused by unsuitable conditions shall be done at no additional cost to the Owner.

C. All marred or abraded spots on shop-primed and factory-finished surfaces shall receive touch-up restoration prior to any other coating application.

3.09 ITEMS NOT TO BE COATED

A. Hardware, hardware accessories, name plate data tags, machined surfaces and similar items in contact with coated surfaces not to be coated shall be removed or masked prior to surface preparation and coating operations. Following completion of coating of each piece, removed items shall be reinstalled. Such removal and installation shall be done by workmen skilled in the trades involved.

3.10 ABRASIVE BLASTING

A. All abrasive blasting shall be done in strict accordance with the referenced specifications of the Steel Structures Painting Council and shall conform to all regulations of the local and State (CARB) Air Pollution Control Agency.

B. When items are to be shop primed or shop primed and finish coated, surface preparation shall be as specified in this Section. The Owner shall have the right to witness, inspect, and reject any abrasive blasting done in the shop. If automatic blast units are used the working mixture of abrasive shall be 75% grit and 25% shot.

C. Contractor shall provide suitable protection from inclement weather while abrasive blasting is in progress to ensure that all required standards for surface preparation are met.

D. Should unforeseen difficulties develop in performing abrasive blasting outside the plant, Owner may allow temporary relocation of materials and equipment to designated areas inside the plant to maintain progress. Such permission shall be granted entirely at Owners discretion, must be in writing, and shall not relieve Contractor's responsibility for maintaining required standards of quality and progress on the work.

E. Care shall be taken to prevent damage to structures and equipment. The work area shall be enclosed by tarps and or dust collectors and, in addition, pumps, motors, and other equipment shall be shielded, covered, or otherwise protected to prevent the entrance of abrasive or dust.

F. No dust or overspray shall leave the tarp enclosure. Contractor shall be responsible for all over-spray and dust claims and any related damage. All blast equipment shall be equipped with oil/water separators and dryers. Air stream testing shall be performed daily in accordance with ASTM D 4285.

G. No Abrasive blasting may begin before the Owner inspects and approves the protective measures. The Contractor shall be responsible for all damage caused by or resulting from Abrasive blasting in all cases. Contractor shall be responsible for disposal of all blast residue in accordance with applicable Federal, State and Local regulations.

H. After abrasive blasting, dust and spent abrasive shall be removed from the surfaces by brushing and vacuum cleaning. Contractor shall be responsible for all costs for disposal of blast residue in accordance with applicable Federal, State and Local regulations.

I. Dispose of all wastes from abrasive blasting, and any other wastes generated during the Work. Sample and test wastes as required by regulatory agencies, and as necessary for classification of wastes prior to disposal. This work includes all costs for waste sampling, testing, accumulation, transport, and disposal, including the cost for wastes classified as hazardous and non-hazardous.

J. To facilitate inspection, the Contractor shall, on the first day of abrasive blasting operations, provide and abrasive blast metal panels to the degree called for in the Specifications and as noted above. After Owner and Contractor mutually agree that a specific panel meets the requirements of the Specification, the panel shall be initialed by the Contractor and Owner and then be coated with a clear, non-yellowing finish. Panels shall be prepared for each type abrasive blasting specified and shall be maintained and utilized by the Inspector throughout the duration of abrasive blasting operations.

K. If lead is present on the project, a lead stabilization system may be used such as: Enviro-Prep 33010, manufactured by Hoffers Coatings, or equal. The system Chemical stabilization process shall render the coating non-hazardous which shall be tested and verified by the contractor. The material shall be disposed of appropriately according to current regulations.

3.11 APPLICATION OF PROTECTIVE COATINGS

A. Application of Field Coatings:

1. Except where in conflict with the manufacturer's printed instructions, or where otherwise specified herein, the Contractor may use brush, roller, air spray, or airless spray application; however, any spray coating must first have the approval of the Owner. Areas inaccessible to spray coating or rolling shall be coated by brushing or other suitable means.
2. The Contractor shall give special attention to the work to ensure that edges, corners, crevices, welds, bolts, and other areas, as determined by the Owner, receive a film thickness at least equivalent to that of adjacent coated surfaces. All coatings shall be uniform in gloss, color and appearance.
3. All protective coating materials shall be applied in strict accordance with the manufacturer's printed instructions.
4. Prime coat shall be applied to cleaned surfaces within a four-hour period of the cleaning, and prior to deterioration or oxidation of the surface and in accordance with the manufacturer's recommendations. Drift from Abrasive blasting procedures shall not be allowed to settle on freshly coated surfaces, work area shall be clear of all visible dust.
5. All coatings shall be applied in a dry and dust-free environment. Do not apply coatings when the air temperature is less than 5 degrees F above dew point. No, coating shall be applied when the surrounding air temperature, measured in the shade, is below 50 degrees F.
6. The Contractor shall provide a heated environment to obtain temperature and humidity conditions if necessary to meet schedule requirements at no additional cost to the Owner.
7. Do not abrasive blast when air temperature is less than 5 degrees F above dew point. No coating shall be applied when it is expected that the relative humidity will exceed 85 percent or that the air temperature will drop below 55 degrees F. within eight hours after the application of the coating. Dew or moisture condensation should be anticipated and if such conditions are prevalent, coating shall be delayed until mid-morning to be certain that the surfaces are dry. The day's coating shall be completed well in advance of the probable time of day when condensation will occur, in order to permit the film a sufficient drying time prior to the formation of moisture or reaching the dew point.
8. Each coat shall be applied evenly, at the proper consistency, and free of brush marks, sags, runs, over spray, pin holes and other evidence of poor workmanship. Care shall be exercised to avoid lapping coatings onto glass or hardware. Coatings shall be sharply cut to lines. Finished coated surfaces shall be free from defects or blemishes. Protective coverings shall be used to protect surrounding areas and equipment. Care shall be exercised to prevent coating from being spattered onto surfaces from which such coating cannot be removed satisfactorily. Surfaces from which coating cannot be removed satisfactorily shall be coated or recoated as required to produce a finish satisfactory to the Owner. Whenever two (2) coats of a dark, colored coating, are specified, the first coat shall lighter color to act as an indicator of proper coverage, or the two (2) coatings shall be of a contrasting color.
9. Touch-up of all surfaces shall be performed after installation.
10. All surfaces to be coated shall be clean and dry at the time of application.
11. Holiday test 100% per NACE RPO-188 all coatings in immersion and vapor areas, until no holidays are detected.

B. Time of Coating:

1. Manufacturer's recoat time limits shall be strictly complied with. Sufficient time shall be allowed to elapse between successive coats to permit satisfactory recoating, but, once commenced, the entire coating operation shall be completed without delay. No additional coating of any structure, equipment, or other item designated to be coated shall be undertaken without specific permission of the Owner until the previous coating has been completed for the entire structure, piece of equipment, or other item.
2. Piping shall not be finish coated until it has been pressure tested and approved.

C. Thickness of Coating: The dry film mil-thickness specified shall be achieved and verified for each coat, before applying next coat.

3.12 TESTING AND INSPECTION

A. Inspection Devices:

1. The Contractor shall furnish, until final acceptance of coating, inspection devices in good working condition for detection of holidays and measurement of dry-film thickness of coatings.
2. The Contractor shall also furnish U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates to test accuracy of dry-film thickness gauge and certified instrumentation to test accuracy. Dry-film thickness gauges shall be made available for the Inspector's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the Inspector. Inspection devices shall be operated in accordance with the manufacturer's instructions at the direction of the Owner's Representative.

B. The Inspector and Contractor shall conduct film thickness measurements and electrical holiday inspection of the coated surfaces with equipment furnished by the Contractor and shall recoat and repair as necessary for compliance with the Specifications. Contractor shall provide all manpower to move scaffolding and or ladders.

1. After repaired and recoated ferrous metals areas have cured, final inspection tests will be conducted by the Owner or Owner's Representative. Coating thicknesses specified in mils on ferrous substrates will be measured with a nondestructive magnetic type dry-film thickness gage such as the Positech 6000. Discontinuities, voids and pinholes in the coatings will be determined with a nondestructive type electrical holiday detector. Epoxy coatings and other thin film coatings will be checked for discontinuities and voids with a low voltage detector of the wet-sponge type, such as Model M1 as manufactured by Tinker and Rasor. Use a non-sudsing type wetting agent, such as Kodak Photo-Flo, which shall be added to the water prior to wetting the sponge. A high voltage, low current, spark type detector such as, manufactured by D.E. Sterns 14/20. Contractor shall supply three 14” wire brush wands. Tape type coatings will be inspected for holidays using a device designed for use in detecting such flaws.
2. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations and retested. No pinholes or other irregularities will be permitted. Coatings not in compliance with the Specifications will not be acceptable and shall be replaced, and re-inspected at Contractor's expense until the Specifications are met.
3. Provide adequate lighting, without shadows, during all phases of work to ensure that work is performed as specified. Illuminate entire area of work.

4. Provide ground supported scaffolding and lighting, as determined by the Inspector, to facilitate visual and instrument inspection by the Inspector of each phase of the work and of the completed work. Place as directed to minimize glare and shadows.
5. Provide personnel to move scaffolding and furnish other assistance to the District or District's representative as required.
6. Inspector will examine surfaces after blast cleaning to verify that all deposits of contaminants have been removed. Contractor shall blow down, and vacuum all surfaces prior to inspection.
7. Verify at a minimum of two times daily that air supply is free of oil and moisture contamination. Effective oil and water separators shall be used in all main compressor airlines and shall be placed as close as practicable to the equipment. Prior to using compressed air, quality of air downstream of the separators shall be tested at suitable outlets by blowing the air on clean white blotter for 2 minutes to check for any contamination, oil, or moisture.
8. Measure air temperature, humidity, relative humidity, and metal surface temperature, and determine dew point and relative humidity prior to abrasive blasting or coating each day. Provide portable temperature and humidity recorders to provide continuous permanent hard copy of the air conditions. Repeat measurements and determination of dew point as often as the Inspector deems necessary but not less often than every four hours.
9. Maintain a written record of measurements and dew points, and time that measurements were taken. Make records available to Inspector immediately on request.
10. Inspector will evaluate surface preparation using field abrasive blasting standards, and Testex tape. Evaluation will include inspection of blasted surfaces for dust and abrasive residue, using clear adhesive coated tape. Evaluation will be made immediately prior to coating application. Contractor will furnish 4 rolls of Testex tape 1.5 to 2.5 mils X-course prior to the start of abrasive blasting.
11. Verify cleanliness of all spray application equipment prior to, or no later than, time of mixing coating material.
12. Measure wet film thickness during coating application of coating to ensure adequate coating thickness. Take at least one measurement every 100 square feet.
13. Measure dry film thickness after each coat using a non-destructive magnetic dry film thickness gauges.
14. Inspector will also measure coating thickness, at random locations, after each coat.
15. Inspector will evaluate cleanliness of coated surface immediately prior to application of a subsequent coat.

C. Contractor shall test all coated surfaces for pinholes and holidays after application of the final coat in accordance with the following:

1. Perform test in presence of Inspector, or the inspector has the right to perform all testing.
2. Perform test after coating has cured as recommended by the manufacturer. Immersion coatings: Contractor shall provide letter that coating is fully cured and ready to be placed in service.
3. Re-test after coating repairs.
4. On non-ferrous surfaces, dry film thickness readings shall be taken at random locations with a Tooke Gauge at the rate of approximately five readings per 100

square feet of surface. Grooves cut into coating shall be repaired by application of all coats of coating film being tested. The average of all readings for a given area or surface shall be within required dry film thickness range and no individual reading shall be more than 0.1 percent below the recommended dry film thickness. Any areas that are found to be below standard shall be marked and recoated to obtain proper film thickness.

3.13 WARRANTY INSPECTION:

A. Warranty inspection shall be conducted during the warranty period following completion of all coating work. All personnel present at the Pre-Job Conference shall attend this inspection.

B. Any and all defective work shall be repaired in accordance with this specification and to the satisfaction of the Owner or his appointed representative. The inspection shall be conducted in coordination with the owner prior to the 3-year warranty expiration unless otherwise agreed upon by Owner.

3.14 CLEANUP

A. Upon completion of the work, staging, scaffolding, and containers shall be removed from the site or destroyed in an approved manner. Spots, oil, or stains upon adjacent surfaces shall be removed.

B. The Contractor shall clean the site in accordance with the requirements for "Cleaning Up" in the "General Conditions."

END OF SECTION

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SECTION 09 97 13

HOT-DIP ZINC COATING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies hot-dip zinc coating. Unless otherwise specified, steel items not fully encased in a building envelope shall be hot-dip zinc coated. Also termed hot dip galvanized.

B. References

1. ASTM A90 Standard Test Methods for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
2. ASTM A123 Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip
3. ASTM A153 Zinc Coating on Iron and Steel Hardware
4. ASTM A384 Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
5. ASTM A385 Providing High Quality Zinc Coatings on Assembled Products
6. ASTM A386 Zinc Coating on Assembled Steel Products
7. MILSPEC DOD-P-21035 Paint, High Zinc Dust Content, Galvanizing Repair

PART 2 - PRODUCTS

2.01 MATERIALS

A. The coating material shall be as specified in ASTM A153 or ASTM A123.

PART 3 - EXECUTION

3.01 GALVANIZING

A. The thickness, chemistry, and all other engineering properties of galvanizing shall be defined by ASTM A153 and ASTM A123.

3.02 FIELD REPAIRS

A. Where zinc coating has been damaged, substrate surface shall be cleaned and repaired with zinc dust-zinc oxide coating in accordance with MILSPEC DOD-P-21035.

B. Field repair of zinc coated surfaces, including Unistrut shall be accomplished with:

1. Z.R.C. as manufactured by Z.R.C. Chemical Products Co.
2. Galvicon as manufactured by Galvicon Co.
3. Or equal.

3.03 POST-GALVANIZING COATING

A. When paint is required over a hot-dip galvanized coating, the galvanized surface requires special preparation. Chemical or abrasive methods may be used, with care exercised to not remove excessive galvanized coating.

B. Galvanized surfaces scheduled to be painted shall not have a passivator applied. Any surface scheduled to painted on which a passivator has been found to be applied, shall be abrasive blasted, chemically cleaned or replaced at the Engineers discretion.

END OF SECTION

SECTION 11 01 00

GENERAL REQUIREMENTS FOR EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Scope: This section provides the general requirements that must be met by all equipment supplied under Division 11 and or shown on the drawings.

B. Equipment Lists: Equipment lists, if any, presented in these specifications and shown on the drawings are included for the convenience of the Engineer and Contractor and are not intended to represent a rigorous and precise listing of all equipment, devices and material to be provided under this contract. The Contractor agrees to rely solely upon his own material and equipment takeoff lists for this purpose.

1.02 REFERENCES

A. This section references the following documents. They are a part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.

Reference	Title
AFMBA	Methods of Evaluating Load Ratings of Ball and Roller Bearings
ANSI B1.1	Unified Inch Square Threads
ANSI B2.1	Pipe Threads (Except Dupeal)
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 125
ANSI B16.5	Stainless Steel Pipe Flanges and Flanged Fittings
ANSI B18.2.1	Square and Hex Head Bolts and Screws, Including Askew Head Bolts, Hex Cap Screws, and Lag Screws
ANSI B 18.2.2	Square and Hex Nuts
CBC	California Building Code – latest edition

1.03 SUBMITTALS

A. Required Submittal Data: The following information shall be submitted for each piece of equipment. Additional submittal requirements, specific to individual equipment items, are listed in the individual equipment specifications.

1. The proposed equipment shall be identified by the equipment numbers listed in the specifications and on the drawings.
2. Manufacturer and manufacturer's type designation
3. A photocopy of the equipment specifications shall be included. All paragraphs shall be initialed to show compliance. Any exceptions to these specifications along with justification for each exception shall be clearly presented.
4. Manufacturer's catalog data confirming rated capacity, horsepower, efficiency and electrical requirements
5. Shop drawings
6. Predicted performance curves developed for the specific application. In the case of rotating equipment, performance curves shall show speed, capacity, pressure, efficiency and power for all specified conditions
7. Cross-sectional views of machines showing details of construction

8. Data and calculations required to justify selection of size of components such as shafts, bearings, and peripheral equipment necessary to conform to these specifications
9. Parts lists, with materials of construction
10. Installation, startup, and shakedown requirements noting all items to be inspected and confirmed at each stage of installation, startup, and shakedown.
11. Piping and equipment assemblies with dissimilar metals shall be installed with dielectric or equal corrosion protection.

1.04 QUALITY ASSURANCE

A. Arrangement: The arrangement of equipment shown is based upon information available to the Owner at the time of design and is not intended to show exact dimensions peculiar to a specific manufacturer unless otherwise indicated. The drawings are, in part, diagrammatic and some features of the illustrated equipment installation may require revision to meet actual equipment installation requirements. Structural supports, foundations, connected piping and valves shown may have to be altered to accommodate the equipment provided. No additional payment will be made for such revisions and alterations.

B. Control Devices: Control devices, wiring, starters, panels, light, and other electrical items provided with mechanical equipment shall, in general, conform to the requirements of Division 16 as well as any requirements of the particular equipment specification.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protection during Shipment

1. Each item of equipment shall be shipped to the site of the work with either the manufacturer's shop applied prime coating or a vinyl paint prime coating. The prime coating shall be applied over clean dry surfaces in accordance with the paint manufacturer's recommendations. The prime coating will serve as a base for field-applied finish coats.
2. Bearing housings shall be wrapped or otherwise sealed to prevent contamination by grit and dirt, and ventilation and other types of openings shall be taped closed.

PART 2 - PRODUCTS

2.01 FLANGES AND PIPE THREADS

A. Flanges on equipment and appurtenances:

1. Shall conform in dimensions and drilling to ANSI B16.1 for cast iron, Class 125 and ANSI B16.5 for stainless steel.
2. Unless otherwise specified, metric dimensioned flanges not allowed.
3. Unless otherwise specified, flanges shall be flat faced.

B. Pipe threads:

1. Shall conform in dimension and limits of size to ANSI B1.1, coarse thread series, Class 2 fit.
2. Threaded flanges shall have a standard taper pipe thread conforming to ANSI B2.1.

C. Flange assembly bolts:

1. Shall be heavy pattern, hexagonal head, carbon steel machine bolts with heavy pattern, hot pressed, hexagonal nuts conforming to ANSI B18.2.1 and B18.2.2.
2. Bolt Threads shall be Unified Screw Threads, Standard Coarse Thread Series, Class 2A and 2B, ANSI B1.1.

2.02 BEARINGS

A. Unless otherwise specified, equipment bearings shall be oil or grease lubricated, ball or roller type, designed to withstand the stresses of the service specified. Each bearing shall be rated in accordance with the latest revisions of AFMBA Methods of Evaluating Load Ratings of Ball and Roller Bearings for one of the following classes of B-10 rating life:

Class	Hours of Operation
M1	8,000
M2	20,000
M3	50,000
M4	100,000
M5	200,000

B. Unless otherwise specified, equipment shall have bearings rated for Class M4 life or greater.

C. Grease lubricated bearings, except those specified to be factory sealed and lubricated, shall be fitted with easily accessible grease supply, flush, drain and relief fittings. Extension tubes shall be used when necessary. Grease supply fittings shall be standard hydraulic Alemite type.

D. Oil lubricated bearings shall be equipped with either a pressure lubricating system or a separate oil reservoir type system. Each oil lubrication system shall be of sufficient size to safely absorb the heat energy normally generated in the bearing under a maximum ambient temperature of 60 degrees C and shall be equipped with a filler pipe and an external level indicator gauge.

2.03 SEALS

A. Mechanical

1. Unless otherwise specified, mechanical seals may be internal or external type, balanced or unbalanced type, and single or double seals except as herein specified. An internal type seal may be used where clean sealing liquid is provided, either from the pumped liquid or an external source. When the pumped liquid is corrosive, abrasive, toxic or flammable, an internal double seal shall be provided with adequate sealing liquid pressure to prevent entry of pumped liquid into the seal chamber, or an external seal may be provided. The sealing liquid shall be within the temperature limits and at the flushing rate recommended by the equipment manufacturer.
2. The seal may be balanced or unbalanced, as recommended by the equipment manufacturer. To maintain the necessary minimum or maximum pressure across the seal faces, spring pressure shall be uniformly distributed to the sealing faces by a coil spring or multiple springs. The rotating seal element shall be clamped to the shaft and provided with O-ring seal. The stationary seal element shall be sealed with O-ring or gasket material.
3. Seal faces shall be tungsten carbide to tungsten carbide except on the double seal where the seal in contact with pump liquid shall be carbon. The O-ring

gasket material shall be as recommended by the manufacturer for the liquid being pumped. Other parts shall be 316 stainless steel.

B. Stuffing Box: Unless otherwise specified, each stuffing box shall be cast separately, bolted to the bearing frame, tapped to permit installation of a clean liquid seal, and shall be large and sufficiently deep to hold a minimum of five rows of packing and a bronze lantern water seal ring. Packing shall be die-molded packing rings of material suitable for the intended service and as recommended by the manufacturer. Sealing liquid shall be the pumped liquid unless otherwise specified. Taps for external sealing and a lantern ring shall be provided. When used, lantern rings shall be of two-piece construction and shall be provided with tapped holes to facilitate removal. Packing gland halves and studs shall be 316 stainless steel.

2.04 COUPLINGS

A. Unless otherwise specified in the particular Equipment Sections, equipment with a driver greater than 2 HP, and where the input shaft of a driven unit is directly connected to the output shaft of the driver, shall have its two shafts connected by a flexible coupling which can accommodate angular misalignment, parallel misalignment and end float, and which cushions shock loads and dampens torsional vibrations. The flexible member shall consist of a tire with synthetic tension members bonded together in rubber. The flexible member shall be attached to flanges by means of clamping rings and cap screws, and the flanges shall be attached to the stub shaft by means of taperlock bushings which shall give the equivalent of a shrunk-on-fit. There shall be no metal-to-metal contact between the driver and the driven unit. Each coupling shall be sized and provided as recommended by the coupling manufacturer for the specific application, considering horsepower, speed of rotation, and type of service.

B. Where torque or horsepower capacities of couplings of the foregoing type is exceeded, Thomas-Rex, Falk Steel Flex, or equal, couplings will be acceptable provided they are sized in accordance with the equipment manufacturer's recommendations and sizing data are submitted. They shall be installed in conformance to the coupling manufacturer's instructions.

2.05 GUARDS

A. Exposed moving parts shall be provided with guards which meet the requirements of CAL/OSHA. Guards shall be fabricated of solid 14-gauge steel. Guards shall be galvanized after fabrication and shall be designed to be readily removable to facilitate maintenance of moving parts. Reinforced holes shall be provided. Reinforced holes shall be provided.

2.06 CAUTION SIGNS

A. Equipment with guarded moving parts which operates automatically or by remote control shall be identified by signs reading "CAUTION – AUTOMATIC EQUIPMENT MAY START AT ANY TIME."

2.07 PRESSURE TAPS, TEST PLUGS, AND GAUGES

A. Whether shown or not shown on the drawings, ½" pressure taps w/plugs shall be provided on the suction and discharge sides of all pumps, blowers and compressors. Pressure and vacuum test gauges shall be provided where shown or specified.

2.08 NAMEPLATES

A. Nameplates shall be provided on each item of equipment and shall contain the specified equipment name or abbreviation. Equipment nameplates shall be engraved or stamped on corrosion resistant material and fastened to the equipment in an accessible location with a No. 4 or larger oval head stainless steel screws or drive pins.

2.09 LUBRICANTS

A. The Contractor shall provide for each item of mechanical equipment a supply of the lubricant required for the initial filling and for the commissioning period.

B. Lubricants shall be of the type recommended by the equipment manufacturer and shall be products of the Owner's current lubricant supplier.

C. The Contractor shall limit the various types of lubricants by consolidating them, with the equipment manufacturer's approval, into the least number of different types. Not less than 90 days before the date shown in his construction schedule for starting, testing, and adjusting equipment.

D. Contractor shall provide the Owner with three copies of a list showing the required lubricants, after consolidation, for each item of mechanical equipment. The list shall show estimated quantity of lubricant needed for a full year's operation, assuming the equipment will be operating continuously.

2.10 SPARE PARTS

A. Parts and materials shall be furnished in manufacturer's unopened cartons, boxes, crates or other protective covering suitable for preventing corrosion or deterioration for the maximum length of storage that may be normally anticipated. They shall be clearly marked and identified.

B. During construction, parts shall be stored in buildings or trailers with floor, roof and closed sides and in accordance with manufacturer's recommendations. They shall be protected from weather, condensation and humidity.

C. Spare parts and materials shall be delivered to the Owner upon completion of the Work or when the Owner assumes beneficial occupancy. Contractor shall then place them in permanent storage rooms or areas approved by the Owner's Representative.

D. A letter of transmittal shall accompany the spare parts and shall include the following:

1. Date of letter and transfer of parts and material
2. Contract title and number
3. Contractor's name and address
4. A complete inventory of the parts and material, listing the applicable Specification Section for each
5. A place for the Owner to sign and signify receipt of the parts and materials

E. Contractor shall be fully responsible for loss or damage to parts and material until they are transmitted to the Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Each item of equipment provided shall be installed and tested within the tolerances recommended by the equipment manufacturer.

3.02 TESTING

A. Items of equipment specified in this Section shall be tested as required in each section and in accordance with Division 1 requirements.

END OF SECTION

SECTION 11 05 00

EQUIPMENT MOUNTING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the requirements for supply and installation of mounts, supports, and anchorage hardware for all equipment and accessories required to make a complete system including but not limited to piping, fans, and ducts.

1.02 SYSTEM DESCRIPTION

A. Design Requirements

1. Requirements of Regulatory Agencies:
   a. All tanks, and related piping, equipment and related supports and equipment anchorages shall be designed and supplied by the Contractor in accordance with National and State requirements including, but not limited to CBC, AWWA & ANSI Standards.
2. Project Specific Requirements:
   a. See the structural drawings for project specific seismic and wind load parameters.
   b. If there is a conflict between this section and the structural drawings, the structural drawings will govern.
3. Additional Design Requirements:
   a. In addition to code requirements, anchors and supports shall be designed to allow for expansion and contraction throughout the full potential temperature differential (both operational and off-line conditions).
   b. Anchors shall be capable of supporting equipment and accessories in all service and testing conditions.
   c. Anchorage shall allow for proper leveling.
   d. Allowances shall be provided for horizontal and vertical adjustment after installation and operation.

1.03 SUBMITTALS

A. The following items shall be submitted:

1. Calculations:
   a. Calculations for all of the work required above. All calculations must be performed and signed by a civil or structural engineer currently registered in the State of California.
2. Design codes and criteria used
3. Equipment weight, support points, and center of gravity
4. Anchor and hardware details
5. Concrete embeds (if any)
6. Isolation mounts (vibratory and reciprocating equipment)

B. Inasmuch as all anchorage of equipment will be made to cast-in-place concrete elements, it is imperative that types of anchorage be coordinated with the concrete placement.

C. If calculations and anchorage details are not submitted prior to placing of concrete, the Contractor will become responsible for any strengthening of concrete elements because of superimposed seismic loading.

1.04 QUALITY ASSURANCE

A. Allow for special inspection for the installation of chemical anchors in accordance with CBC requirements.

B. Expansion type anchors or adhesive type anchors shall not be allowed as a substitute for cast-in-place anchors.

PART 2 - PRODUCTS

2.01 GENERAL

A. All equipment located on floor slabs shall be mounted on concrete pads.

B. Concrete pedestals and pad dimensions shall be provided with submittal.

1. Unless otherwise shown on the drawings, the minimum edge distance for anchors is 1.5 times anchor embedment, but no less than 6”.

C. All conduits, piping connections, drains, etc., shall be enclosed by the concrete base.

D. Where a steel base is shown or specified between the equipment and the concrete pedestal, it shall be hot-dip galvanized after fabrication.

2.02 MATERIALS

A. Unless otherwise specified on the drawings, materials of construction for anchoring devices shall conform to the following:

1. Anchor bolts and other anchoring devices, nuts, and washers shall be type 304 stainless steel.
2. Anchor bolts and other anchoring devices, nuts, and washers shall be type 316 stainless steel if installed outside, below the top of walls of water containing structures, on the underside of roofs, slabs, or walkways, or on the dry side of walls on water containing structures.

2.03 CAST IRON BASES

A. Cast iron bases do not require galvanizing but must be sealed in accordance with the requirements specified in Section 09905 – Protective Coating Systems.

B. All fasteners requiring connections to the base shall be terminated by nuts welded to the bottom side of the base and plugged with cork, plastic plugs or grease, or acorn nuts.

C. In no case shall the fastener terminate only into the metal base.

2.04 ANCHORS

A. Epoxy and wedge anchors used in concrete shall be approved for cracked concrete per ACI 318 Appendix D.

B. See drawings for further requirements.

2.05 ADJUSTABILITY

A. Provide leveling grout for equipment mounting unless otherwise detailed on Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Equipment

1. Except where a higher lateral force is required by code, each piece of equipment installed shall be anchored to resist minimum lateral seismic or wind forces for the site, whichever is greater.
2. No equipment shall be anchored to vertical structural elements without written approval of the Engineer.
3. Vibratory equipment shall be supported by isolator mounts to limit transmissibility to structure.
4. Non-vibrating equipment shall be anchored directly to the supporting floor system.
5. In addition to the anchorage, all equipment shall be internally designed so that all static and moving parts are anchored to the supporting framework to resist the imposed seismic force. All forces must be transmitted to the base in order to be anchored as required.

B. Piping

1. All piping, raceways, accessories, and appurtenances, furnished with equipment shall be anchored to resist lateral seismic forces.
2. Piping with flexible connections and/or expansion joints shall be anchored such that the intended uses of these joints are maintained in the piping system.

C. Anchor bolts

1. Prior to installing nuts on anchor bolts, coat with non-seize compound to prevent galling of threads.
2. Nuts shall be tightened to the equipment manufacturer’s specifications.

END OF SECTION

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SECTION 22 13 29.16

SUBMERSIBLE SEWERAGE PUMPS - INSTALLATION

PART 1 - GENERAL

1.01 SUMMARY

A. This section details the supply and installation of submersible pumps and accessories for pumping municipal sewage.

B. The Contractor shall supply and install all components for installation of the pumps.

C. Contractor shall supply two identical pumps. One for installation and one for an on the shelf spare. The spare shall be prepared for long-term storage.

1.02 SYSTEM DESCRIPTION

A. The pumps shall be designed for pumping municipal sewage. The pumps shall be suitable for heavy-duty continuous submerged service and shall be capable of intermittent operation with the motor above liquid surface.

B. Motors shall be explosion-proof and premium efficiency

C. The pumps shall be submersible non-clog sewage sump pumps and shall be provided with pump, motor, base elbows, slide guide rails and brackets, pump discharge connection couplings, electrical devices internal to pump housing, all submersible cabling for power and control conductors, lifting chains sufficiently long to accommodate depth of wet well shown and specified and other items as required for a complete and operational system.

D. Operating Requirements:

Characteristic	Value
Maximum Motor Speed, rpm	3600
Maximum Motor Horsepower	3
Rated Capacity, gpm	100
Max Static Head, ft	26
Total Dynamic Head, ft	31

1.03 SUBMITTALS

A. The Contractor shall provide the following submittals.

1. Shop drawings for each unit.
2. Outline installation drawings for each unit.
3. Material list(s) and catalog information showing the details of construction.
4. List(s) of recommended Spare Parts and Special Tools.

B. Manufacturer’s Instructions and Field Reports: Instructions for installation and testing of equipment shall be provided with equipment submittals. A manufacturer’s certification letter shall be submitted certifying the pumps have been installed per the manufacturer’s requirements.

C. Operation and Maintenance: Paper or electronic copies of the primary equipment Operation and Maintenance manuals shall be submitted for information with the initial equipment submittals.

1.04 QUALITY ASSURANCE

A. General: The pumps shall be capable of continuous operation in a municipal wastewater application. The solids to be encountered will be those typically found in municipal wastewater treatment service including heterogeneous mixtures of inorganic and organic solids. Among the inorganic solids will be small rocks, sand, pieces of metal, animal bones and similar objects, while the organic solids may be expected to include vegetable parts, rags, paper products, rubber goods, fecal matter, and semi-solid grease particles. In addition, the liquid may be expected to include detergents, industrial solvents, petroleum products and water.

B. Single Source Responsibility: Pump equipment specified in this Section shall be by one manufacturer who has been regularly engaged in the design and manufacture of the equipment. The manufacturer shall have supplied pump equipment that has been in successful operation, at similar installations, for at least five (5) years.

C. Manufacturer shall furnish and coordinate drivers, drive controls, lifting rails, covers, access ways, and miscellaneous components as specified.

D. Manufacturer shall provide written installation and check out requirements.

E. Shop Tests: Each pump shall be fully assembled in the shop and tested prior to shipment. Each pump shall be tested in the shop prior to shipment for free rotation of all moving parts.

1.05 DELIVERY, STORAGE, AND HANDLING

A. All equipment shall be shipped and delivered fully assembled, except where partial disassembly is required in order to conform to transportation regulations or for the protection of components.

B. The Contractor shall be responsible for transporting the pumps from their storage location and unloading onsite and shall have equipment on-site available at the time of delivery permitting proper hoisting of the equipment.

1.06 PROJECT / SITE CONDITIONS

A. See Specification Section 02 00 00

B. The equipment shall be suitable for the service specified. The pump and motor will be submerged for extended periods of time. The pumped fluid temperature is expected to range from 35 degrees F to 100 degrees F. The relative humidity is expected to range from 20 to 100 percent.

1.07 WARRANTY

A. The manufacturer shall furnish the Owner with a written warranty to cover the pumps against defects in workmanship and material for a period of one year and rotating parts for a period of five (5) years under normal use and service from the date of acceptance of installation by the manufacturer's representative.

B. The manufacturer's warranty shall be issued in the Owner's name.

1.08 MAINTENANCE

A. Spare parts and special tools shall be furnished as listed below.

1. Mechanical Seal: 1 each size and type
2. O-Ring set
3. Power cable entry seal set

4. Manufacturer's standard moisture protection relay

B. One (1) set of special tools as necessary to provide for complete assembly or disassembly of specified equipment and components for each type or size of equipment specified.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Pumps shall be the N Series as manufactured by Flygt Corporation, no equal.

B. Modeled Pump is Flygt 3069, 2.7 HP, 106mm impeller. Supplier shall confirm pump selection is appropriate for required conditions.

2.02 MATERIALS

A. Materials shall be as follows:

Component	Material
Pump, motor casing, bracket, discharge base, and elbow	Cast iron, ASTM A 48 Class 35B
Guide Rails, fasteners, and lifting chain	Stainless steel, AISI Type 316
All exposed nuts and bolts	Stainless steel, AISI Type 316
Motor and pump shaft	Stainless steel, AISI Type 431
Impeller	Hard Iron

2.03 EQUIPMENT

A. Pump and Motor Casing

1. Type: Water tight, air filled
2. Water Tightness: Able to run submerged up to 65 feet; and to run dry.
3. Motor Cooling: Each unit shall be provided with an integral motor cooling system that shall encircle the stator housing. A motor cooling jacket shall encircle the stator housing, providing for dissipation of motor heat regardless of the type of pump installation. An impeller, integral to the cooling system and driven by the pump shaft shall provide the necessary circulation of the cooling liquid through the jacket. The cooling liquid shall pass about the stator housing in the closed loop system in turbulent flow providing for superior heat transfer. The cooling system shall have one fill port and one drain port integral to the cooling jacket. The cooling system shall provide for continuous pump operation in liquid or ambient temperatures of up to 104 degrees F (40 degrees C). Operational restrictions at temperatures below 104 degrees F are not acceptable. Fans, blowers or auxiliary cooling systems that are mounted external to the pump motor are not acceptable.
4. Design Working Pressure: Minimum 1.10 times maximum shutoff total dynamic head with maximum diameter impeller at maximum operating speed plus maximum suction static head or minimum 20 pounds per square inch gauge.
5. O-Ring Seals: Capable of sealing mated surfaces (major components) watertight, with the following features.
   a. Machined surfaces and grooves

b. O-Ring contact on 4 surfaces and O-Ring compression on 2 surfaces
c. Does not require specific fastener torque or tension to obtain watertight joint
d. Does not require secondary sealing compounds, gasket, grease or other devices

B. Impellers

1. Type: Non-clog
2. Number of Vanes: Maximum 2
3. Water Passages: Smooth enough to prevent clogging by stringy or fibrous materials
4. Passage Sizes: Large enough to pass solids with minimum sphere size of 1.75 inches or smaller for pumps with motors larger than 2 horsepower.
5. Casting: One piece, free of cracks, and porosity
6. Balance Vanes: Vanes shall be evenly balanced to minimize vibration and excessive wear
7. Method for Securing Impeller to Shafts: The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.
8. Rotation: As indicated on the Drawing; clockwise looking from top when not indicated
9. Balance: As specified in Section 11010 – General Requirements for Equipment
10. Vibration Criteria: As per manufacturer's recommendations

C. Each pump shall have the Flygt Mix-Flush System, Model 4901 with 90-degree discharge elbow. No equals shall be allowed for this item.

1. This valve shall be mounted directly on the pump volute and shall direct a portion of the pumpage into the sump to flush and re-suspend solids and grease by the turbulent action of its discharge.
2. The turbulent action caused by the flow shall also provide sump aeration.
3. The valve shall be mounted on the pump volute so that it can be removed from the sump along with the pump during normal and routine maintenance checks and shall be positioned on the volute to provide for non-clogging operation. The valve shall be equipped with an adjustable, wear-resistant discharge nozzle which shall be used to direct flow from the valve to optimize mixing action within the sump.
4. The valve shall not require any external power source or control to operate, neither electric nor pneumatic. The use of the external power source is not acceptable. The valve shall be suitable for use in Class I, Division 1 hazardous locations.
5. The valve shall open at the beginning of each pumping cycle and shall automatically close during pump operation after a pre-selected time of operation. The valve shall operate automatically by differential pressure across the valve and shall be actuated through a self-contained hydraulic system which uses an environmentally safe fluid. A method of adjusting the valve operating time shall be provided.

D. Bearings

1. Type: Anti-friction meeting AFBMA standards. Bearing lubrication system shall be sized to safely absorb energy normally generated in bearing under maximum ambient temperature of 60 degrees Celsius.
2. Pump shaft shall rotate on a minimum of two (2) permanently sealed, grease lubricated bearings.

3. Upper bearing shall be a single deep groove ball bearing.
4. Lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces.
5. Bearing life: One of the following whichever provides longer bearing life in intended service
    a. Minimum L10 life of 50,000 hours in accordance with AFBMA standards at rated design point.
    b. Minimum 24,000 hours at bearing design load imposed by pump shutoff with maximum sized impeller at rated speed.

E. Shaft Seals

1. Upper Seal Unit Material: One stationary tungsten-carbide ring and one positively driven rotating tungsten-carbide ring.
2. Lower Seal Unit Material: One stationary and one positively driven rotating tungsten-carbide ring.
3. Features:
    a. Tandem arrangement running in an oil chamber.
    b. Design oil chamber to assure that air is left in the oil chamber to absorb the expansion of the oil due to temperature variations.
    c. Oil in oil chamber shall be FDA approved, paraffin type colorless, odorless, and non-toxic.
    d. Independent spring system between seal interfaces able to withstand maximum suction submergences.
    e. Does not require pressure differential to affect sealing.
    f. Does not use pumped media for lubrication.
    g. Lower mechanical seal effectively lubricated from oil chamber housings.
    h. Not damaged when pump is run dry (unsubmerged) for extended periods.
    i. Springs and Other Hardware: Stainless steel, 300 or 400 series.
    j. Moisture Sensing System: Intrinsically safe type that signals seal leakage.
    k. Provide oil chamber with manufacturer’s standard drain and inspection plug, with positive anti-leak seal, easily accessible from the outside.

F. Pump Shaft

1. Pump and Motor Shaft shall be a single piece unit. Shafts using mechanical couplings shall not be acceptable.

G. Discharge Base and Elbow

1. Features
    a. Structurally capable of firmly supporting dual guide rails, discharge piping and pumping unit under operating conditions
    b. Once or more integral support legs or pads with bolting to sump floor provisions
    c. Incorporates 90 degree flanged elbow that receives horizontal flow from pump and discharges flow vertically
2. Support Base
    a. Provide cast iron support base for installation in wet pit.
    b. The entire weight of the pump/motor shall be borne by the pump discharge elbow.
    c. See Section 11050 – Equipment Mounting for more information on base.
3. Discharge Interface

a. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact.
b. Self-aligning without having to enter the wet well.
c. Discharge elbow to mate to pump discharge and transition to discharge piping.
d. Piping: Contractor to provide flanged piping connections as scheduled in Section the Drawings in accordance with ASME standards, minimum Class 125 or as required to meet specified design pressure, whichever is greater.

H. Guide Rails, Brackets, Fasteners, and Lifting Chain for Each Pump

1. Features:
   a. Materials shall be 316 stainless steel for these hardware items.
   b. Dual pipes or dual rails that extend from discharge base to upper bracket unless scheduled otherwise.
   c. Rail wall thickness sufficient to suspend pump unit between brackets plus minimum 50 percent safety factor.
   d. Sized to fit discharge base and sliding bracket of pump.
   e. Integral, self-aligning, cast iron sliding brackets that seal pump to discharge base under operating conditions.
   f. Intermediate guide rail brackets per the manufacturer's recommendation, but not greater than 5-foot maximum intervals.
   g. Lifting Type 316 stainless steel chain of sufficient strength and length to permit safe removal of pump unit from sump.
   h. Each pump shall be fitted with a grip eye system along with a minimum of 20 feet of lifting chain and stainless steel cable applicable for use with the grip eye system.

I. Motor and Power Cables

1. Motor
   a. Squirrel cage induction motor, shell type design explosion proof motor, provide motor that is UL or FM listed for NEC Class 1, Division 1, Groups C and D service, whether submerged or unsubmerged.
   b. All electrical parts in watertight housing
   c. Horsepower: As scheduled. Listed motor horsepower is the maximum to be supplied. However, motor control center (MCC) and other electrical equipment are sized for scheduled motor horsepower.
   d. Voltage: 240V; Phases: 1; Frequency, Hertz: 60
   e. Service Factor: 1.15
   f. NEMA Design Type: B
2. Motor Insulation: Class H insulation, moisture resistant, to 120 degrees Celsius maximum. Able to withstand 40 degrees Celsius ambient temperature plus 80 degrees Celsius temperature rise.
3. Provide motors that are rated suitable for continuous operation in 40 degrees Celsius ambient temperature at project site altitude.
4. The motor shall be designed for continuous duty handing pumped media of 40 degrees Celsius and capable of a minimum of fifteen (15) evenly spaced starts per hour.
5. The motor shall be capable of continuous operation under load with the motor submerged, partially submerged or exposed, without derating the motor.
6. If cooling jacket is required, provide with the following:
   a. Functional with motor submerged, partially submerged, or exposed.

b. Spray systems, air moving equipment or secondary cooling systems are not acceptable.
c. Motor Sealing: Design motor case and seals to withstand 65 feet of submergence.
d. Thermal Protection: Provide automatic reset motor stator temperature detectors, 1 switch in each phase winding. If any detector is activated, the sensor shall activate an alarm and shut down the motor. The thermal detectors shall activate when the stator temperature exceeds 125 degrees Celsius.
e. Moisture Detection: Provide a moisture detection sensor in the seal chamber or motor housing. If leakage is detected in the stator chamber, the sensor shall activate an alarm and shut down the pump/motor.

J. Power / Control Cables

1. Submersible to same water depth as motor casing.
2. Pump manufacturer shall supply the 316 Stainless Steel Cable Sheathing System.
3. Insulation rated for 90 degrees Celsius
4. Non-wicking fillers
5. Length: Sufficient to connect to surface junction box (without the need of splices) as indicated on the Drawings or 30 feet, whichever is greater.
6. All Power and control conductors shall terminate at terminal blocks in the junction box.
7. Sized to conform to NEC, ICEA, and CSA specifications
8. Provide stainless steel cable and stainless steel wire braid sleeve to support power cable from under side of wet well roof slab or access frame.

K. Cable Entry Seal and Junction Chamber

1. Cable entry seal design shall not require specific torque requirements to insure a watertight and submersible seal.
2. Cable entry seal shall consist of a single cylindrical elastomeric grommet, flanked by stainless steel washers.
3. The entry body shall perform compression and strain relief that is separate from the sealing function.
4. The cable entry junction chamber shall be separate from the motor chamber to prevent foreign material from gaining access to the motor interior through the top of the pump.

L. Control

1. Pumps shall be provided with built-in thermal overload protection on each phase and with moisture leakage protection in the motor chamber. Provide manufacturer's standard moisture protection relay for pump control circuit.

2.04 FABRICATION

A. Pump manufacturer to factory prime pump/motor and interior and exterior of discharge elbow in accordance with Section 09 90 00 – Painting and Coating Systems.

B. Contractor to provide abrasive blasting and apply field coatings as specified in Section 09 90 00 – Painting and Coating Systems

PART 3 - EXECUTION

3.01 INSTALLATION

A. Equipment shall be installed in strict conformance with manufacturer's installation instructions.

3.02 FIELD QUALITY CONTROL

A. After installation of the units and all appurtenances, each unit shall be subjected to a field running test under actual operating conditions. The field tests shall be made by the Contractor in the presence of and as directed by the Owner's Representative. The field test shall demonstrate that under all conditions of operation each unit:

1. Has not been damaged by transportation or installation
2. Has been properly installed
3. Has no mechanical defects
4. Is in proper alignment
5. Has been properly connected
6. Is free of overheating of any parts
7. Is free of all objectionable vibration
8. Is free of excessive noise
9. Is free of overloading of any parts
10. Shall operate as specified

3.03 INSTALLATION

A. Equipment shall be installed in strict conformance with the drawings and the manufacturer's installation instructions and recommendations.

3.04 MANUFACTURER'S REPRESENTATIVE

A. The manufacturer's qualified representative shall inspect the installation of the equipment, make any necessary adjustments, test and place the equipment in satisfactory operating condition.

B. Manufacturer's qualified representative shall provide training – Instruction of Operations and Maintenance Personnel and for the minimum hours listed below, travel time excluded:

1. Four (4) hours of on-site assistance and training shall be provided. Training details to be submitted three (3) weeks prior to scheduled training.

END OF SECTION

SECTION 33 01 30.13

SEWER FORCE MAIN TESTING

PART 1 - GENERAL

1.01 SCOPE

A. This section governs the testing requirements and procedures for acceptance of all completed sewer force mains.

B. It is the intent of the plans and specifications that the completed force main pipes shall be watertight.

C. All tests shall be made in the presence of the District.

D. The Contractor may, at any time and at his expense, perform his own pressure and leak test; however these tests will in no way offset the requirement for a final pressure and leak test made in the presence of the District.

E. The Contractor shall furnish all pipe and fittings for connection to the main, pumps, pressure regulator, a calibrated water storage tank, and all other materials, fittings and pipelines required to perform the tests and make the necessary repairs.

F. All completed force mains and appurtenant structures, shall be tested by the Contractor in the inspector's presence prior to field acceptance of the work. The Contractor shall correct all defects in workmanship or materials which become evident by inspection or testing at any time during the work.

1.02 ACCEPTANCE

A. If the leakage rate is greater than the amount specified, the pipe joints shall be repaired or, if necessary, the pipe shall be removed and reinstalled by the contractor and retested.

1.03 SUBMITTALS

A. The contractor shall notify the District a minimum of 3 business days in advance of its proposed testing schedule for review and concurrence.

PART 2 - MATERIAL

2.01 HYDROSTATIC TESTING EQUIPMENT

A. All test equipment, valves, plugs, or other control equipment and materials shall be determined and furnished by the Contractor, subject to District review. No materials shall be used which would be injurious to the construction or its future function.

B. In general, the testing equipment configuration shall consist of:

1. A pump receiving water from a calibrated storage tank.
2. The pump discharge shall enter the water main through a tap or appurtenance.
3. A pressure sustaining valve shall be placed on a tee located in the pump discharge line. Discharge from the pressure sustaining valve shall return to the calibrated storage tank.
4. Other types or configurations of testing equipment shall be subject to District approval.

5. The pressure pump shall operate continuous throughout the testing period. If the pump is stopped, the pressure shall not be allowed to drop more than two psi below test pressure before starting the pump.

PART 3 - EXECUTION

3.01 SEWER FORCE MAIN TEST

A. Allowable Leakage: none

B. Test Pressure: 30 psi

C. All defective elements shall be repaired, or removed and replaced, and then retested until all leakage has been stopped and the allowable leakage requirements have been met.

D. The Contractor shall make all necessary provisions for conveying the water from the District designated source to the points of use at the Contractor's own cost.

E. Release of water from pipelines, after testing and disinfecting have been completed, shall be in accordance with a written disposal plan reviewed by the Engineer.

3.02 HYDROSTATIC TESTING

A. The purpose of the hydrostatic test is both to test the ability of the pipeline to withstand pressure and test for allowable leakage. All hydrostatic testing shall follow the test setup and pressurization procedures as described in AWWA C600, C604, and C605. The following exceptions shall be incorporated into the testing procedure as outlined below:

B. Preparation

1. The line shall be filled with water at least 24 hours prior to testing when the pipeline has a mortar lining, thus allowing the lining material to become saturated.
2. Water for testing shall be introduced at the low end of the section being tested to facilitate the elimination of air in the pipeline prior to testing.
3. All pressure gauges used for determining hydrostatic testing shall be liquid filled and shall be capable of operating above the prescribed line test pressure.
4. Gauges shall provide adequate visible ranges to allow accurate measurement for allowable leakage calculation. The Engineer reserves the right to reject provided gauge that does not meet this specification.
5. Test Section Length - The length of pipe being tested at any one time shall not exceed 2,000 linear feet unless otherwise approved by the District.
6. Test Duration - Pressure in the water main shall be maintained within two psi of the calculated test pressure for a minimum of 2 hours.

C. Repairs

1. During the pressure and leakage test, all accessible appurtenances shall be inspected for visual signs of leakage.
2. All visual leaks shall be corrected immediately, regardless of the amount of leakage, and the test shall be run again for its full duration.
3. All leaks detected shall be repaired to a water tight condition.
4. All repairs made shall be retested in accordance with the specifications.

END OF SECTION

SECTION 33 05 31

PVC PIPE

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies polyvinylchloride (PVC) for pressurized and non-pressurized systems.

1.02 REFERENCES

A. This section contains references to some or all of the following documents, most recent edition. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ANSI/AWWA C900	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4-in Through 12-in for Water Distribution
ANSI/AWWA C905	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14-in Through 48-in for Water Distribution
ASTM D1784	Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D1785	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120
ASTM D2241	Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D2464	Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D2665	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
ASTM D2466	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fitting, Schedule 40
ASTM D2467	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D2564	Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D2665	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste and Vent Pipe Fittings
ASTM D2774	Standard Practice for Underground Installation of Thermoplastic Pressure Piping

Reference	Title
ASTM D2855	Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D3139	Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM F402	Standard Practice for Safe Handling of Solvent Cements, Primers and Cleaners Used for Joining Thermoplastic Pipe and Fittings
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F679	Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
AWWA M23	Manual of Water Supply Practices PVC Pipe – Design and Installation

1.03 SUBMITTALS

A. The Contractor shall provide submittals as required hereunder.

1. Alignment/ Layout drawings
2. Manufacturer's certificates shall be provided with each delivery. This certifies that each pipe section complies with this specification.
3. Manufacturers' Affidavits of compliance with applicable references
4. Descriptive literature showing pipe dimensions, joints, couplings and other details for each size of pipe indicated.

1.04 QUALITY ASSURANCE

A. The pipe, joints and fittings shall be tested in accordance with the requirements of this specification and as specified in the reference standards. The Contractor shall submit the test results to the Owner's Representative.

B. Additional sampling may be requested of any material for testing by the Owner at the Owner's expense. The additional samples shall be furnished by the Contractor at no additional cost to the Owner.

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Pipe shipment should be carefully inspected by the Contractor upon arrival for defects or damage during delivery.
2. The Manufacturer shall mark the nominal pipe diameter, pressure class, manufacturer's name, date of extrusion, ASTM designation and PVC Cell Classification on the pipe.

B. Storage

1. Pipe shall be stored in such a way as to prevent sagging, compression or bending.

2. Pipe shall be protected from direct sunlight by covering with an opaque material while permitting air circulation.
3. Gaskets should be stored in a cool, dark place out of direct sunlight.

C. Handling

1. Handling of the PVC pipe shall be done in accordance with manufacturer's instructions to ensure that the pipe is not damaged in any manner during storage, transit, loading, unloading, and installation.
2. Any length of pipe having a gouge, scratch, or other permanent indentation more than 10 percent of the wall thickness in depth shall be rejected.
3. Defective, damaged or rejected pipe shall be immediately removed from the working area and replaced by the contractor at no additional cost to the owner.

1.06 Warranty

A. The pipe shall be warranted to be free of defects in material for a period of one year from substantial completion.

PART 2 - PRODUCTS

2.01 MATERIAL

A. PVC material for pipes and fitting shall complying with Cell Classification 12454-B or better, in accordance with ASTM D1784.

B. PVC shall be normal impact type unless otherwise specified

C. Pipe Color shall be based on application as follows:

1. Blue: potable water
2. Brown: drains
3. Green: sanitary sewer, sewer force mains
4. Purple: recycled water

2.02 PVC NON-PRESSURE PIPE

A. <u>SDR 26</u>

1. Pipe shall meet the requirements of ASTM D2241, ASTM D3034 and ASTM F679.
2. Fittings and Joints
   a. Push-on:
      1) ASTM D3034
      2) Gaskets: ASTM F477

B. <u>Schedule 40 and 80</u>

1. Pipe shall meet the requirements of ASTM D1785.
2. Fittings and Joints:
   a. Socket type:
      1) Schedule 40: ASTM D2665
      2) Schedule 80: ASTM D2467
      3) Solvent weld cement for socket type connections: ASTM D2564.

PART 3 - EXECUTION

3.01 GENERAL

A. All installation, jointing, tests for defects and leakage shall be performed in the presence of the Owner's Representative and shall be subject to his approval before acceptance.

B. All material found to have defects will be rejected and the Contractor shall promptly remove such defective materials from the work site.

C. Installation shall conform to the requirements of the following standard practices, instructions furnished by the pipe manufacturer, and to the supplementary requirements or modifications specified in this section. Wherever the provisions of this Section and the aforementioned requirements are in conflict, the more stringent provision shall apply.

1. AWWA Manual M23: C900/C905 PVC Pressure Pipe
2. ASTM D2321: SDR 26
3. ASTM D2855 and F402: Solvent welding joining procedure

D. Unless otherwise specified, paint PVC piping exposed to direct sunlight as specified in Section 09 90 00 – Protective Coating Systems.

3.02 TRENCHING AND BACKFILL

A. Trench excavation and backfill shall conform to the requirements of Section 02 20 00 – Earthwork.

B. Bedding:

1. There shall be a minimum 6 inches of sand bedding
2. Bedding shall be checked for firmness and uniformity of surface immediately before placing each section of pipe in final position for jointing.

C. Select backfill shall be sand to 12 inches above the pipe.

D. Backfill shall be native material or type "C" backfill.

3.03 INSTALLATION

A. General:

1. Pipe and fittings shall be of the sizes indicated.
2. Proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions shall be provided and used by the Contractor for safe and efficient execution of the Work.
3. The interior of the pipe shall be cleaned of all foreign matter before installing.
4. The pipe and accessories shall be inspected for defects prior to lowering into the trench. Any defective, damaged or unsound pipe shall be repaired or replaced.
5. All pipe, fittings, valves, and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings.
6. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.
7. While laying pipe is NOT in progress, the open ends of the installed pipe shall be closed to prevent trench water from entering into the interior of the pipe. Adequate backfill shall be deposited on pipe to prevent floating of pipe. Any pipe that has floated shall be removed from the trench, cleaned, and re-laid in an

acceptable manner. The use of burlap, wood, or other similar temporary plugs will not be permitted.

8. No pipe shall be laid when, in the opinion of the Owner's Representative, the trench conditions or the weather are unsuitable for such work.

B. Field Cutting Pipe

1. Cutting and machining of the pipe shall be accomplished in accordance with the pipe manufacturer's standard procedures for this operation.
2. Pipe shall NOT be cut with a cold chisel, standard iron pipe cutter, wedge type roll cutter or any other method that may fracture the pipe or will produce ragged, uneven edges.
3. Pipe shall be square cut with fine tooth saw or other cutter or knife designed for use with plastic pipe.
4. After cutting, the end of the pipe shall be beveled using a beveling tool, portable type sander or abrasive disc. Remove burrs by smoothing edges with a knife, file, or sandpaper.

C. Field Joining Pipe Joints and Fittings:

1. Pipe shall be jointed in compliance with manufacturer's printed instructions.
2. All pressure pipe shall be suitably restrained by use of thrust blocks or other means as approved by the Engineer.
3. Solvent Weld Joint Type Pipe
   a. Test fit dry pipe and fittings before applying cement. Pipe should enter socket without forcing at least one-third but not more than two-thirds the depth of socket. Fittings that are looser or tighter shall not be used.
   b. Thoroughly clean and dry the pipe end and socket of fittings prior to application of solvent.
   c. Before applying cement, apply primer evenly to outside surface and end of pipe and inside surface of socket.
   d. Apply cement evenly to outside surface and end of pipe and inside surface of socket. Avoid excess application of cement but insure complete coverage of all bonding surfaces.
   e. Mark depth of socket on pipe to guide application of cement and insure full insertion of pipe.
   f. Insert pipe in socket, twisting pipe or fitting approximately 1/2 turn as pipe is being seated in socket. Make sure pipe is fully seated providing a bond between end of pipe and shoulder of socket.
   g. Immediately wipe excess cement from pipe leaving no more than a 1/8 inch fillet at fitting end. Hold assembled joint in place for approximately 15 seconds and allow to set for 30 minutes before moving. Avoid rough handling for 48 hours. Longer periods may be required in cold or wet weather.
4. Mechanical Joints
   a. Cut off and remove bevel end of pipe before installing in mechanical joint.
5. Bends, Tees, and Reducers
   a. Ductile-iron and/or PVC fittings shall be installed utilizing standard installation procedures.
   b. Cable, rope, or other devices used for lowering fittings into trench shall be attached around the exterior of fitting for handling. Under no circumstances shall the cable, rope or other device be attached through the fitting's interior for handling.

3.04 COMPACTION OF PIPE BEDDING AND BACKFILL

A. Compaction of pipe bedding and backfill material shall conform to the requirements of Section 02 20 00 – Earthwork.

3.05 TESTING

A. Field testing of gravity sewer pipe shall be conducted and acceptability determined in accordance with of Section 15 06 00 – Piping Systems.

END OF SECTION

SECTION 33 11 13.13
DUCTILE IRON PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Provide ductile iron piping complete with all fittings, jointing materials, pipe hangers and supports, anchors, thrust blocking, and other necessary appurtenances.

1.02 REFERENCES

A. Reference standards:

1. ANSI/AWWA C104/A21.4: Standard for Cement Mortar Lining for Ductile Iron Pipe and Fitting for Water.
2. ANSI/AWWA C105/A21.5: Standard for Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
3. ANSI/AWWA C110/A21.10: Standard for Ductile Iron and Gray Iron Fittings, 3-In. Through 48-In., for Water and Other Liquids.
4. ANSI/AWWA C111/A21.11: Standard for Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. ANSI/AWWA C115/A21.15: Standard for Flanged Ductile-Iron Pipe with Threaded Flanges.
6. ANSI/AWWA C150/A21.50: Standard for Thickness of Ductile-Iron Pipe.
7. ANSI/AWWA C151/A21.51: Standard for Ductile Iron Pipe, Centrifugally Cast, for Water and Other Liquids.
8. ANSI/AWWA C153/A21.53: Standard for Ductile Iron Compact Fittings 3-In. through 16-In. for Water and Other Liquids.
9. ANSI/AWWA C600: Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.
10. ASME/ANSI B16.1: Cast Iron Pipe Flanges and Flanged Fittings.
11. ASTM A48: Standard Specification for Gray Iron Castings.
12. ASTM A377: Standard Index of Specification for Ductile-Iron Pressure Pipe.
13. ASTM A536: Standard Specification for Ductile-Iron Castings.
14. ASTM C150: Standard Specification for Portland Cement.
15. ASTM D1248: Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.
16. ASTM D395-89 Method B: Standard Test Method for Rubber Property - Compression Set.
17. ASTM D412-87: Standard Test Method for Rubber Properties in Tension.
18. ASTM D2240-86: Standard Test Method for Rubber Properties - Durometer Hardness.
19. ASTM A307: Standard Specification for Carbon Steel Bolts and Studs.

1.03 SUBMITTALS

A. Product Data and Shop Drawings:

1. Material specification data.
2. Detailed Pipe layout Drawings.
3. Installation instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

A. During loading, transporting, unloading and storage, prevent damage to material.

1. To ensure undamaged condition.
2. Use wide bearing area slings and wide padded skids.
3. Do not use bare cables, chains, hooks, metal bars, or narrow skids.
4. Laterally support pipe, fittings, and specials to maintain shape.
5. Separate materials so they do not bear against each other.
6. Securely fasten load to prevent movement in transit.

B. Do not drop pipes or fittings.

C. Adequately tag or otherwise mark all piping and fittings as to size.

D. Acceptance at site:

1. Reject products with dents, kinks, abrupt changes of curvature or other injuries.
2. Reject any product dropped from truck or crane.
3. Replace or recondition at Contractor's expense rejected items.
4. Reconditioning subject to Engineer's acceptance.
5. Replace coatings as originally specified on reconditioned pipe.

1.05 PROJECT/SITE CONDITIONS

A. See specification Section 02 00 00

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturers:

1. U.S. Pipe and Foundry Co.
2. Pacific States.
3. Or equal.

B. Manufacturers for fittings, joints, and couplings are listed with the specific materials in Section 2.02, Materials.

2.02 MATERIALS

A. Pipe:

1. Ductile iron: ANSI/AWWA C151/A21.51 - Classified as listed below:
   a. 12 inches and below: Pressure Class 350.
   b. 24 inches and above: Pressure Class 250.
   c. All pipe burial depth greater than 15 feet below finished grade: Pressure Class 350.

B. Fittings:

1. Ductile iron: ANSI/AWWA C110/A21.10 dimensions, ASTM A536 Grade 80-60-03 or 70-50-05. ANSI/AWWA C153 fittings are allowed.

C. Joints:

1. Mechanical joints: ANSI/AWWA C111/A21.11.
2. Mechanical joints with tie rods:
   a. Tie rods: ASTM A307.

b. Steel pipe spacers: ASTM A120, standard weight.
c. Washers: ANSI A27.2 plain steel.
d. Plastic plugs: As recommended by pipe manufacturer.

3. Flanged joints:
   a. Flanges:
      1) General use: ANSI A21.15 or ASME/ANSI/B16.1, 125 lb.
   b. Bolts: ASTM A307, chamfered or rounded ends projecting 1/4-inch to 1/2-inch beyond outer face of nut, unless otherwise specified.
   c. Nuts: ASTM A307, hexagonal, ANSI B18.2, heavy semi-finished pattern, unless otherwise specified.
   d. Flanged bolts and nuts shall be type 316 stainless steel for the following conditions:
      1) Submerged in water or wastewater.
      2) Buried.
      3) Contained in vault structures.
   e. Gaskets: Full face, 1/8-inch thick, cloth impregnated rubber.
4. Threaded connections:
   a. ANSI B2.1 NPT; provide service saddles at all tapped connections.
5. Flexible couplings:
   a. Dresser Style 38 or 138, Smith-Blair 411 or equal.
   b. Couplings shall have stainless steel nuts, bolts, and washers.
6. Restrained joints, provide:
   a. Flanged joints or restrained mechanical joints as shown on the drawings.
7. Flanged coupling adapters:
   a. 12 inches and under: Smith-Blair Type 912, Dresser Style 127, or equal, with anchor studs and stainless-steel nuts, bolts, and washers.
   b. 14 inches and over: Smith-Blair Type 913, Dresser Style 128, or equal.
   c. Restrain all Flange Coupling Adapters.
8. Restrained flange adapters:
   a. EBAA Iron 2100 Megaflange or as shown on the plans or equal.

D. Corrosion control:

1. Shop lining and coating:
   a. Lining: Mortar
   b. Coating: Coat per Section 09 90 00 Painting and Coating
   c. Rust-preventative compound: Houghton “Rust Veto 344,” Rust-Oleum “R-9.”

2.03 FABRICATION

A. Joints:

1. Type:
   a. Buried: Mechanical or push-on.
   b. Exposed: Flanged.
   c. Other: As noted on Drawings.
2. 12 inches and smaller outlets, where main line is at least twice the diameter of the branch; tee or a tapping saddle is acceptable.
3. Where tie rods are required, except as indicated on Drawings provide:
   a. 14 inches and below: Two (2) rods.
   b. 16 inches through 20 inches: Four (4) rods.
   c. 24 inches through 30 inches: Six (6) rods.
   d. 36 inches through 48 inches: Eight (8) rods.

4. Mark the centerline of each flange and mechanical joint piece.
5. Screw flanges onto screwed-on flanged pipe so that pipe extends completely through and flush with the flange.
6. Finish machine pipe ends and flange faces flat and perpendicular to pipe centerline in a single operation.
7. Wall castings:
    a. Mechanical joint with tapped bolt holes except where indicated otherwise on the Drawings.
    b. Provide seep ring.
    c. Provide plastic plugs to prevent bolt holes filling with concrete.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas for:

1. Defects such as weak structural components that adversely affect execution and quality Work.
2. Deviations beyond allowable tolerances for piping clearances.

B. Start installation only when conditions are satisfactory.

C. Pipe:

1. Carefully examine pipe and fittings for cracks and other defects prior to installation.
2. Remove all defective pipe from site and replace.

3.02 INSTALLATION

A. Cutting pipe:

1. Cut pipe neatly without damage to pipe or cement lining.
2. Cut smooth, straight, and at right angles to pipe axis.
3. Dress and bevel end of cut pipe to remove roughness and sharp corners.
4. Cut cast iron with mechanical pipe cutters.
5. Cut ductile iron pipe with saw or abrasive wheel.

B. Cleaning:

1. Thoroughly clean pipe and fittings of foreign matter before installation.
2. Keep pipe and fittings clean until final acceptance.
3. Joint contact surfaces:
    a. Wire brush, if necessary.
    b. Wipe clean.
    c. Keep clean until jointing is complete.

C. Piping in buildings or structures:

1. Completed installation should present a neat, orderly appearance.
2. Do not block openings, passageways, or pipe galleries.
3. Run piping parallel to walls of building or structure.
4. Keep piping from contacting walls, structures or installed items.

D. Piping underground:

1. Install in accordance with AWWA C600, except as specified herein.
2. Protect from lateral displacement while placing backfill.

3. Embedment and backfill per Earthwork Section.
4. Do not lay pipe:
    a. In water.
    b. Under unsuitable weather conditions.
    c. Under unsuitable trench conditions.

E. Jointing:

1. Restrained joints: At all locations provide restrained joints or fittings in order to develop full thrust restraint at test pressure.
2. Follow manufacturer's instructions.
3. Below Grade: Mechanical joints
    a. If an effective seal is not obtained, disassemble joint, clean thoroughly, and reassemble.
    b. Do not over-tighten bolts to compensate for poor installation.
    c. Carefully align holes in mechanical joints with tie rods to permit installation of the harness bolts.
    d. Install flange and mechanical joint pieces so the mechanical joint holes, as well as the flange holes, straddle the top centerline for horizontal piping or the side centerline for vertical piping.
    e. Restrain all joints on pressure pipe unless indicated otherwise on the Drawings.
4. Above Grade: Flanged joints
    a. Take care when bolting flanges to ensure that there is no restraint on the opposite end of the pipe which would prevent gasket compression or cause unnecessary stress in flanges.
    b. Leave one (1) flange free to move in any direction while tightening flange bolts.
    c. Tighten bolts gradually at a uniform rate to compress gaskets uniformly.
    d. Take special care in connecting to pumping equipment to ensure no stresses are transmitted to pump flanges by connecting piping.
        1) Permanently support piping for accurate matching of bolt holes and uniform contact over the entire face of abutting pump and pipe flanges are obtained before bolting those flanges.
        2) Allow pump connection piping to move parallel to its longitudinal centerline while bolts are tightened.
        3) Level, align, and wedge pipes into position to fit connecting piping; but, do not install grout until after initial pipe fitting and alignment to allow shifting the pump on its foundation.
        4) Grout pumps in place prior to final bolting of connecting piping.
5. Mechanical couplings:
    a. Cut pipe ends clean and smooth.
    b. Leave a space of 1/2-inch between pipe ends.
    c. Restrain all couplings on pressure pipe unless indicated otherwise on the Drawings.
6. Wall castings: Provide where indicated on the Drawings.

F. Reducers:

1. Provide eccentric reducers unless indicated otherwise on the drawings.
2. Install with straight side on top to avoid trapping air.

G. Anchorage:

1. In interior locations and where subject to internal pressure anchor or harness piping with mechanically coupled or similar joints to prevent separation of joints.
2. Other locations: Provide reaction blocking anchorages or other supports for fittings above grade or exposed in structure as indicated on the Drawings or as required to prevent movement.
3. Concrete thrust blocking:
    a. Bearing area as indicated on the Drawings, or as directed by the Engineer.
    b. Extend from fitting to solid undisturbed earth.
    c. Install so joints are accessible for repair.
    d. If adequate support against undisturbed earth cannot be obtained, provide restrained joints or metal harness anchorages across the joint and secure by anchoring to the pipes or fittings or other anchorage facilities as required for adequate support. If the lack of a solid vertical excavation face is due to improper excavation, all excess costs shall be borne by Contractor.

H. Encasement:

1. Provide concrete encasement as indicated on the Drawings.
2. Provide concrete encasement under all structures to a distance of five (5) feet outside of structure footings.
3. Suitably support and block pipe and anchor against flotation.

I. Connection to existing pipelines:

1. Make connections between new and existing piping with suitable fittings.
2. Schedule connection to minimize inconvenience to the Owner.
3. Contractor shall dewater existing piping.
4. The District shall operate all existing valves.
5. Provide facilities for adequate dewatering and disposal of water from dewatered line and excavations without damage to adjacent property.

J. Alignment:

1. Unless shown otherwise, piping shall be installed parallel to building lines, plumb, and level.
2. Piping shall be installed without springing or forcing the pipe in a manner which would set up stresses in the pipe, valves, or connected equipment.
3. All pipe flanges shall be set level, plumb, and aligned. All flanged fittings shall be true and perpendicular to the axis of the pipe. All bolt holes in flanges shall straddle vertical centerline of pipes.

3.03 FIELD QUALITY CONTROL

A. Hydrostatic tests: Perform hydrostatic tests in accordance with Section 33 01 30 - Sewer System Testing.

END OF SECTION

SECTION 33 31 01

TIE IN TO SANITARY SEWER FORCE MAIN

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This section describes the criteria for the tie-in between the upgraded Lift Station and the existing force main.

PART 2 - MATERIALS

2.01 EQUIPMENT

A. The Contractor shall be fully responsible to provide all labor and equipment (including vacuum trucks, pumps, piping, valves, etc.) and materials required to complete the tie-ins.

B. The necessary labor, equipment, and materials shall be on-site prior to and for the full duration the sewer system is shut down and the tie-in is being made.

PART 3 - EXECUTION

3.01 TIE-IN REQUIREMENTS

A. Vacuum Trucks / Bypass Pumping:

1. The Contractor shall provide all personnel, equipment and pumping necessary during the entirety of the lift station upgrade.
2. The Contractor will need to dewater sanitary sewer lines that feed into the existing wet well.
3. Bypass pumping rate: 30 gallons per minute

B. Existing Wastewater Collection System:

1. In order to prevent unnecessary interruption of the existing force main operation, a controlled scheduling and sequence of the Contractor's work is necessary.
2. The Contractor shall work in cooperation with District Operations and Maintenance personnel to maintain continuous operation of the system.
3. The Contractor is required to submit a Shutdown Schedule and Tie-in Plan for District approval a minimum of fifteen (15) days prior to the proposed tie-in work. The plan shall include emergency response measures that the Contractor would implement, and carryout should a sanitary sewer spill occur.

C. Backup of sewage into the gravity lines, spills, dumping or free flow of septage on private property, gutters, streets, sidewalks, or into storm sewers is strictly prohibited. The Contractor shall be liable for all cleanup, damages, and resultant fines in the event of a spill resulting from the Contractor’s Work.

D. The Contractor shall not operate any existing valve or other wastewater or water appurtenances without permission of the District.

E. The Contractor shall participate in the Districts Lock Out / Tag Out procedures. The Contractor shall also implement their own Lock Out / Tag Out program.

F. The Contractor is made aware that the District does not allow system shutdowns on Monday or Friday. All work, unless otherwise approved in writing by the District, associated with installing the new pipe, fittings, plug valve(s), check valves, shall be completed within one scheduled eight (8) hour outage.

G. The Contractor shall be solely responsible for providing all labor, equipment, and materials to manage and properly dispose of all septage from the Lift Station, force main and sewer system.

H. The cost of temporary facilities, vacuum trucks and other items necessary for successful completion of the project shall be included in the bid.

I. The Contractor shall be fully prepared to complete the connections in the time allotted and shall not stop work until the facilities are restored to service or until otherwise directed so by the District.

1. All possible preparatory work shall be completed to the satisfaction of the District prior to connection to the existing system.
2. The District reserves the right to cancel or delay the tie-ins due to weather, existing system operational concerns, equipment or man-power concerns.
3. The District will not grant additional compensation to the Contractor if such a cancelation or delay were to occur.

J. Exposing Existing Facilities:

1. When connections are to be made to any existing pipe or other appurtenances, a minimum of 48 hours before the tie-in the Contractor shall excavate and expose the existing facility and pipe before the connection is made to determine the actual size, elevation, and position.
2. The Contractor shall notify the District prior to covering and may either backfill or trench plate the exposed location upon examining the site and determining what work and material will be necessary to complete the tie-in. Trench plates must be securely anchored to the ground, have a slip resistance surface when within a drive surface, and be installed in compliance with County Department of Transportation requirements.

K. The Contractor shall be responsible for all coordination with the landowner/tenant at the existing pump sewer service laterals. The coordination shall, at a minimum, include advance notification regarding the system being offline and the status of their service.

L. The Contractor shall provide all equipment and personnel necessary to dewater the force main and to deal with all flows at the tie-in location. This may include additional stand-by vacuum trucks during tie-in.

M. The Contractor will be allowed to discharge the septage from the Vacuum trucks into a District manhole or lift station located within approximately 5-miles of the location of work. No rocks, debris, or grout shall be discharged into the District facilities.

3.02 TIE-IN SEQUENCING

A. The Contractor shall submit a Shutdown Schedule and Tie-in Plan, however, in general, the Work consists of the following Major tasks:

1. Shutdown and isolation of existing wet well services.
   a. Set up of a bypass pumping system of the Contractors design.
   b. Closing valves that connect the lift station to the force main.
   c. Plugging and dewatering the sanitary sewer gravity lines.

2. Dewatering and sanitizing the existing lift station such that it can be worked in safely.
3. Removal of existing equipment.
4. Construction of new facility.
    a. Wet well pump and piping assembly.
5. Tie-in to the existing force main and testing.
    a. Shut down and dewatering of the existing force main.
    b. Installation of new valves.
    c. Connection between the existing force main and the lift station.
    d. Repair of existing vault walls.
    e. Painting.

END OF SECTION

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SECTION 40 05 60

VALVES & MISCELLANEOUS COMPONENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes valves and miscellaneous components.

1.02 SUBMITTALS

A. Annotated Product Bulletins for all valves, miscellaneous components, and accessories utilized.

B. Installation, operating and maintenance manuals for all valves, miscellaneous components, and accessories utilized.

1.03 DELIVERY, STORAGE, AND HANDLING

A. All valves and miscellaneous items shall be packed, shipped, stored and handled in accordance with manufacturer recommendations.

1.04 MANUAL OPERATORS

A. All valves, except check valves and air/vacuum valves, shall be provided with manual operators unless otherwise specified.

1. The operator shall be either levers or handwheels opened in the counterclockwise direction, unless otherwise indicated.
2. Each valve body shall have cast thereon the word OPEN and an arrow indicating the direction to open.
3. Valves mounted higher than 6 feet above floor or operating level shall have chain operators.
4. Unless otherwise indicated, valves of sizes 4-inch and larger shall have gear-assisted operators.

1.05 BURIED VALVES

A. Where buried, valves shall have extensions with square nuts.

1. Extended wrench nuts shall be provided so that the nut shall be within 40 inches of the cover.
2. Wrench nuts shall comply with Section 19 of AWWA C500.
3. A minimum of two operating keys, but no less than one key per every ten valves, shall be provided.
4. Provide valve boxes for all buried valves.

1.06 WARRANTY

A. Provide manufacturer’s written warranty, issued in the Owner’s name, to cover the equipment supplied against defects in workmanship and material for a period of one (1) year from the date of acceptance under normal use and service. Warranty shall include all materials and labor required.

PART 2 - PRODUCTS

2.01 SWING CHECK VALVES

A. The swing check valve shall be of the full body type with a domed access cover and only two moving parts, the flexible disc and the disc accelerator.

B. The swing check valve shall be suitable for sewage service.

C. The seating surface shall be on a 45 degree angle to minimize disc travel.

D. Swing check valves shall be designed, manufactured, and tested in accordance with AWWA C508.

E. Valves shall be flanged in accordance with ANSI B16.1, Class 125.

F. Valves shall be full opening type, designed for a minimum working pressure of 250 psi.

G. Materials of construction shall be as follows:

Components	Material
Body/Cover	Ductile Iron, A536 GR. 65-45-12
Body Seat	316 stainless steel
Disc	Buna – N, ASTM D2000-BG
Disc Seat	Acrylonitrile-Butadiene (NBR), held with stainless steel screws.
Pivot shaft	Stainless steel, Type 303
Lever & Spring	Lever: Steel, A36 Min., Spring: Stainless Steel
Mechanical Indicator	Stainless Steel
Gasket	Compressed non-asbestos fiber

H. Lining and Coating: Valve shall be lined and coated with a fusion bonded epoxy coating, 12 mil minimum thickness (dry).

1. Coatings shall conform to AWWA C550 for all interior and exterior surfaces.
2. Contractor shall coat the exterior of valve per Section 09 90 00– Painting and Coating to match piping system color, or color per Owner's approval.

I. Manufacturers/Models:

1. 2" TO 14": APCO model CVS-250A-LS or equal.
2. 16" TO 42": APCO model CVS-250-LS, or equal.

2.02 MISCELLANEOUS VALVES AND COMPONENTS

A. Valve Boxes:

1. Provide 9" inside diameter precast, traffic rated, type G5 valve boxes with bolt down cast iron covers by Christy Concrete Products, Jensen Precast , or equal

2. Valve boxes outside of street or traffic locations shall be installed with a 12-inch wide by 6-inch deep concrete collar with a #4 rebar reinforcing ring.
3. All valve box lids shall be marked Sewer, Reclaimed Water or Potable Water to match service.
4. Operator nut shall be within 40-inches of final surface grade.
5. All valve operators shall be centered in a one-piece riser stock with the use of a riser aligner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Valves shall be installed in accordance with the manufacturer's instructions.
2. Valves shall be independently supported to prevent stress on pipe.

B. Access:

1. Valves shall be installed to provide easy access for operation, removal and maintenance and to prevent interferences between the valve operators and structural members or other obstructions.

END OF SECTION

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SECTION 40 05 62
PLUG VALVES

PART 1 - GENERAL

1.01 SCOPE

A. This specification governs materials and installation for the installation of plug valves in a pumped sewage system as shown on the plans.

1.02 SUBMITTALS

A. Prior to the purchase of valves to be used in the District system, the following items shall be submitted and approved by the District:

1. Manufacturer's catalog data showing valve type and size to be used, valve dimensions, pressure rating and materials of construction.
2. Manufacturer’s data on the lining to be used.

PART 2 - MATERIALS

2.01 PLUG VALVES, 3” AND LARGER

A. Shall be manufactured in accordance with AWWA C517

B. Body: cast iron body with full port body meeting the requirements of AWWA C517-09, ANSI 125 flanged connections in accordance with ANSI B16.1, Class 125, and suitable for buried and/or submerged conditions.

C. Plug: ASTM A-536 Grade 65-45-12 ductile iron standard. Fully molded with Buna-N rubber, leaving no plug surface exposed to the media. Shaft and plug are to be one integral casting. All valves shall be suitable for frequent operation as well as service involving long periods of inactivity. Valves shall be capable of providing zero leakage past the seat.

D. Stem seal: Nitrile rubber (NBR) V-type multiple v-ring packing.

E. Body seat: Nickel, welded Nickel overlay of not less than 99 percent pure Nickel.

F. Upper and lower trunnion bearings: Sleeve-type, 18-8 stainless steel or bronze. Bearings journals shall be coated with PTFE or epoxy coating.

G. Grit excluders shall be provided on all valves.

H. All actuators shall be sized not to exceed 150 pounds of input force on all buried service valves at the maximum pressure rating of the valve for bi-directional flow. Manual operated valves shall comply with MSS-SP91 requirements.

I. Coating and Lining

1. Lining:
   a. Interior surfaces, excluding seating areas, bronze, and stainless-steel pieces, shall be lined with Protecto 401 epoxy lining.
2. Coating:
   a. Tnemec “Series 141” or approved equal.
   b. Flange faces shall be coated with a rust preventive compound.

J. Marking - The manufacturer shall show on the valve the size, manufacturer, class and year.

K. Acceptable manufacturers:

1. DeZurik PEF, 100% port eccentric
   a. AWWA C517-05 Resilient-Seated Cast-Iron Eccentric Plug Valve.
   b. Connection Type: Flanged
   c. Body: Cast Iron

PART 3 - EXECUTION

3.01 STORAGE

A. Valves shall be delivered and stored in the field with the port openings covered with plastic, cardboard or wood. These covers shall remain in place until the valve is ready to be installed. Valves shall not be stored in contact with bare ground. Valves shall not be stacked on top of one another.

3.02 INSTALLATION

A. The weight of the valve shall be supported by firm ground or concrete blocking and not by the pipe. Buried valves having the top of the operating nut greater than three feet below the finished surface shall be provided with shaft extensions.

B. Flanged Connection – Bolt holes of flanged valves shall straddle the horizontal and vertical axis of the pipe to which the valves are attached. Flanges, bolts and nuts shall be cleaned by wire brushing before installing flanged valves. Threads on nuts and bolts shall be lubricated with oil and graphite. Nuts and bolts shall be tightened uniformly and progressively. If flanges leak under pressure testing, the Contractor shall loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts, and retest the joints. Joints shall be watertight. Bolts shall be tightened in an even manner by a series of steps until the torque required by the manufacturer is reached.

C. Mechanical Joint – Valve socket, gland, and pipe plain end shall be wiped clean of all sand, dirt and other foreign material prior to valve installation. Bolts shall be tightened in a manner by a series of steps until the torque required by the manufacturer is reached.

3.03 OPERATION

A. Immediately before installation, each valve shall be operated through one complete open-close cycle and visually checked for proper operation. Boxing of valves shall begin immediately after pipe sections containing the valve have been installed. All valve boxes, paving rings, and lids shall be brought to grade after pavement has been constructed.

END OF SECTION

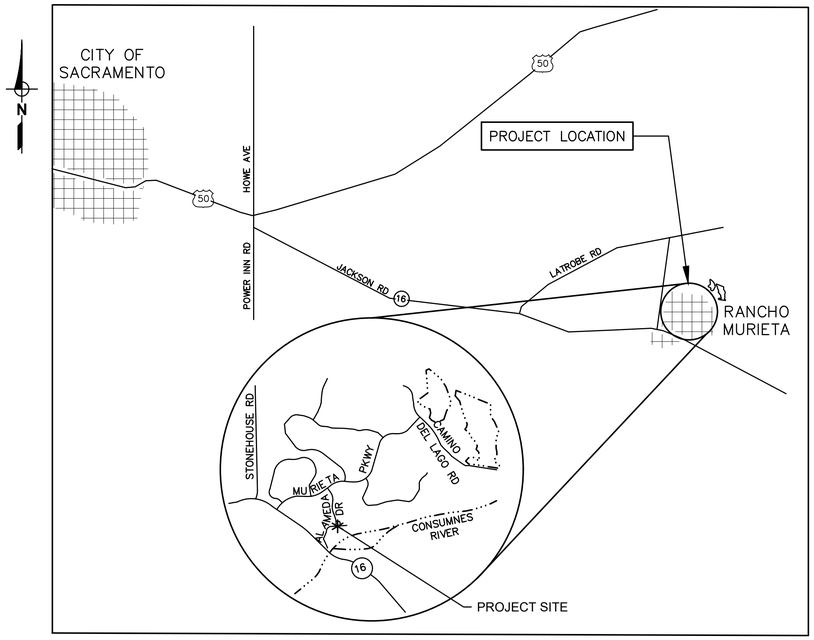
Attachment D

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

RANCHO MURIETA, CALIFORNIA

ALAMEDA LIFT STATION IMPROVEMENTS

DECEMBER 2024



LOCATION MAP

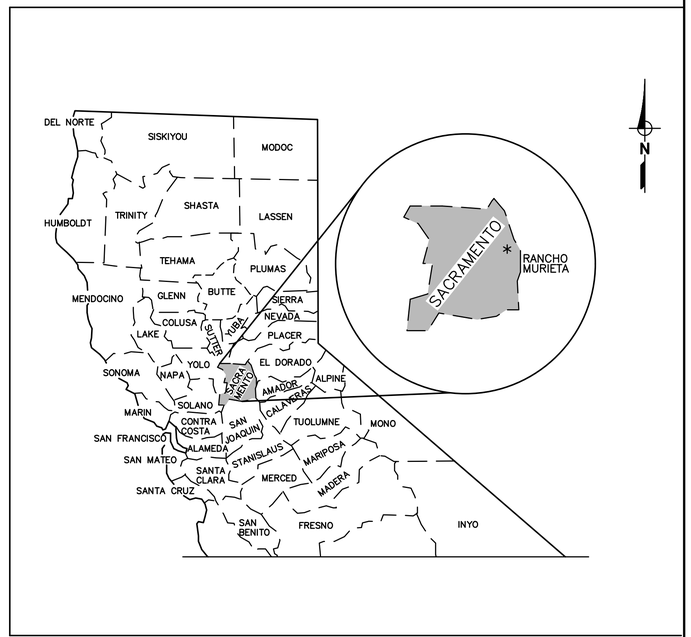
NOT TO SCALE

INDEX OF DRAWINGS		
DWG	SHEET	TITLE
G1	1	TITLE SHEET & INDEX OF DRAWINGS
G2	2	GENERAL NOTES, ABBREVIATIONS & SYMBOLS
G3	3	PROJECT SCHEMATIC
C1	4	DEMO PLAN AND SECTION
C2	5	RENOVATION PLAN AND SECTION
D1	6	DETAIL SHEET 1
D2	7	DETAIL SHEET 2

APPROVED ON _____ RESOLUTION NO. _____

RANCHO MURIETA COMMUNITY SERVICES DISTRICT _____ DATE

DOMENICHELLI & ASSOCIATES _____ DATE



VICINITY MAP

NOT TO SCALE

Z:\RM-ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA GS.DWG

REVISIONS				
REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

AT FULL SCALE

(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

DESIGNED: D. HEIGHER

DRAWN: J. MERCADO

CHECKED: J. DOMENICHELLI

DATE: DECEMBER 2024

DOMENICHELLI & ASSOCIATES

Domenichelli & Associates Ph: (916) 933-1997
5180 Golden Foothill Pkwy. Suite 220
El Dorado Hills, CA 95762

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

Rancho Murieta Community Services District

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RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

COVER SHEET

DRAWING NUMBER G1

SHEET NUMBER 1 OF 7

GENERAL NOTES

1. WORK INCLUDED (BUT NOT LIMITED TO):

   A. ALL WORK SHALL CONFORM TO THE APPLICABLE LOCAL, STATE AND FEDERAL CODES AND SPECIFICATIONS INCLUDING OSHA.
   B. IT IS THE CONTRACTORS RESPONSIBILITY TO ASSURE JOB SAFETY. LOCAL, STATE AND FEDERAL, INCLUDING OSHA, LAWS AND RULES SHALL BE ENFORCED BY THE CONTRACTOR AT ALL TIMES.
   C. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA), (800) 642-2444, 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL ALSO NOTIFY ALL OTHER UTILITIES, NOT IN USA, 48 HOURS PRIOR TO ANY EXCAVATION.
   D. ALL STRUCTURES AND FACILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.

3. PUBLIC SAFETY AND TRAFFIC CONTROL PLAN SHALL BE PROVIDED IN ACCORDANCE WITH THE GENERAL SPECIFICATIONS. SAFE VEHICULAR AND OPERATION STAFF ACCESS SHALL BE PROVIDED AT ALL TIMES DURING CONSTRUCTION.

4. EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND SACRAMENTO COUNTY BMPS.

5. THE TYPES, LOCATIONS, SIZES, AND/OR DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE IMPROVEMENT PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, LOCATIONS, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, THE DISTRICT CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ACTUAL LOCATIONS.

6. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND SPECIFICATIONS.

7. THE CONTRACTOR SHALL NOTIFY THE DISTRICT CONSTRUCTION INSPECTION SUPERVISOR AT (916) 354-3700 48 HOURS PRIOR TO INTENDED START OF WORK TO ARRANGE A PRE-CONSTRUCTION FIELD MEETING AND SHALL VERIFY AT THIS TIME THAT THE INSPECTOR HAS RECEIVED COPIES OF THE APPROVED PLANS. NO CONSTRUCTION MAY BE DONE PRIOR TO THIS MEETING.

8. COMPLIANCE WITH NOISE RESTRICTIONS IS REQUIRED. HOURS OF CONSTRUCTION OPERATION SHALL BE LIMITED FROM 7:00 A.M. TO 6:00 P.M. WEEKDAYS. NO SATURDAY WORK SHALL BE ALLOWED UNLESS APPROVED BY THE DISTRICT. NO SUNDAY WORK IS APPROVED. CONSTRUCTION EQUIPMENT SHALL BE MUFFLED AND SHROUDED TO MINIMIZE NOISE LEVELS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

9. NO REFUELING, LUBRICATION, OR MAINTENANCE OF CONSTRUCTION VEHICLES SHALL BE DONE ANYWHERE ON THE SITE EXCEPT WITHIN APPROVED CONSTRUCTION STAGING AREAS.

10. PRIOR TO COMMENCEMENT OF ANY WORK SHOWN ON THESE PLANS LOCATED WITHIN EXISTING PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM SACRAMENTO COUNTY PLANNING, INSPECTION, AND PERMITTING DEPARTMENT. THE CONTRACTOR WILL BE REQUIRED TO POST A PERFORMANCE BOND AND PROVIDE PROOF OF INSURANCE NAMING THE DISTRICT AS ADDITIONALLY INSURED.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINING AND CLEANING OF THE EXISTING WET WELL.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR BYPASSING SEWAGE FLOW AROUND THE WORK SITE. 100 GALLONS PER MINUTE AT 35 FT. OF HEAD.

ARCHAEOLOGY NOTE

SHOULD ANY CULTURAL RESOURCES, SUCH AS STRUCTURAL FEATURES, UNUSUAL AMOUNTS OF BONE OR SHELL, ARTIFACTS, HUMAN REMAINS, OR ARCHITECTURAL REMAINS BE ENCOUNTERED DURING ANY DEVELOPMENT ACTIVITIES, WORK SHALL BE SUSPENDED AND THE OWNER SHALL BE NOTIFIED IMMEDIATELY. CONTRACTOR SHALL COMPLY WITH ALL CONTRACT REQUIREMENTS FOR PROTECTION OF CULTURAL AND ARCHITECTURAL RESOURCES.

CONSTRUCTION WATER

ALL CONSTRUCTION WATER TO BE OBTAINED FROM AN APPROVED LOCATION BY RANCHO MURIETA COMMUNITY SERVICES DISTRICT.

LEGEND & SYMBOLS

- FLANGED JOINT
- MECHANICAL JOINT
- WELDED JOINT
- BELL & SPIGOT JOINT (LEADED)
- BALL JOINT
- GROOVED END JOINT
- FLANGED COUPLING ADAPTER
- FLEXIBLE COUPLING
- FLEXIBLE COUPLING WITH THRUST TIES
- STEEL BELLOWS EXP JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- LATERAL UP
- LATERAL DOWN
- ELBOW 90°
- CROSS
- TEE
- ELBOW 45°
- LATERAL
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- CAP (WELDED)
- TRAP
- VENT
- WYE
- BURIED VALVE W/ BOX
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- DIAPHRAGM VALVE
- GATE VALVE
- PUMP CONTROL VALVE
- PRESSURE RELIEF VALVE
- PLUG VALVE
- 3 WAY VALVE
- 4 WAY VALVE
- VACUUM RELIEF VALVE
- BACKFLOW PREVENTER
- BLIND FLANGE
- DOUBLE MECHANICAL JOINT
- PVC JOINT
- EXPANSION COUPLING
- PIPE CONTINUATION
- PIPE CONTINUATION, END VIEW
- CLEAN OUT
- DRAIN OR BELL-UP
- FILTER
- FLEXIBLE HOSE OR TUBING
- FLOWMETER
- FLOWTUBE
- FREE SURFACE
- GAGE, PRESSURE (W/COCK)
- HOSE BIBB 3/4" W/HOSE THREAD
- YARD HYDRANT, FREEZE PROOF
- HOSE CONNECTION
- HOSE RACK
- ORIFICE PLATE
- PUMP, CENTRIFUGAL
- PUMP, VARIABLE SPEED
- PUMP, PROGRESSIVE CAVITY
- SLEEVE
- STRAINER
- WATER SERVICE
- POWER/TELEPHONE
- WATER SERVICE REGULATOR OR WATER METER
- FIRE HYDRANT
- LIGHT POLE
- SIGN
- PROPERTY LINE
- EXISTING SEWER
- NEW SEWER
- EXISTING NON-POTABLE WATER LINE
- NEW NON-POTABLE WATER LINE
- WATER SURFACE
- MANHOLE
- THRUST BLOCK
- CATCH BASIN
- FENCE
- GAS LINE
- TELEPHONE CONDUIT
- ELECTRICAL CONDUIT
- CONTOUR ELEVATION
- POINT ELEVATION
- SLOPE
- TREES OR SHRUBBERY
- LANDSCAPED AREA
- TEST BORING LOCATION AND NO.
- EXISTING BUILDING
- NEW BUILDING
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- DRAINAGE COURSE OR FLOW LINE
- EXISTING GROUND CONTOUR
- FINISH GRADE CONTOUR
- STRUCTURAL CONTINUATION
- CONCRETE
- GROUT
- ROAD BASE
- DRAIN GRAVEL OR GRANULAR MATERIAL
- COARSE BASE ROCK
- FINISHED WOOD
- ROUGH WOOD, CONTINUOUS
- INSULATION
- MASONRY BLOCK
- EARTH OR GRADE
- EARTH FILL
- CHECKERED PLATE
- GRATING
- STEEL
- PIPE SUPPORTS
- CONDUIT
- ELECTRICAL BOX
- SEWER ACCESS
- AIR RELEASE VALVE
- METAL STRUT W/ CONC. FOOTING

ABBREVIATIONS

@	AT
AC	ASPHALT CONCRETE
AB	AGGREGATE BASE
ARV	AIR RELEASE VALVE
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BM	BENCH MARK
BOF	BOTTOM OF FLANGE
BOF*	BOTTOM OF FLANGE, NOT INCLUDING BOLTS
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STAIRS
BW	BACKWASH WATER
CIP	CAST IN PLACE
CLG	CEILING
CLR	CLEAR
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUOUS
CPLG	COUPLING
C TO C	CENTER TO CENTER
CV	CHECK VALVE
d	PENNY (NAIL SIZE)
DET	DETAIL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
ECC	ECCENTRIC
EG	EXISTING GRADE
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC, ELECTRICAL
EOP	EDGE OF PAVEMENT
ESEW	EMERGENCY SHOWER & EYEWASH
EW	EACH WAY
EXH	EXHAUST
EX OR (E)	EXISTING
FC	FLEXIBLE COUPLING
FCA	FLANGED COUPLING ADAPTER
FCTRY	FACTORY
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIG	FIGURE
FL	FLOOR
FLG	FLANGE
℄	FLOW LINE
FM	FORCE MAIN
FT	FOOT OR FEET
FTG	FOOTING
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GV	GATE VALVE
HDW	HARDWARE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HOSE RACK
IE	INVERT ELEVATION
IN	INCH
INSUL	INSULATION
INV	INVERT
JT	JOINT
KIP	THOUSAND POUNDS
KW	KILOWATT
L	ANGLE
LB	POUNDS
LF	LINEAR FEET
LT	LEFT
LR	LONG RADIUS
MAX	MAXIMUM
MECH	MECHANICAL
MANF	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MO	MASONRY OPENING
(N)	NEW
NO, OR #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OF	OVERFLOW
OZ	OUNCE
PE	PLAIN END
PL	PLATE (STEEL)
PLYWD	PLYWOOD
PRESS	PRESSURE
℗	PROPERTY LINE
PSI	POUND PER SQUARE INCH
PW	POTABLE WATER
R OR RAD	RADIUS
RD	ROAD
RDCR	REDUCER
RDW	REDWOOD
RED	REDUCER
RM	ROOM
RO	ROUGH OPENING
RTN	RETURN
RV	ROOF FENT
R/W	RIGHT-OF-WAY
SCH	SCHEDULE
SEC	SECTION
SH	SHEET
SHT'G	SHEATHING
SPEC	SPECIFICATIONS
SQ	SQUARE
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STRL	STRUCTURAL
STRUCT	STRUCTURE
TAN	TANGENT
TARV	TOP OF AIR RELEASE VALVE
TBG	TUBING
TECH	TECHNICAL
TEMP	TEMPERATURE
THD	THREAD
TOC	TOP OF CURB
TOG	TOP OF GRATE
TOP	TOP OF PIPE
TOR	TOP OF ROCK
TOW	TOP OF WALL
TYP	TYPICAL
TW	TREATED WATER
UBC	UNIFORM BUILDING CODE
UNO	UNLESS NOTED OTHERWISE
V	VENT, FOLT
VAC	VACUUM
VTR	VENT THRU ROOF
WM	WATER METER
WW	WASTE WATER

Z:\RM-ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA GS.DWG

REVISIONS

REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

AT FULL SCALE

(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

DESIGNED: D. HEIGHER
DRAWN: J. MERCADO
CHECKED: J. DOMENICHELLI
DATE: DECEMBER 2024

DOMENICHELLI & ASSOCIATES
Domenichelli & Associates Ph: (916) 933-1997
5180 Golden Foothill Pkwy. Suite 220
El Dorado Hills, CA 95762

REGISTERED PROFESSIONAL ENGINEER DARYL W. HEIGHER No. C 82011 CIVIL STATE OF CALIFORNIA

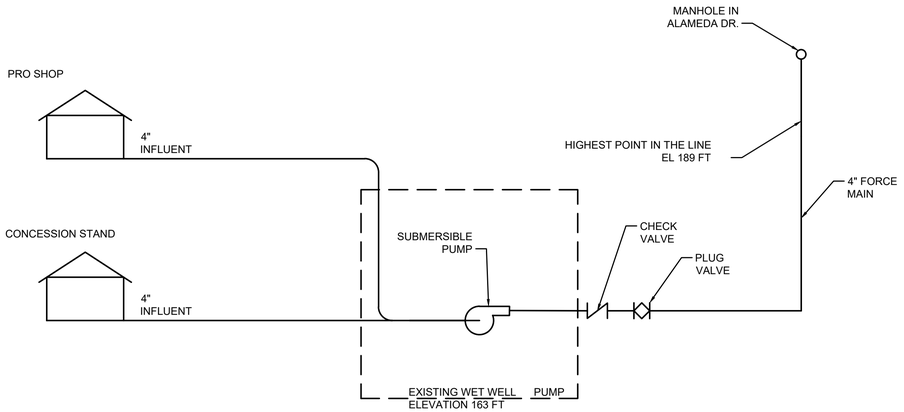
Rancho Murieta Community Services District
15160 Jackson Road, Rancho Murieta
(916) 354 3700

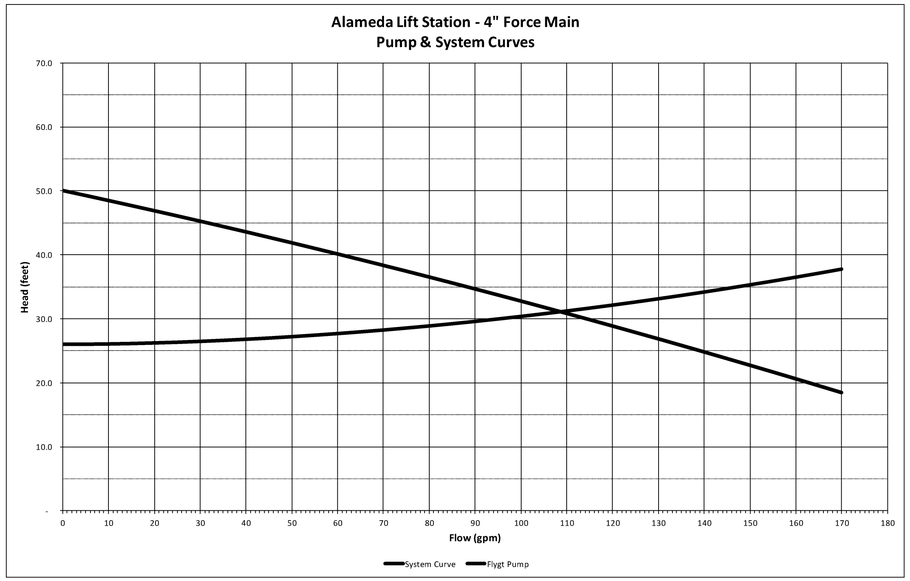
RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

GENERAL NOTES, ABBREVIATIONS & SYMBOLS

DRAWING NUMBER G2

SHEET NUMBER 2 OF 7





By: DWH
Date: 5/1/2024

Project: **Alameda LS**
Forcemain Calculation

	mgd	gpm	cfs
Pump Capacity =	0.144	100.0	0.22

Section 1

Force main Diameter =	4.18	inches	Pipe Retention Time	
Forcemain Area =	0.10	ft^2	237	seconds
Force Main Velocity =	2.3	fps	0.07	hours
C =	120			
Head Loss =	0.70	ft/100ft		
Force Main Length =	553	ft	395	gallons
$V^2/(2g)$ =	0.085	Pipe Travel Time =	3.9	minutes

	Qty.	K Value	Subtotal
Entrance	1	1	1
Exit	1	1	1
Elbows	3	0.45	1.35
45 degree	1	0.14	0.14
Check Valve	1	1.8	1.8
Gate Valve	1	0.12	0.12
		Total K =	5.41

Friction Head loss =	3.9	ft	1.7	psi
Top of Wet Well =	172.0	ft		
Pump Centerline =	163.0	ft		
High Point On The Line =	189.0	ft		
Minor Loses =	0.5	ft	0.2	psi
Section 1 Friction Head loss =	3.9	ft	1.7	psi
Section 2 Friction Head loss =	0.0	ft	0.0	psi
Section 3 Friction Head loss =	0.0	ft	0.0	psi
Static Head =	26.0	ft	11.3	psi
Total head =	30.4	ft	13.2	psi

Z:\RM-ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA G'S.DWG

REVISIONS				
REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING
0 1"
AT FULL SCALE
(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

DESIGNED: D. HEIGHER
DRAWN: J. MERCADO
CHECKED: J. DOMENICHELLI
DATE: DECEMBER 2024

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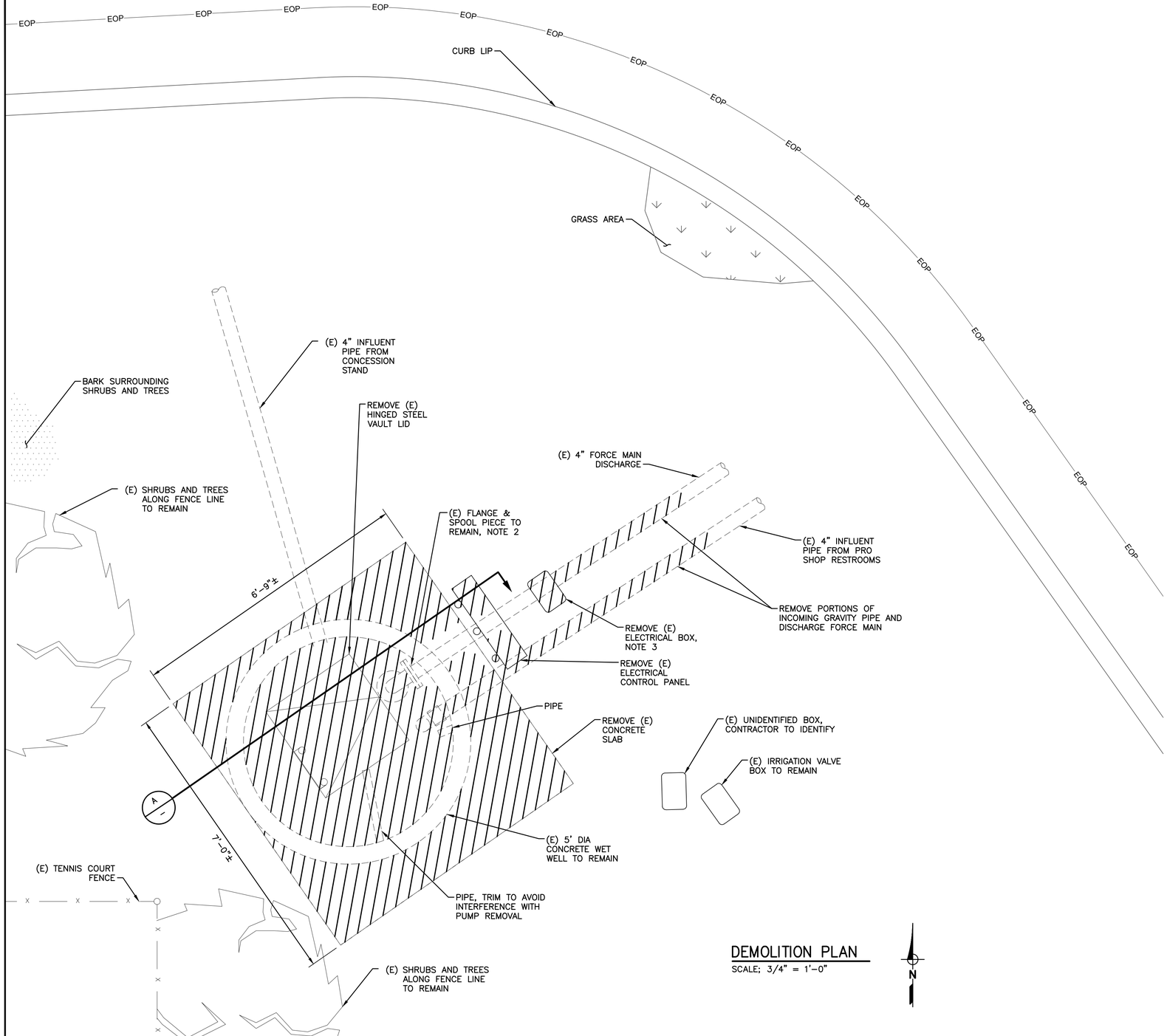
RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

PROJECT SCHEMATIC

DRAWING NUMBER
G3

SHEET NUMBER
3 OF 7

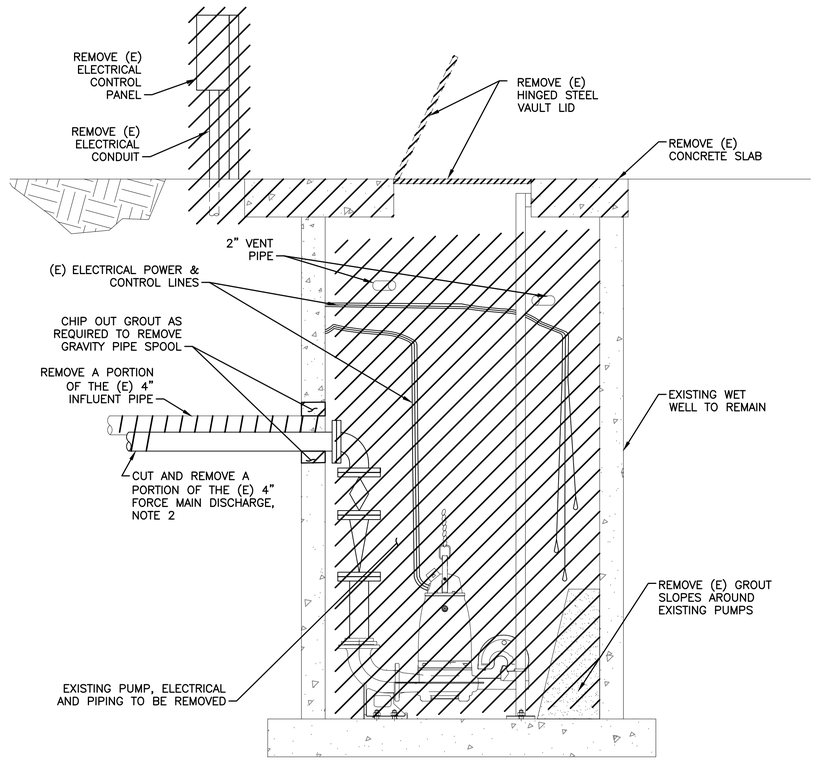


DEMOLITION PLAN

SCALE; 3/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL PROVIDE A MEANS TO PUMP SEWAGE AROUND THE WORK SITE, 100 GALLONS PER MINUTE AT 35ft OF HEAD. PROVIDE A PUMPING PLAN FOR DISTRICT APPROVAL PRIOR TO STARTING WORK.
2. LEAVE ENOUGH OF THE EXISTING FORCE MAIN SPOOL PIECE TO ALLOW A COUPLED CONNECTION IN THE NEW VALVE VAULT.
3. REMOVE CONDUITS AS REQUIRED AND RE-ROUTE ELECTRICAL POWER FEED TO NEW PANEL



DEMOLITION SECTION

SCALE; 3/4" = 1'-0"

Z:\RM\ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA SITE.DWG

REVISIONS				
REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

AT FULL SCALE

(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

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DATE: December 2024

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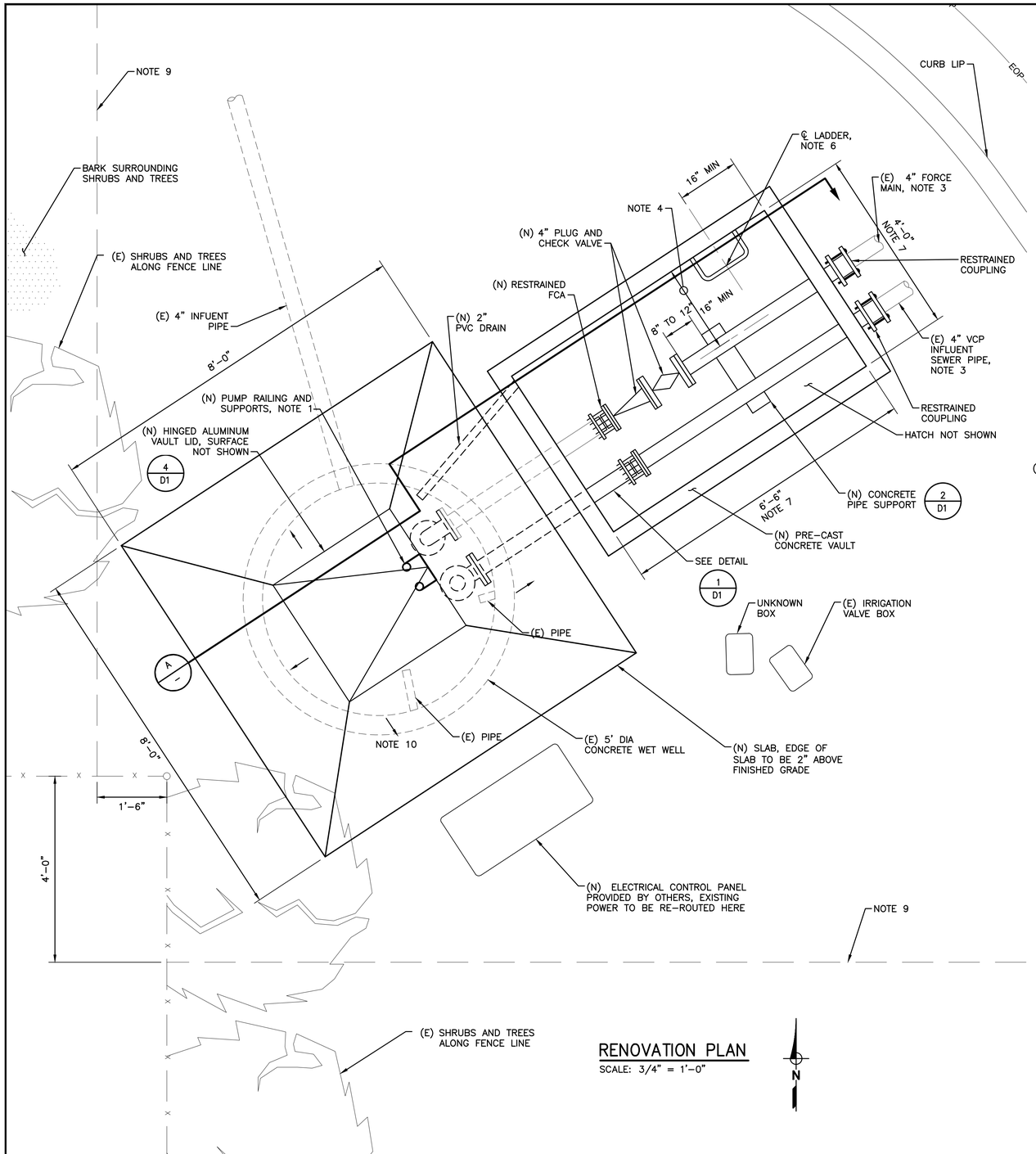
RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

DEMOLITION PLAN & SECTION

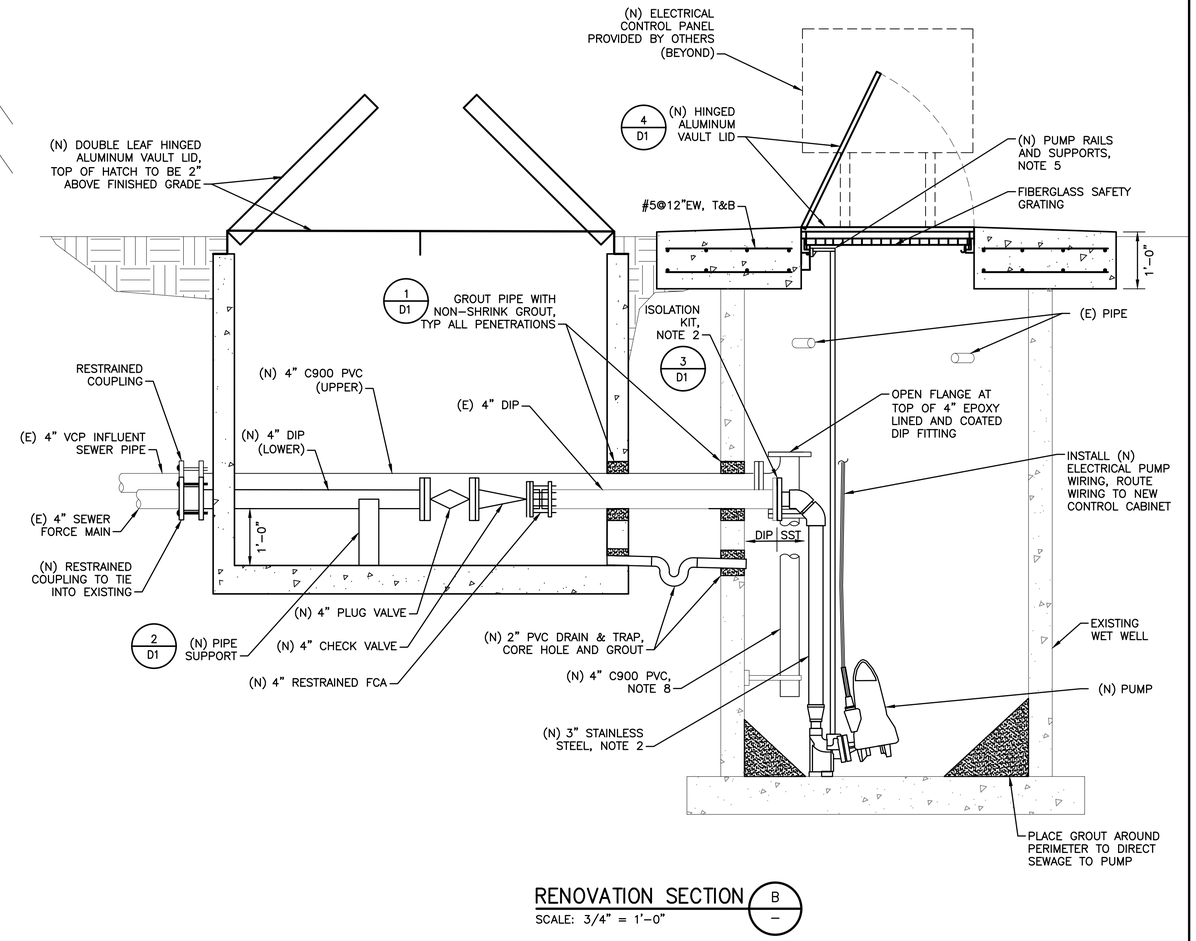
DRAWING NUMBER C1

SHEET NUMBER 4 OF 7



RENOVATION PLAN

SCALE: 3/4" = 1'-0"



RENOVATION SECTION

B –

SCALE: 3/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL INSTALL NEW PUMP RAILS TO AVOID CONFLICTS BETWEEN THE PUMP MOUNTS, GUIDES AND NEW HATCH.
2. PIPING FROM PUMP DISCHARGE TO DIP TRANSITION SHALL BE STAINLESS STEEL, DIP SHALL BE EPOXY LINED AND COATED
3. CONTRACTOR TO POTHOLE AND VERIFY SIZE AND TYPE OF EXISTING PIPING
4. CONTRACTOR TO VERIFY REQUIRED SPACE FOR VALVE SPRING RODS AND HANDWHEEL
5. PROVIDE MOUNTING BRACKET OF SUFFICIENT LENGTH TO ALIGN NEW PIPING WITH EXISTING. SLIDE RAILS SHALL BE VERTICAL.
6. THE LADDER RUNGS ARE TO BE CAST INTO THE PRE-CAST CONCRETE BOX BY THE MANUFACTURER. RUNGS SHALL BE 1" ROUND STEEL, 12" SIDE TO SIDE, 8" OFF THE WALL FACE, AND WILL BEGIN 12" ABOVE THE FINISHED FLOOR, SPACED 12" VERTICALLY TO THE TOP OF THE STRUCTURE.
7. THE INTERNAL DIMENSIONS SHOWN FOR THE NEW PRE-CAST VAULT ARE MINIMUMS.
8. BRACE 4" PVC OFF OF WET WELL WALL WITH 316 STAINLESS STEEL BRACE, UNISTRUT OR EQUAL.
9. REMOVE ALL GRASS AND SOD BETWEEN THE LINES SHOWN TO A DEPTH OF 4" AND REPLACE WITH 4" OF COMPACTED AB. COMPACT TO 90%.
10. TAPER TOP OF SLAB 1" FROM HATCH DOWN TO SLAB EDGE.

REVISIONS				
REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

AT FULL SCALE

(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

DESIGNED: D. HEIGHER

DRAWN: J. MERCADO

CHECKED: J. DOMENICHELLI

DATE: December 2024

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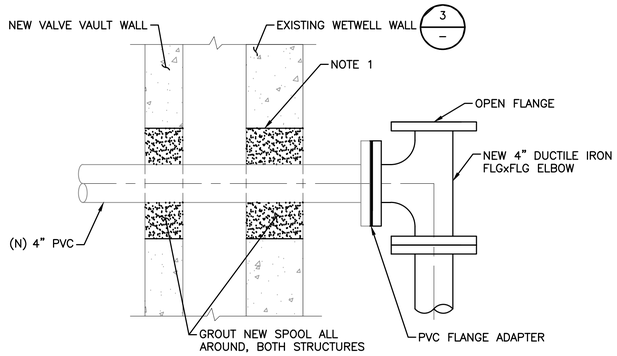
RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

RENOVATION PLAN & SECTION

DRAWING NUMBER C2

SHEET NUMBER 5 OF 7

Z:\RM\ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA SITE.DWG

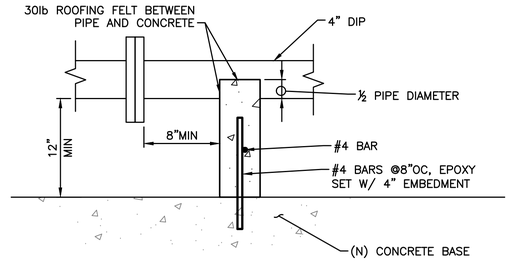


NOTES:

1. REMOVE EXISTING CONCRETE AND GROUT AS REQUIRED TO REMOVE EXISTING SPOOL.

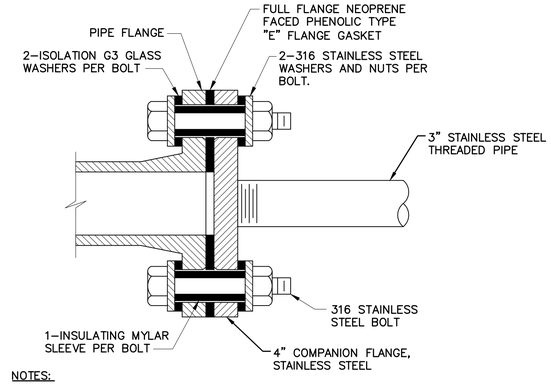
GRAVITY PIPE WALL PENETRATION DETAIL (1 / C2)

NTS



CONCRETE PIPE SUPPORT DETAIL (2 / C2)

NTS

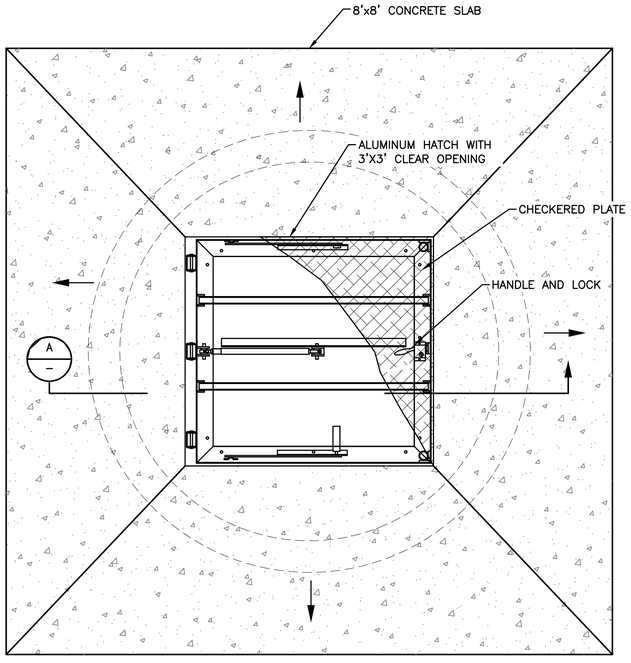


NOTES:

1. THE USE OF ALL–THREAD FOR BOLTS IS NOT PERMITTED.
2. BOLTS SHALL BE LONG ENOUGH TO ACCOMMODATE WASHERS AND FLANGE GASKET. TWO (2) THREADS MINIMUM PAST END OF NUT, ½" MINIMUM.

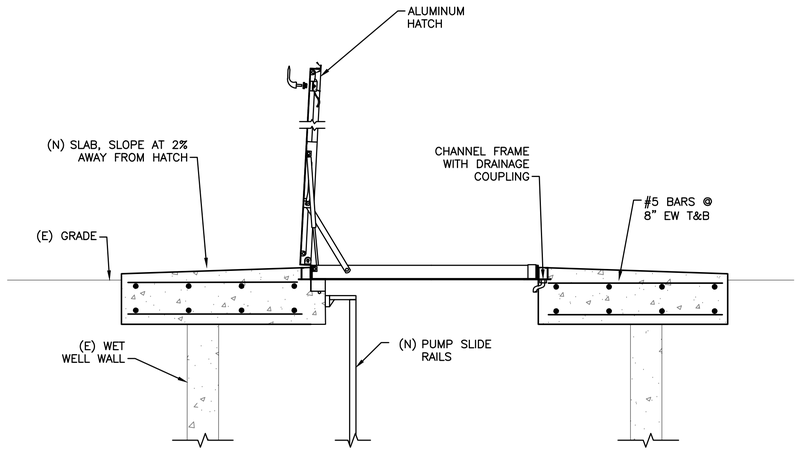
PIPE FLANGE ISOLATION (3 / C2)

NTS



ACCESS HATCH DETAIL (4 / C2)

1"=1'–0"



ACCESS HATCH SECTION (A / –)

1"=1'–0"

REVISIONS				
REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

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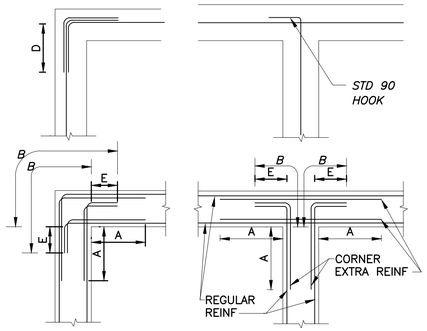
RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

DETAIL SHEET 1

DRAWING NUMBER D1

SHEET NUMBER 6 OF 7

Z:\RM-ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA DET.DWG

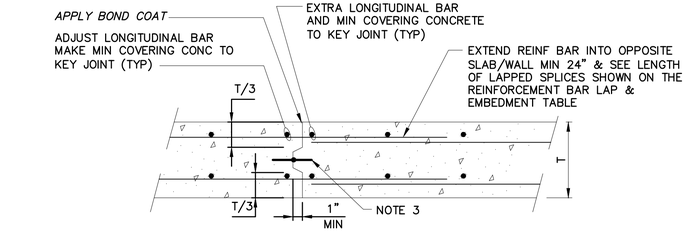


NOTES:

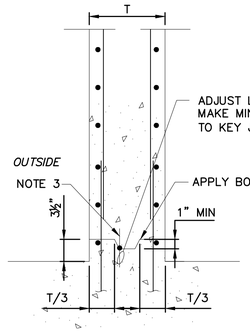
1. "A" IS 1/5 THE CLEAR SPAN DISTANCE MEASURED HORIZ OR VERT, WHICHEVER IS THE SMALLER; BUT IN NO CASE LESS THEN THE REQ'D LENGTH OF LAPPED SPLICES FOR TOP BARS AS SHOWN ON THE REINF BAR LAP & EMBEDMENT TABLE.
2. "B" IS SUFFICIENT LENGTH TO PERMIT BARS TO EXTEND THROUGH WALL TO OPPOSITE FACE AND TERMINATE IN A STANDARD HOOK BUT SHALL NOT BE LESS THAN THE LENGTH REQ'D FOR EMBEDMENT OF TOP BAR, AS SHOWN ON THE REINF BAR LAP & EMBEDMENT TABLE.
3. "D" NOT LESS THAN THE REQ'D FOR LAPPED SPLICES FOR TOP BARS AS SHOWN ON THE REINF BAR LAP & EMBEDMENT TABLE.
4. "E" IS NOT LESS THAN THE STD HOOK.
5. EXTRA BARS ALTERNATING WITH AND SAME AS HORIZ STEEL.
6. THIS DETAIL SHOWS THE HORIZ BARS ONLY.

TYPICAL CORNER REINFORCING DETAIL 1 TYP

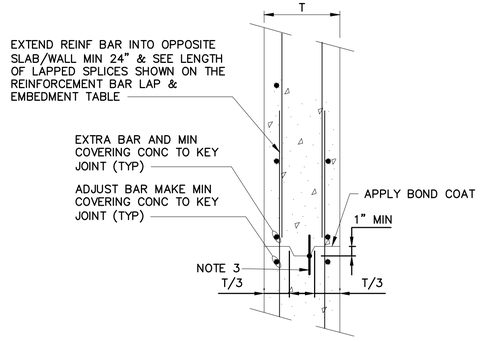
NTS



SLABS



BASE OF WALLS



WALLS

NOTES:

1. LOCATE PER PLANS.
2. UTILIZE WATERSTOP WHERE IDENTIFIED ON PLANS.
3. WATERSTOP SHALL BE 6' CENTERBULB PVC, GREENSTREAK 674 OR EQUAL.

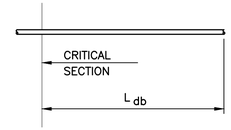
TYPICAL CONCRETE CONSTRUCTION JOINTS 2 TYP

FOOTNOTES:

1. TOP BARS ARE HORIZONTAL BARS SO THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
2. UNLESS OTHERWISE NOTED ON THE DRAWINGS, LAP SPLICE LENGTHS, AND TENSION EMBEDMENT LENGTHS SHALL BE NO LESS THAN (NO MINUS TOLERANCE) SHOWN ABOVE.
3. LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS AS DETERMINED BY THE ENGINEER AND SHALL NOT BE SPACED CLOSER THAN 6" OC.
4. IF THE CLEAR SPACING BETWEEN BARS $\leq$ 2d OR CONCRETE COVER < d THE TENSION EMBEDMENT AND LAP SPLICE LENGTHS MUST BE INCREASED BY 50 PERCENT.
5. TENSION EMBEDMENT LENGTH L_{db} IS THE STRAIGHT LENGTH OF REINFORCING BAR THAT MUST BE EMBEDDED IN THE CONCRETE BEYOND THE CRITICAL SECTION FOR A STRAIGHT DOWEL TO BE SUBSTITUTED FOR A STANDARD END HOOK.
6. THE TENSION EMBEDMENT AND LAP SPLICE LENGTHS SHOWN ABOVE ARE FOR NORMAL WEIGHT CONCRETE WITH f'_c = 4,000 psi. INCREASE THE LENGTHS SHOWN ABOVE BY 20% FOR NORMAL WEIGHT CONCRETE WITH f'_c = 3,000 psi. DECREASE THE LENGTHS SHOWN ABOVE BY 10% FOR NORMAL WEIGHT CONCRETE WITH f'_c = 5,000 psi.

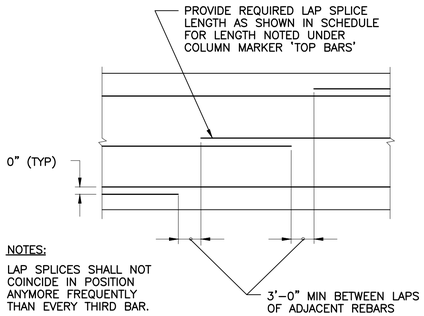
f'_c = 4,000 psi, NORMAL WEIGHT

BAR SIZE	TENSION EMBEDMENT LENGTH L_{db} (INCHES)		LAP SPLICE LENGTH (INCHES)	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	22	14	29	19
#4	29	19	38	25
#5	36	24	47	32
#6	43	29	56	38
#7	63	42	82	55
#8	72	48	94	63
#9	80	54	104	70
#10	90	60	117	78



LAP SPLICE AND TENSION EMBEDMENT LENGTHS 3 TYP

NTS

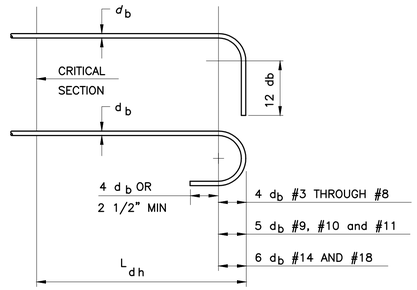


NOTES:

LAP SPLICES SHALL NOT COINCIDE IN POSITION ANYMORE FREQUENTLY THAN EVERY THIRD BAR.

SLAB AND WALL REINFORCING SPLICE 4 TYP

NTS



NOTES:

1. TENSION DEVELOPMENT LENGTHS L_{dh} SHOWN ABOVE ARE FOR NORMAL WEIGHT CONCRETE WITH f'_c = 4,000 psi. INCREASE THE LENGTHS SHOWN ABOVE BY 15% FOR NORMAL WEIGHT CONCRETE WITH f'_c = 3,000 psi. DECREASE THE LENGTHS SHOWN ABOVE BY 10% FOR NORMAL WEIGHT CONCRETE WITH f'_c = 5,000 psi.
2. IF SIDE COVER IS LESS THAN 2 1/2" OF CONCRETE OR END COVER IS LESS THAN 2", OF CONCRETE MULTIPLY TENSION EMBEDMENT LENGTH L_{dh} FOR STANDARD END HOOKS BY 1.45.

BAR SIZE	L dh (INCHES)
#3	6
#4	7
#5	9
#6	10
#7	12
#8	14
#9	15
#10	17
#11	19

STANDARD END HOOK 5 TYP

NTS

LOCATION	*MINIMUM COVER
UNFORMED SURFACES ADJACENT TO EARTH	3"
FORMED OR TOP SURFACES EXPOSED TO WEATHER OR SATURATED AIR, SUBMERGED OR IN CONTACT WITH EARTH	2"
SLABS AND JOISTS	2"
BEAMS AND COLUMNS	
STIRRUPS, SPIRALS AND TIES	2"
PRIMARY REINFORCEMENT	2½"
WALLS	
FOOTINGS AND BASE SLABS	
FORMED SURFACES	2"
TOP OF FOOTINGS AND BASE SLABS	2"
SHELLS AND FOLDED PLATE MEMBERS	1½"
CONDITIONS NOT COVERED ABOVE	
SLABS AND JOISTS	
#11 AND SMALLER	¾"
#14 AND #18	1½"
BEAMS AND COLUMNS	
STIRRUPS, SPIRALS AND TIES	1½"
PRIMARY REINFORCEMENT	2"
WALLS	
#11 AND SMALLER	¾"
#14 AND #18	1½"
SHELLS AND FOLDED PLATE MEMBERS	
#5 BARS, W31 OR D31 WIRE AND SMALLER	½"
#6 BARS AND LARGER	¾"

* COVER FOR REINFORCING STEEL SHALL NOT BE LESS THAN THE MINIMUM GIVEN ABOVE (NO MINUS TOLERANCE) , AND SHALL NOT EXCEED THE MINIMUM BY MORE THAN 1/4 INCH WHERE THE CONCRETE THICKNESS IS 24" OR LESS, OR MORE THAN 1/2 INCH WHERE THE CONCRETE THICKNESS IS MORE THAN 24 INCHES.

FOR REINFORCEMENT CONCRETE COVER 6 TYP

NTS

Z:\RM-ONCALL 3-21 TO 3-24\RM-031 LIFT STATION UPGRADES\DWGS\ALAMEDA\ALAMEDA DET.DWG

REVISIONS

REV.	DESCRIPTION	DATE	BY	CHKD.

WARNING

0 1"

AT FULL SCALE

(IF BAR IS NOT 1" - SCALE ACCORDINGLY)

DESIGNED: D. HEIGHER
DRAWN: J. MERCADO
CHECKED: J. DOMENICHELLI
DATE: December 2024

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Rancho Murieta Community Services District
15160 Jackson Road, Rancho Murieta
(916) 354 3700

RANCHO MURIETA COMMUNITY SERVICES
ALAMEDA LIFT STATION IMPROVEMENTS

DETAIL SHEET 2

DRAWING NUMBER D2

SHEET NUMBER 7 OF 7