

PROSPECT PUMP STATION REHABILITATION PROJECT

CONTRACT SPECIFICATIONS

FOR:



PREPARED BY:

MARK THOMAS, INC.

20863 Stevens Creek Boulevard, Suite 100
Cupertino, California 95014
(408) 253-7071

APPROVED BY:



Benjamin Porter
District Manager-Engineer

R.C.E. # 69302
Expires June 30, 2020

Specifications Dated: July 17, 2019

Bid Opening on Wednesday, August 28, 2019 at 2:00 PM

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ATTACHMENTS (DISTRICT FURNISHED MATERIALS AT NO COST TO THE CONTRACTOR):

- 1) TESCO CONTROLS, INC. DATED 6/27/2019, AS AMENDED
- 2) SHAPE INC. - FLYGT PUMPS NZ3153 AND SERVICE CART
- 3) SHAPE INC. – FLYGT MULTISMART PUMP STATION MANAGER
- 4) SHAPE INC. – ABB INC. VARIABLE FREQUENCY DRIVES

END OF TOC

BID INFORMATION

BI-2 INVITATION TO BID

Project: **Prospect Pump Station Rehabilitation Project**

District: **Cupertino Sanitary District**
20863 Stevens Creek Blvd, Suite 100
Cupertino, Ca 95014

Engineer: **Mark Thomas & Co. Inc.**
20863 Stevens Creek Blvd, Suite 100
Cupertino, Ca 95014

Date: July 18, 2019

Your firm is invited to submit a Bid under seal at the office of the Engineer to the attention of the District, CUPERTINO SANITARY DISTRICT (“District”), for the sewer pump station rehabilitation project titled: **Prospect Pump Station Rehabilitation Project**.

The Contractor’s registration with the Cupertino Sanitary District must be current. The District has the right to disqualify Contractors who fail to renew their registration. If your firm is not currently registered, please contact the District for information. The Contractor, and subcontractors, will also need to be registered with the Department of Industrial Relations (DIR) in order to bid or be listed on the bid for this project. Contractors and subcontractors can register with DIR at: <http://www.dir.ca.gov/Public-Works/PublicWorksContractorsAndSubcontractors.html>

The District will receive Bids until **2:00 PM local standard time on Wednesday, August 28, 2019 at the Office of the District Manager, 20863 Stevens Creek Blvd, Suite 100, Cupertino, California 95014**, for the following project:

Project Description: The WORK includes providing all labor, materials, tools and equipment necessary for rehabilitating Prospect Pump Station located at the southeast corner of De Anza Blvd. and Prospect Road in the City of Saratoga.

Additional details can be found in the project plan set (“Plans”).

Bids received after the date and time stated herein will be rejected as nonresponsive. It is highly recommended that all Bids be hand-delivered.

Contract documents specifying the requirements of the work to be performed, the terms of the contract between the District and the successful Bidder, and the details of the contract documents can be found at the Cupertino Sanitary District website. Go to www.cupertinosanitarydistrict.com or at Builders’ Exchange.

Although Bidders may download the contract documents from District website or from Builders’ Exchange, **Bidders must call Cupertino Sanitary District at (408) 253-7071 to register as a plan holder and prospective Bidders in order to bid on this Project and be assured that their Bids include all addenda.** Bids that do not acknowledge receipt of addenda may be considered nonresponsive.

The District requires the Project to be completed in **Sixty Five (65) working days** from date of Notice to Proceed (NTP).

Bidders will be required to provide Bid security in the form of a Bid Bond of a sum no less than ten percent (10%) of the Bid Price.

Refer to other bidding requirements described in Bidding Document BI-3 Instructions to Bidders.

Submit your Bid on the Bid Form provided. Bidders may supplement this Bid Form with additional bid information as needed.

Your Bid is required to be submitted under a condition of irrevocability for a period of ninety (90) days after submission.

The District reserves the right to accept or reject any or all Bids.

Acceptance of the qualified low Bid and award of the Contract will be agendized for the Board of Directors Meeting of **Wednesday, September 4, 2019.**

END OF BIDDING DOCUMENT BI-2

BI-3 INSTRUCTIONS TO BIDDERS

SUMMARY

Document Includes:

- 1.2 Bid submission
- 1.3 Intent
- 1.4 Work Identified in Contract Documents
- 1.5 Contract Time
- 1.6 Definitions
- 1.7 Contract Documents Identification
- 1.8 Availability of Documents
- 1.9 Examination of Documents
- 1.10 Inquiries and Addenda
- 1.11 Product Substitutions
- 1.12 Site Examination
- 1.13 Pre-bid Conference
- 1.14 Bidder Qualifications
- 1.15 Bidder Pre-qualification
- 1.16 Subcontractors
- 1.17 Bid Submission Procedure
- 1.18 Bid Ineligibility
- 1.19 Security Deposit
- 1.20 Performance Assurance
- 1.21 Insurance
- 1.22 Bid Form Requirements.
- 1.23 Fees for Changes in the Work
- 1.24 Bid Form Signature
- 1.25 Additional Bid Information
- 1.26 Selection and Award of Alternates
- 1.27 Bid Opening
- 1.28 Duration of Offer
- 1.29 Acceptance of Offer

Related Documents:

- 1.30 Bidding Document BI-2 - Invitation To Bid.
- 1.31 Bidding Document BI-6 - Bid Form - Unit Price.
- 1.32 Bidding Document BI-7 - Bid Form Supplements: Appendices A, B

1.2 BID SUBMISSION

- Bids signed and under seal, executed, and dated will be received at the Office of the District Manger, 20863 Stevens Creek Blvd, Suite 100, Cupertino, California 95014 by **2:00 PM** local standard time on **Wednesday, August 28, 2019**.
- Bids submitted after the above time may be returned to Bidder unopened at the discretion of the District.
- Amendments to submitted Bids will be permitted when received in writing prior to bid closing and when endorsed by the same party or parties who signed and sealed the Bid.
- Bidders may withdraw their Bid by written request at any time before bid closing.

1.3 INTENT

- The intent of this Bid request is to obtain an offer to perform work to rehabilitate Prospect Pump Station.

1.4 WORK IDENTIFIED IN CONTRACT DOCUMENTS

- Work:
 - Rehabilitate Prospect Pump Station, including installation of new force main..
- Location:
 - Located at the southeast corner of DeAnza Boulevard and Saratoga-Sunnyvale Road in the City of Saratoga, CA for a Unit Price contract, in accordance with Contract Documents.

1.5 CONTRACT TIME

- Perform the Work in **sixty five (65) working days** from the date of the Notice to Proceed. Bidders may suggest revisions to the Contract Time with a specific adjustment to Bid Price.
- New pumps must be in operable condition by November 25, 2019.

1.6 DEFINITIONS

- Bid Documents:
 - Contract Documents supplemented with Invitation To Bid,
- Instructions to Bidders, Information available to Bidders, Bid Form Supplements and Appendices, and bid securities, identified.
- Contract Documents:
 - Approved Specifications and Construction Plans prepared by Mark Thomas. Also including Bidding Documents and issued Addenda.
- Bid:
 - Executed Bid Form and required attachments submitted in accordance with these Instructions to Bidders.
- Bid Price:
 - Monetary sum identified by the Bidder in the Bid Form.

1.7 CONTRACT DOCUMENTS IDENTIFICATION

- The Contract Documents are identified as “**Prospect Pump Rehabilitation Project**” as prepared by Mark Thomas & Co. Inc. located at 20863 Stevens Creek Blvd. Suite. 100 Cupertino, CA 95014.

1.8 AVAILABILITY OF DOCUMENTS

- Bidding Documents may be obtained as stated in Invitation to Bid.
- Partial sets of Bidding Documents will not be issued to general contract Bidders.
- Bidding Documents are made available only for the purpose of obtaining offers for this Project. Their use does not grant a license for other purposes.

1.9 EXAMINATION OF DOCUMENTS

- Upon receipt of Bid Documents, Contractor shall verify documents are complete. Notify Engineer if documents are incomplete.
- Immediately notify Engineer upon finding discrepancies or omissions in Bidding Documents.

1.10 INQUIRIES AND ADDENDA

- Bidder must direct all questions about the meaning or intent of Bidding Documents to District (Attention: District’s Authorized Representative) **in writing**. Letters, Faxes or emails are acceptable forms of written questions. Interpretations or clarifications considered necessary by District in response to such questions will be issued by Addenda mailed, faxed, or delivered to all “Bid List” parties, recorded by District as having received a Bidding Document. Addenda will be written and will be issued to each Bidder to the address or fax

number supplied District by Bidder. District may not answer questions received less than ten (10) days prior to the date for opening Bids. Only questions answered by formal written Addenda will be binding.

- Oral and other interpretations or clarification will be without legal effect.
- Submit questions not less than two (2) days before date set for receipt of Bids. Replies will be made by Addenda.
- Submit Addenda may be issued during bidding period. Addenda shall be acknowledged by number with signature and shall be part of the Contract Documents. A complete listing of Addenda may be secured from District.

1.11 PRODUCT SUBSTITUTIONS

- Bidder must base their Bids on Products and systems specified in Contract Documents or Addenda.
- Where Bidding Documents stipulate particular Products, substitution requests will be considered by Engineer up to two (2) days before receipt of Bids.
- With each substitution request, provide sufficient information for Engineer to determine acceptability of proposed products.
- Bidder must base their Bids on Products and systems specified in Contract Documents or Addenda.
- Where Bidding Documents stipulate particular Products, substitution requests will be considered by Engineer up to two (2) days before receipt of Bids.
- With each substitution request, provide sufficient information for Engineer to determine acceptability of proposed products.
- Bidder must base their Bids on Products and systems specified in Contract Documents or Addenda.
- Where Bidding Documents stipulate particular Products, substitution requests will be considered by Engineer up to two (2) days before receipt of Bids.
- With each substitution request, provide sufficient information for Engineer to determine acceptability of proposed products.
- When a request to substitute a Product is made, Engineer may approve the substitution. Approved substitution will be identified by Addenda.
- In submission of substitutions to Products specified, Bidders shall include in their Bid, changes required in the Work and changes to Contract Time and Contract Price to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Price because of changes in Work necessitated by use of substitutions will not be considered.
- Provide Products as specified unless substitutions are submitted in this manner and subsequently accepted.
- Approval to submit substitution requests prior to submission of Bids is not required

1.12 SITE EXAMINATION

- Before submitting a Bid, each Bidder shall be responsible in obtaining such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the project site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents. Bidders shall advise District in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for District's review and response.

- Contact Engineer at the following address and phone number to arrange date and time to visit Project site:
 - Address: 20863 Stevens Creek Blvd. Suite 100, Cupertino CA.
 - Telephone: (408) 253-7071.
 - Contact: Frank Quach
- Geotechnical Data. For informational purpose only. District does not warrant, and makes not representation regarding, the accuracy or thoroughness of any geotechnical data. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by the District. A copy of the geotechnical report is included as Attachment 3.
- Contractor is responsible for contacting Underground Service Alert (USA) at (1-800-227-2600) prior to the start of construction to have all utility locations marked and located prior to the start of construction.

1.13 PRE-BID CONFERENCE

- District will conduct a Pre-Bid Conference at **10:00 AM on Tuesday, August 13, 2019** in the at Prospect Pump Station. Any Bidder wishing to investigate subsurface conditions at the site must schedule such as visit with the District in accordance with Bidding Information BI-3 (Instruction to Bidders).

1.14 BIDDER QUALIFICATIONS

- To demonstrate qualification for performing the Work of this Contract, Bidders may be requested to submit written evidence of bonding capacity, previous experience, current commitments and licenses to perform work in the County of Santa Clara and State of California.

1.15 BIDDER PRE-QUALIFICATION

- Bidder must hold a Class “A” General Engineering Contractor or Class “C-34” Pipeline Contractor, contractor’s license and meet current registration requirements with the **Cupertino Sanitary District** is required to Bid this Contract. Joint ventures must secure a joint venture license prior to award of this Contract. Removal, handling, and/or disposal of hazardous materials may, by law, require hazardous substance removal certification by the Contractor’s State License Board.

1.16 SUBCONTRACTORS

- All Bidders must submit with their Bids the required information on all Subcontractors, for those Subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to details drawings contained in the plans and specifications, in excess of one half of one percent of total Bid or ten thousand dollars (\$10,000), whichever is greater. Violation of this requirement may result in Bid being deemed non-responsive and being rejected. The District reserves the right to reject a proposed Subcontractor for reasonable cause, as determined by the District.

1.17 BID SUBMISSION PROCEDURE

- Bidders shall be solely responsible for delivery of Bids in manner and time prescribed.
- Submit one (1) copy of executed offer on Bid Forms provided, signed and sealed with required Bid Bond in a closed opaque envelope, clearly identified with Bidder’s name, Project name, contact phone number and District’s name on the outside.
- Double Envelope: Insert the closed and sealed Bid Form in a large envelope and include the requested Bid Bond in a separate opaque envelope. Label the outer envelope as noted above.

- Improperly completed information or irregularities in Bid Bond, may be cause not to open the Bid Form envelope. District may declare the Bid invalid.
- A summary of submitted Bids will be made available to all Bidders following bid opening.

1.18 BID INELIGIBILITY

- Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at District's discretion.
- Bid Forms, Appendices, and enclosures which are improperly prepared may be declared unacceptable at District's discretion.
- Failure to provide security deposit, bonds or insurance requirements will invalidate the Bid at the discretion of the District.
- Bids are by invitation from selected Bidders and by qualified Bidders via project advertisement. Unsolicited Bids from non-qualified Bidders will be returned.

1.19 SECURITY DEPOSIT

- Bids shall be accompanied by a Bid Bond that equals the sum of no less than ten percent (10%) of the Bid Price on standard surety company form.
- Endorse Bid Bond in name of the District as obligee, signed and sealed by the principal Contractor and surety.
- Include the cost of the Bid Bond in the Bid Price. No separate payment will be made thereof.
- After a Bid has been accepted, Bid Bonds will be returned to the respective Bidders, other than the lowest bidder.
- If no contract is awarded, Bid Bonds will be returned.

1.20 PERFORMANCE ASSURANCE

- Accepted Bidder:
 - Provide Performance and Payment bonds in amount of one hundred percent (100%) of Bid Price as described in Bidding Information BI-3 (Instructions to Bidders).
- Include the cost of performance assurance bonds in the Bid Price. Bidder shall identify the cost when requested by the District.

1.21 INSURANCE

- Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the Bidder in accordance with the insurance requirements of the Contract Documents.
- Insurance certificates shall be issued to Cupertino Sanitary District and name State of California, Santa Clara Valley Water District, City of Cupertino and Mark Thomas & Co. Inc. as additional insured.

1.22 BID FORM REQUIREMENTS

- All Bidders must submit Bids, using where applicable, documents supplied in this Bid Document, including without limitation Bidding Information BI-6 (Bid Form – Unit Price), Bidding Information BI-7 (Bid Form Supplements), Bidding Document BD-8 (Non-Collusion Affidavit), and Bidding Document BI-9 (Bidders Certifications). District will reject as non-responsive any Bid not submitted on the required forms. Bids must be full and complete. Bidders must complete all Bid items and supply all information required by Bidding Documents. Bidder must completely fill out all forms required for the bid. District reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders may not modify the Bid Form or qualify their Bids. Bidders

must submit clearly and distinctly written Bids. Bidders must clearly make any changes in their Bids by crossing out original entries, entering new entries, and initialing new entries. District reserves the right to reject any Bid not clearly written.

- Complete requested information in the Bid Form and Bid Form Supplements.

1.23 FEES FOR CHANGES IN THE WORK

- Include in the Bid Form, the overhead and profit fees on Bidder's own Work and Work by Subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Price is based.

1.24 BID FORM SIGNATURE

- Sign Bid Form, as follows:
 - Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
 - Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
 - Corporation: Signature of duly authorized signing officers in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the Bid is signed by officials other than the president or secretary of the company, or the president, secretary and/or treasurer of the company, submit a copy of the by-law resolution of their board of directors authorizing them to do so, with the Bid Form in the bid envelope.
 - Joint Venture: Signature of each party of the joint venture under their respective seals in a manner appropriate to such party as described above, similar to requirements for Partnerships.

1.25 ADDITIONAL BID INFORMATION

- Complete and submit Bidding Document BI-7 Bid Form Supplements with Bid.
- Complete and submit the following Appendices included in Bidding Document BI-7 Bid Form Supplements within twenty-four (24) hours of Bid opening, if not already included in the Bid:
 - Appendix A - List of Subcontractors: Include names of all Subcontractors and portions of the Work each Subcontractor will perform.

1.26 SELECTION AND AWARD OF ALTERNATES

- Indicate variation of Bid Price for alternates listed in Bidding Document BI-7 Bid Form Supplements. This form requests a Bid Price for either of two alternatives.

1.27 BID OPENING

- Bids will be publicly opened and read by the Office of the District Manager, 20863 Stevens Creek Blvd, Suite 100, Cupertino, California 95014 at **2:00 PM** local standard time on **Wednesday, August 28, 2019**. A report of the results will be made by the District Clerk of the Board of Cupertino Sanitary District at a publicly noticed regular or special meeting of the Board of Directors. The anticipated date of the meeting will be announced at the Bid Opening.

1.28 DURATION OF OFFER

- Bids shall remain open to acceptance and shall be irrevocable for a period of **twenty (20) calendar days** after bid closing date.

1.29 ACCEPTANCE OF OFFER

- The District reserves the right to accept or reject any or all offers.
- After acceptance by the District, Engineer will issue to the accepted Bidder, a written Bid Acceptance and Notice To Proceed (NTP).
- Notwithstanding delay in the preparation and execution of the Agreement, accepted Bidder shall be prepared, upon written Notice to Proceed (NTP), to commence work within **ten (10) calendar days** following receipt of official written order of the District to proceed, or on date stipulated in such order.
- The accepted bidder shall assist and cooperate with the District to prepare the Agreement, and within **five (5) calendar days** following its presentation shall execute Agreement and return it to the District.

END OF BIDDING DOCUMENT BI-3

BI-4 INDEMNITY AND RELEASE AGREEMENT

Dated _____

NAME OF BIDDER: _____

DISTRICT: CUPERTINO SANITARY DISTRICT (“DISTRICT”)

PROJECT: **PROSPECT PUMP STATION REHABILITATION PROJECT**

In consideration of the above-referenced District’s permitting the undersigned potential bidder (“Bidder”) to have access to, and to conduct investigations, tests and/or inspections on, the Site, Bidder hereby agrees as follows:

- To the greatest extent permitted by law, Bidder hereby releases, and shall defend, indemnify and hold harmless District and Mark Thomas & Co. Inc., and its officers, employees, other consultants (including without limitation Consulting Engineer), representatives, and agents, and all other parties having any other interest in the Site, against any claim or liability, including attorney’s fees, arising from or relating to any Site-related access, investigation, test, inspection and/or other activity conducted by Bidder or any of Bidder’s officers, employees, consultants, representatives, and/or agents, regardless of whether claim or liability is caused in part by the negligence of District or by any released and indemnified party.
- Bidder hereby waives the provisions of California Civil Code Section 1542 which provides as follows:
 - A general release does not extend to claims that the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him, must have materially affected his settlement with the debtor.
- Bidder shall repair any damage to the Site or adjacent property resulting from activities authorized hereunder, and comply with and be subject to all other requirements and obligations described or referenced in Bidding Document BI-5 (Geotechnical Data and Existing Conditions).
- Attached hereto (or to be delivered separately before Bidder’s visit to the Site) is a certificate for comprehensive general liability insurance.
- Although this Indemnity and Release Agreement is not a Contract Document (see Contract Document CD-2), it shall be fully effective and binding regardless of whether Bidder submits a Bid for the subject Project, is awarded a contract for the Project, or otherwise.

By: _____
Signature

By: _____
Signature

Its: _____
Title (If Corporation: Chairman, President or Vice President)

Its: _____
Title (If Corporation: Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer)

END OF BIDDING DOCUMENT BI-4

BI-5 GEOTECHNICAL DATA, HAZARDOUS MATERIALS SURVEYS AND EXISTING CONDITIONS

SUMMARY

- This Document sets forth the terms and conditions under which Bidder may review, study, use, or rely upon geotechnical data at or contiguous to the Site, and existing conditions information concerning existing conditions at or contiguous to the Site. This Document, the available geotechnical, soil and asbestos data, and the supplied existing conditions information are not Contract Documents.

REPORTS AND INFORMATION

- No recent geotechnical report has been prepared for this project. As-builts drawings are available at the District's office.

USE OF INFORMATION ON EXISTING CONDITIONS

- **Above ground Existing Conditions:**
 - Under no circumstances shall District be deemed to make a warranty or representation of existing aboveground conditions, as-built conditions, or other aboveground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform prior to bidding and Bidder must not rely on the information supplied by District regarding existing conditions. Bidder represents and agrees that in submitting its Bid, it is not relying on any information regarding existing conditions supplied by District.
- **Underground Facilities:**
 - Information supplied regarding existing Underground Facilities at or contiguous to the Site is based on information furnished to District by others (e.g., the owners or builders of such Underground Facilities or others). Except as expressly set forth in this Bidding Document BI-5, District does not assume responsibility for the accuracy, completeness or thoroughness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information. Except as expressly set forth in this Bidding Document BI-5, District will be responsible only for the general accuracy of information regarding Underground Facilities, and only for those Underground Facilities that are owned by District. This express assumption of responsibility applies only if Bidder has conducted the independent investigation required of it and discrepancies were not apparent.

LIMITED RELIANCE PERMITTED ON CERTAIN INFORMATION

- **Geotechnical Data.**
For informational purpose only. Except as expressly set forth in this Bidding Document BI-5, District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data shown on as-builts. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by District, except as specifically set forth herein.

INVESTIGATIONS

- Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of

construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents. Bidders shall advise District in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for District's review and response.

ACCESS TO SITE FOR INVESTIGATIONS

- Subject to reasonable scheduling, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Such investigations may be performed only under the provisions of Bidding Document BI-3 (Instructions to Bidders) including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. District has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

END OF BIDDING DOCUMENT BI-5

BI-6 BID FORM-UNIT PRICE

To: CUPERTINO SANITARY DISTRICT
c/o MARK THOMAS & CO. INC>
20863 STEVENS CREEK BLVD., SUITE 100
CUPERTINO, CA 95014

Project: **PROSPECT PUMP STATION REHABILITATION PROJECT**

Date: _____

Submitted by: _____

Full Contractor Name

Full Address

City State ZIP

Area Code Phone No. Email

OFFER

- Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents and/or prepared by the Engineer for the above mentioned project; we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Unit Prices listed in this bid form in lawful money of the United States of America.
- We have included:
 - The security Bid Bond as required by the Instruction to Bidders.
 - All applicable Federal, State and Local taxes are included in the Unit Prices.

ACCEPTANCE

- This offer shall be open to acceptance and is irrevocable for ninety (90) days from the bid closing date.
- If the District accepts this bid within the time stated above, we will:
 - Execute the Agreement within seven (7) days of receipt of acceptance of this bid.
 - Furnish the required bonds within seven (7) days of receipt of acceptance of this bid in the form described in Supplementary Conditions.
 - Commence work within ten (10) working days after written Notice to Proceed.
- If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required bonds, the security deposit shall be forfeited as damages to the District by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.
- In the event our bid is not accepted within the time stated above, the required Bid Bond will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended of time.

CONTRACT TIME

- If this Bid is accepted, we will:
 - Complete the Work in **one hundred and ten (110) working days** from Notice to Proceed.

UNIT PRICES

- The following are Unit Prices for Bid Items for the Work as listed.

BID SCHEDULE						
ITEM	SSP	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	CP-1	Mobilization	1	LS		
2	CP-2	Clearing and Grubbing	1	LS		
3	CP-3	Temporary Bypass Pumping System	1	LS		
4	CP-4	Best Management Practices	1	LS		
5	CP-5	Temporary Fences	300	LF		
4	CP-6	Construction Area Sign	1	LS		
5	CP-6	Remove Ex. Striping, temporary striping and final striping in-kind	600	LF		
6	CP-6	Plastic K-Rail	380	LF		
7	CP-6	Type 1 Barricade with sign	6	EA		
8	CP-6	Type 3 Barricade with sign	4	EA		
9	CP-6	Channelizer	150	EA		
10	CP-6	Changeable Message Sign	3	EA		
11	CP-7	Remove Existing Concrete Sidewalk	1	LS		
12	CP-7	Remove Existing Electrical Service Cabinet and Pad	1	LS		
13	CP-8	Demolition - Existing Drywell	1	LS		
14	CP-8	Demolition - Existing Wetwell	1	LS		
15	CP-9	Rehabilitate Existing Wetwells Walls	1	LS		
16	CP-9	DIP Pipes, Fittings and Appurtenances	1	LS		
17	CP-9	Install 3-NT3153 pumps furnished by District via Shape Inc.	1	LS		
18	CP-9	Install 12" connector between two wetwells	1	LS		
19	CP-9	PVC Inside Wetwell Drop	3	EA		
20	CP-10	48" Dia. MH on De Anza (H=10.3')	1	EA		
21	CP-10	48" Dia. MH on Prospect (H=21.3')	1	EA		
22	CP-10	60" Dia. Sewer Manhole (H=25.5')	1	EA		
23	CP-11	6" HDPE Directional Drilling	224	LF		
24	CP-12	6" Quick Coupler and box and lid	1	LS		
25	CP-13	Concrete Pad for electrical cabinet	1	LS		
26	CP-13	Concrete Sidewalk	220	SF		
27	CP-14	Two Steel Bollards	1	LS		
28	CP-15	Decomposed pedestrian walkway	120	SF		
29	CP-16	Restore irrigation system	1	LS		
30	CP-17	Install electrical pump control cabinet furnished by the District via Tesco	1	LS		

31	CP-17	Install conduit and wires	1	LS		
32	CP-17	Install Instrument and Control System furnished by the District via Tesco & Flygt	1	LS		
33	CP-17	Electrical Startup	1	LS		

- In the event of any delays due to actions of the District or Engineer, extension of time will be granted accordingly for the total Contract Time. In the event of delays due to weather, utility conflicts or unavailability of materials to be incorporated in the Contract Work, time extensions will be granted in accordance with Caltrans Specifications. However, no additional payments for costs due to delays of any nature will be granted.
- Additional working days will not be granted to the Contractor if there are any days not worked by the Contractor for reasons other than those specified above. All time extension will be mutually agreed upon by District, Engineer, and Contractor.
- Contractor is responsible for obtaining all applicable permits and payment of all associated fees and taxes.

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUMS

- Bidder hereby acknowledges receipt and examination of all Contract Documents, performed all necessary Pre-Bid investigations, and receives the following Addenda:

Addendum Number	Addendum Date	Signature of Bidder

APPENDICES

- Submit the following Appendices included in Bidding Document BI-7 - Bid Form Supplements concurrent with Bid submission:
 - Appendix A: List of Subcontractors
 - Appendix B: Fees for Changes in the Work. Include the overhead and profit fees on Bidder's own Work and Work by Subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Price is based.

BID FORM SIGNATURES

The Corporate Seal of

.....
 (Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

.....
 (Authorized signing officer Title)

(Seal)

.....
(Authorized signing officer Title)

(Seal)

- If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF BIDDING DOCUMENT BI-6

BI-7 BID FORM SUPPLEMENTS

To: CUPERTINO SANITARY DISTRICT
c/o MARK THOMAS
20863 STEVENS CREEK BLVD., SUITE 100
CUPERTINO, CA 95014

Project: **PROSPECT PUMP STATION REHABILITATION PROJECT**

Date: _____

Submitted by: _____

Full Contractor Name

Full Address

City State ZIP

Area Code Phone No. EMAIL

- In accordance with Bidding Document BI-3 - Instructions to Bidders and Bidding Document BI-6 - Bid Form - Unit Price, we include the Appendices to Bid Form Supplements listed below. The information provided shall be considered an integral part of the Bid Form. The following Appendices are attached to this document:
 - Appendix A - List of Subcontractors: Include names of all Subcontractors and portions of the Work each Subcontractor will perform.
 - Appendix B - Fees for Changes in the Work. Include the overhead and profit fees on Bidder's own Work and Work by Subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Price is based.

BID FORM SUPPLEMENTS SIGNATURES

The Corporate Seal of

.....
(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

.....
(Authorized signing officer Title) (Seal)

.....
(Authorized signing officer Title) (Seal)

APPENDIX A - LIST OF SUBCONTRACTORS

- Herewith is the list of subcontractors referenced in the bid submitted by:

(Bidder).....

To: CUPERTINO SANITARY DISTRICT

Dated: and which is an integral part of the Bid Form

- Bidder must provide the following Listed Subcontractor information in conformance with the California Public Contract Code where the value of the Subcontractor's work is or exceeds ½ of one percent (.05%) of the Base Bid or ten thousand dollars (\$10,000), whichever is greater. Failure to do so will render Bid Non Responsive.
- Bidder is reminded that Listed Subcontractors cannot be substituted by the Apparent Low Bidder after Bid has been submitted and opened, without District's formal approval.
- The following work will be performed (or provided) by subcontractors and coordinated by us:

Subcontractor Name	Address & Phone No.	License No.	Trade	\$ Value \$

APPENDIX B – FEES FOR CHANGES IN THE WORK.

- Attach a separate document stating the overhead and profit fees on Bidder's own Work and Work by Subcontractors, applicable for Changes in the Work.

END OF BIDDING DOCUMENT BI-7

BI-8 NON-COLLUSION AFFIDAVIT

PUBLIC CONTRACT CODE §7106

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

_____, being first duly sworn, deposes and says that he or she is _____ **[Office of Affiant]** of _____ **[Name of Bidder]**, the party making the foregoing Bid, that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived or agreed with any bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding, and that the Bidder has not in any manner, directly or indirectly, sought by contract, communication or conference with anyone to fix the Bid price of Bidder or any other bidder, or to fix any overhead, profit or cost element of the Bid price, or of that of any other bidder, or to secure any advantage against the Cupertino Sanitary District, or anyone interested in the proposed contract; that all statements contained in the Bid are true; and further, that Bidder has not, directly or indirectly, submitted its Bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, Bid depository, or to any member or agent thereof to effectuate a collusive or sham Bid.

Executed under penalty of perjury under the laws of the State of California:

(Name of Bidder)

(Signature of Principal)

Subscribed and sworn before me _____

This _____ day of _____, 20____

Notary Public of the State of _____

In and for the County of _____

My Commission expires _____

(Seal)

(If Bidder is a partnership or a joint venture, this affidavit must be signed and sworn to by every member of the partnership or venture.)

(If Bidder [including any partner or venturer of a partnership or joint venture] is a corporation, this affidavit must be signed by the Chairman, President, or Vice President and by the Secretary, Assistant Secretary, Chief Financial Officer, or Assistant Treasurer.)

(If Bidder's affidavit on this form is made outside the State of California, the official position of the person taking such affidavit shall be certified according to law.)

END OF BIDDING DOCUMENT BI-8

BI-9 BIDDER CERTIFICATIONS

CUPERTINO SANITARY DISTRICT PROSPECT PUMP STATION REHABILITATION PROJECT

The undersigned Bidder certifies to the Cupertino Sanitary District as set forth in sections below;

STATEMENT OF CONVICTIONS

- By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, un-appealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

CERTIFICATION OF WORKER'S COMPENSATION INSURANCE

- By my signature hereunder, as the Bidder, I certify that I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS

- By my signature hereunder, as the Bidder, I certify that I am aware of the provisions of Section 1773 of the California Labor Code, which requires the payment of prevailing wage on public projects. Also, that the Bidder and any sub bidders under the Bidder shall comply with California Labor Code §1776, regarding wage records, and with California Labor Code §1777.5, regarding the employment and training of apprentices. It is the Bidder's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

CERTIFICATE OF NON-DISCRIMINATION

- By my signature hereunder, on behalf of the Bidder making this Bid, the undersigned certifies that there will be no discrimination in employment with regard to race, color, religion, gender, sexual orientation, age or national origin; that all federal, state, and local directives and executive orders regarding non-discrimination in employment will be complied with; and that the principle of equal opportunity in employment will be demonstrated positively and aggressively.

CERTIFICATION REGARDING PREVIOUS DISQUALIFICATIONS

- By my signature hereunder, I hereby swear, under penalty of perjury, that the below indicated Bidder, any officer of such Bidder, or any employee of such Bidder who has a proprietary interest in such Bidder, has never been disqualified, removed or otherwise prevented from bidding on, or completing a Federal, State, or local government project because of a violation of law or a safety regulation except as indicated on the separate sheet attached hereto entitled "Previous Disqualifications." If such exceptions are attached, please explain the circumstances

CERTIFICATION OF ADEQUACY OF CONTRACT AMOUNT

- By my signature hereunder, as the Contractor, pursuant to Labor Code Section 2810(a), I certify that, if awarded the Contract based on the undersigned's Bid, the Contract will include funds sufficient to allow the Contractor to comply with all applicable local, state, and

federal laws or regulations governing the labor or services to be provided. I understand that the District will be relying on this certification if it awards the Contract to the undersigned.

BIDDER:

(Name of Bidder)

Date: _____, 2017

By: _____

(Signature)

Name: _____

(Print Name)

Its: _____

(Title)

END OF BIDDING DOCUMENT BI-9

CONTRACT DOCUMENTS

CD-1 NOTICE OF TENTATIVE AWARD

Dated _____

TO: _____

ADDRESS: _____

CONTRACT NO.: _____

CONTRACT FOR:

PROSPECT PUMP STATION REHABILITATION PROJECT

The Contract Sum of your contract is _____ Dollars (\$_____).

- Three copies of each of the proposed Contract Documents (except Specifications and Drawings) accompany this Notice of Award.
- You must comply with the following conditions precedent by 5:00 p.m. of the 8th Calendar Day following the date of this Notice of Tentative Award.
 - Deliver to District three fully executed counterparts of Contract Document CD-2 (Construction Contract Agreement). Each of the Contract Documents must bear your signature on the cover page.
 - Deliver to District three original Contract Document CD-5 (Bidder's Bond), executed by you and your surety.
 - Deliver to District three original Contract Document CD-6 (Faithful Performance Bond) executed by you and your surety.
 - Deliver to District three original copies of Contract Document CD-7 (Payment Bond), each executed by you.
 - Deliver to District three original copies of Contract Document (Warranty Bond), each executed by you.
 - Deliver to District three original sets of the insurance certificates from Contract Document CD-3 (Insurance Forms) with endorsements.
- Within 3 Days after you comply with the conditions in paragraph 2 of this Contract Document CD-1 and by award and approval of the Contract by the Board of Directors anticipated to be on June 7, 2017, District will return to you one fully signed counterpart of Contract Document CD-2 (Construction Contract Agreement) with the Contract Documents and issue formal Notice to Proceed.
- Upon commencement of the Work, you and each of your Subcontractors shall certify and make available for inspection payroll records on forms provided by the Division of Labor Standards Enforcement, in accordance with Section 1776 of the California Labor Code

THE CUPERTINO SANITARY DISTRICT, ("District")

BY: _____

ITS: _____

END OF CONTRACT DOCUMENT CD-1

CD-2 CONSTRUCTION CONTRACT AGREEMENT

THIS CONSTRUCTION CONTRACT AGREEMENT (“Agreement”) is made and entered into as of the ____ day of _____, 2019, by and between the **CUPERTINO SANITARY DISTRICT**, (hereinafter referred to as the “DISTRICT”) and [Name of the Contractor], a California corporation, (hereinafter referred to as “CONTRACTOR”).

WHEREAS, District, on the ____ day of _____, 2019 awarded to Contractor the following Project:

PROSPECT PUMP STATION REHABILITATION PROJECT

DISTRICT and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 SCOPE OF WORK

CONTRACTOR shall perform and complete all Work specified in the Contract Documents, in accordance with the Specifications, Drawings, and all other term and condition of the Contract Documents. CONTRACTOR shall provide and furnish any and all labor, materials, methods or processes, equipment, implements, tools, machinery, equipment, and all utility, transportation and other services required to construct, install, and put in complete order for use in a good and workmanlike manner all of the work covered by the this Agreement in connection with the construction of improvements of sanitary sewer facilities, in strict accordance with the plans and specifications therefore entitled, **PROSPECT PUMP STATIN REHABILITATION PROJECT**, and in strict accordance with the Bid Documents and Technical Specifications prepared by **Mark Thomas & Co. Inc.**, attached hereto respectively as Exhibits “A” and “B,” including any and all addenda issued by the **DISTRICT** (hereinafter referred to as “WORK”). The intent of the plans and specifications is to describe the details for the construction and completion of the work which CONTRACTOR undertakes to perform in accordance with the 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 first-class quality are to be used.

Bidder should take particular notice that any and all items of Work, called in the Construction Documents, but not included in a description of any specific bid item, shall be considered as included in one (1) or more of the bid items and that no additional compensation for those items of Work, beyond the Base Bid, will allowed. Work of this nature includes, but is not limited to, such items as flagmen, water, all safety requirements, or work and materials required providing public convenience and safety, barricades, lights, vehicular detours, and pedestrian walkways.

ARTICLE 2 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between the DISTRICT and the CONTRACTOR concerning the WORK consist of the following documents, including all changes, addenda, and modification thereto:

- This Agreement;
- Notice Requesting Sealed Proposals;
- Bid Form
- Non-Collusion Affidavit
- Bidder Certificate
- Notice of Award
- Construction Contract Document

- Insurance Forms
- Notice to Proceed
- Bidder's Bond;
- Faithful Performance Bond;
- Payment Bond;
- Warranty Bond;
- Labor and Material Bond;
- Agreements and Release of Any and All Claims
- Substitution Request Form
- Escrow Agreements for Security Deposit in Lieu of Retention
- Technical Specification/Standard Specifications;
- Design Standards; and
- Plans, Profiles and Detailed Drawings.

There are no Contract Documents other than those listed in this section. The Contract Documents may only be amended by Change Order as provided in the Bid Document hereto as Exhibit "A" and "B".

ARTICLE 3 **CHANGE IN THE WORK**

The District may at any time it deems necessary or desirable, require changes in the Work called for by the Contract Documents. Changes and other amendments to the Contract Documents may be made only by a writing executed by authorized representatives of the District and the Contractor.

All proposed change orders must be submitted on completed Change Order forms provided in the Contract Documents. If applicable, such proposed change orders must itemize all cost impacts of the proposed change order and include a total price for that change order and the amended Contract Price that would become effective upon execution of the change order. All proposed change orders must also specify any change in the Project schedule, or in any project milestone including, but not limited to, the Time of Completion, under the change order.

The District Manager will notify the Contractor in writing of the details of the change. No increase in the contract price or extension of contract time will be made for a change if the Contractor does not advise the District Manager in writing within five (5) days after receipt of the notification of change, that additional cost and/ or time extension will be required to make the change. Contractor shall submit to the District a detailed breakdown of the additional costs and/ or time extension required to make the change within fifteen (15) days of notification of change.

No work shall commence on any change requested by the District Manager until there is mutual agreement on cost or the method of determining cost is established in writing.

Any change in scope of Work or deviation from Contract Documents including, without limitation, extra work, or alterations or additions to or deductions from the original Work, shall not invalidate the original Contract, and shall be performed under the terms of the Contract Documents.

Only Contractor or District may initiate changes in scope of Work or deviation from Contract Documents.

If notice of any change in the Work is required to be given to a surety, the giving of any such notice shall be the Contractor's responsibility. If the change in the Work affects the Contract Price, the District may require an adjustment to the amount of any applicable bond and the amount of each applicable bond shall be adjusted accordingly.

Notwithstanding the foregoing, the District Manager may, at any time, issue instruction to the Contractor requiring minor changes in the Work or schedule that are not inconsistent with the general intent of the Contract Documents, at no extra cost to the District.

ARTICLE 4 **COMPLETION OF WORK**

The WORK shall be completed to the satisfaction of DISTRICT within **Sixty Five (65)** working days from the commencement date as stated in the Notice to Proceed. District will make the final inspection. If District determines that the Work has been completed, in accordance with the Contract Documents, District will recommend that the Work be accepted. Contractor will be relieved of the responsibility imposed on the date of Acceptance. District will record a "RESOLUTION" after the Board of Directors accepts the project as complete. The final payment including without limitation on retention will be made thirty (30) days after the Resolution has been recorded and signed by the Board of Directors, provide there are no outstanding punch list items or deficiencies in the project.

ARTICLE 5 **LIQUIDATED DAMAGES**

DISTRICT and the CONTRACTOR recognize that time is of the essence of this Agreement and that the DISTRICT will suffer financial loss if the WORK is not completed within the time specified herein, plus any extensions thereof allowed in accordance with the Bid Document Conditions. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage which the DISTRICT will sustain in the event of and by reason of the CONTRACTOR's failure to fully perform the WORK or to fully perform all of its contract obligations that have accrued by the time for completion as specified herein. It is, therefore, agreed in accordance with California Government Code section 53069.85 that the CONTRACTOR will forfeit and pay to the DISTRICT liquidated damages in the sum of **Five Hundred Dollars (\$500.00)** per day for each and every calendar day that expires after the time for completion specified herein. It is further understood and agreed in accordance with California Government Code section 53069.85 that the liquidated damages sum specified in this provision is not manifestly unreasonable under the circumstances existing at the time this contract was made, and that the DISTRICT may deduct liquidated damages sums in accordance with this provision from any payments due or that may become due the CONTRACTOR.

Liquidated damages will continue to accrue at the stated rate until final completion of the WORK. Accrued liquidated damages may be deducted by the DISTRICT from amounts due or that become due to the CONTRACTOR for performance of the WORK. Liquidated damages may not be waived or reduced by DISTRICT unless expressly waived or reduced in writing by the ENGINEER.

Liquidated damages for delay shall only cover administrative, overhead, interest on bonds, and general loss of public use damages suffered by the District as a result of delay. Liquidated damages shall not cover the cost of completion of the Work, damages resulting from defective Work, lost revenues or costs of substitute facilities, or damages suffered by others who then seek to recover their damages from the District (for example, delay claims of other Contractors, Subcontractors, Tenants, or other third-parties), and defense costs thereof.

ARTICLE 6 **PREVAILING WAGES**

In accordance with California Labor Code Section 1771, Contractor will pay and will require all Subcontractors to pay all workers on the work a salary or wage at least equal to the prevailing

rate of per diem wages for such work as set forth in the wage determinations and wage standards applicable to this work. Pursuant to section 1773 of the Labor Code of the state of California, the DISTRICT has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holidays and overtime work for each craft, classification, or type of worker required to execute the contract. A copy of said prevailing rate of per diem wages is on file in the office of the DISTRICT, to which reference is hereby made for further particulars. Said prevailing rate of per diem wages will be made available to any interested party upon request, and a copy thereof shall be posted at the job site. Compliance with the provisions of Article 2, Chapter 1, Part 7, Division 2 (commencing with section 1770) of said Labor Code and particularly section 1775 thereof is required.

CONTRACTOR shall forfeit, as penalty to DISTRICT, Fifty Dollars (\$50.00) for each worker employed in the execution of the contract by him or by any subcontractor, for each calendar day during which any 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 the provisions of Article 3, Chapter 1, Part 7, Division 2 (commencing with section 1810) of said Labor Code.

In accordance with the provisions of sections 1777.5 and 1777.6 of said Labor Code, and in accordance with the rules and procedures of the California Apprenticeship Council, properly indentured apprentices shall be employed in the prosecution of the work. The ratio of apprentices to journeypersons who shall be employed in the respective crafts or trades may be the ratio stipulated in the apprenticeship standards under which the appropriate joint apprenticeship committee operates. In no event shall the ratio be less than one apprentice for each five journeypersons unless a certificate of exemption has been issued by the Division of Apprenticeship Standards. Willful failure by the CONTRACTOR to comply with said section 1777.5 shall result in his being denied the right to bid on a public works contract for a period of six (6) months from the date the determination is made. Information relating to the number of apprentices, identifications, wages, hours of employment and standards of working conditions shall be obtained from the Director of the Department of Industrial Relations, who is the Administrative Officer of the California Apprenticeship Council.

Attention is directed to section 1735 of said Labor Code, 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.

See attached Exhibit "C" for Provisions Required for Public Works Contracts Pursuant to California Labor Code section 1720 et ep. And Exhibit "D" for Living Wage Provisions in Santa Clara County Contracts.

ARTICLE 7 **CONTRACT PRICE**

DISTRICT shall pay CONTRACTOR for completion of the WORK the sum of _____ Dollars (\$_____) based on the bid price of same and in accordance with the Bid Schedule attached hereto as Exhibit "D" and the Contract Documents as defined in Article 10.

In no case shall the total contract compensation exceed _____ Dollars (\$_____) without the prior written authorization by the DISTRICT's Engineer Manager. Further, no

compensation for a section or work program component attached with a specific budget shall be exceeded without the prior written authorization of the General Manager.

ARTICLE 8 **PAYMENT PROCEDURES**

Payment for the items in the BID, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items being described, as necessary to complete the items of the work as specified and indicated, including health and safety requirements, and for any items that is not specifically set forth in the BID, and all costs therefor shall be included in the prices named in the "BID for the various appurtenant items of work. Payments for maintenance of traffic and detours and for conforming to all of the provisions of the specifications shall be considered to be included in the Contract unit or lump sum prices paid for items of work where maintenance of traffic and detours is required, and no additional allowance will be made therefor.

CONTRACTOR shall submit Applications for Payment for the work be paid for in a single payment upon completion; the application shall contain the following:

The quantity or amount of work completed for each unit price item in the BID.

The percent complete for each lump sum item in the BID

The Owner may require evidence of quantities, amounts, or percent complete for the unit price and lump sum items

A partial payment may be made during the progress of the work, provided that the Contractor shall have submitted to the Engineer and Owner an application for such payment. On or before the due date of such payment, the Engineer shall issue to the Contractor, for delivery to the Owner, a certificate for such amount as the Engineer determines to be properly due. The application shall contain the same items listed above.

No Payment, made as provided for in the Contract, shall be evidence of the performance of the Contract, either wholly or in part, and no payment, including the final payment shall be construed to be an acceptance of any defective work or improper materials.

The acceptance by the Contractor of final payment hereunder shall be and shall operate as a waiver of all rights of the Contractor to file any claim of lien arising out of or connected with the work or the Contract and as a release to the Owner of all claims of the Contractor and of all liability to the Contractor for all things done and furnished in connection with the work and for any act or neglect of the Owner, Engineer, or others, relating to or arising out of the work.

If at any time any dispute shall exist between the Owner and the Contractor as to any amount of money due or claimed by the Contractor to be due from the Owner to the Contractor, then and in each such instance the Owner shall pay to the Contractor such amount of money involved in such dispute as shall have been certified by the Engineer to be due and payable from the Owner to the Contractor, and the Contractor hereby waives all rights of the Contractor to file any lien or claim of lien by reason of any balance of money involved in such dispute as shall have been certified by the Engineer to be due and payable from the Owner to the Contractor, and the Contractor hereby waives all rights of the Contractor to file any lien or claim of lien by reason of any balance of money involved in such dispute and not so certified by the Engineer; provided, however, that such determination by the Engineer may be subject to arbitration.

The Retention proceeds shall be withheld by the Owner in accordance with the provisions of Section 7107 of the Public Contract Code. The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied.
2. Claim filed or reasonable evidence indicating probable filing of claims.
3. Failure of the Contractor to make payments properly to subcontractors or for material or labor.
4. A reasonable doubt that the Contract can be completed for the balance then unpaid.
5. Damage to any Other Contractor.
6. A reasonable doubt that the work can be completed within the Contract Time.
7. Unsatisfactory prosecution of the work by the Contractor. When the above grounds are removed, payment shall be made for amounts withheld because of them.

ARTICLE 9 **RETENTION**

Pursuant to section 22300 of the California Public Contract Code, the CONTRACTOR may substitute securities for any money withheld by the DISTRICT to ensure performance under the Contract. At the request and expense of the CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the DISTRICT or with a state or federally chartered bank in California as to the escrow agent, who shall return such securities to the CONTRACTOR upon satisfactory completion of the Contract.

Alternatively, the CONTRACTOR may request and the DISTRICT shall make payment of retentions earned directly to the escrow agent at the expense of the CONTRACTOR. At the expense of the CONTRACTOR, the CONTRACTOR may direct the investment of the payments into securities and the CONTRACTOR shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by the CONTRACTOR. The CONTRACTOR shall be responsible for paying all fees for the expenses incurred by the escrow account and all expenses of the DISTRICT. These expenses and payment terms shall be determined by the DISTRICT's Finance Director of his/her designee and the escrow agent. Upon satisfactory completion of the Contract, the CONTRACTOR shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the DISTRICT, pursuant to the terms of this section. The CONTRACTOR shall pay to each subcontractor, not later than twenty (20) days of receipt of the payment, the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to ensure the performance of the CONTRACTOR.

Securities eligible for investment under section 22300 shall be limited to those listed in section 16430 of the Government Code and to bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the CONTRACTOR and the DISTRICT.

ARTICLE 10 **FACILITIES, EQUIPMENT, SAFETY AND JOBSITE MANAGEMENT**

CONTRACTOR shall, at its sole cost and expense, provide all facilities and equipment that may be necessary to perform the services required by this Agreement and Bid Documents, Exhibit "A".

In accordance with generally accepted construction practices and state law, CONTRACTOR shall be solely and completely responsible for conditions on the jobsite, 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.

CONTRACTOR shall take all necessary precautions and provide all necessary safeguards to prevent personal injury and property damage. CONTRACTOR shall provide protection for all persons including, but not limited to, its employees and employees of its subcontractors; members of the public; and employees, agents, and representatives of the DISTRICT and regulatory agencies that may be on or about the work.

The services of the DISTRICT in conducting review and inspection of CONTRACTOR's performance is not intended to include review of the adequacy of CONTRACTOR's work methods, equipment, bracing or scaffolding, or safety measures, in, on, or near any CONTRACTOR jobsite.

All work and materials shall be in strict accordance with all applicable state, DISTRICT, county and federal rules, regulations and codes, with specific attention to the United States Department of Labor Occupational Health and Safety Administration (OSHA) requirements. CONTRACTOR shall be solely responsible for compliance with all DISTRICT, County, and State explosive transport, storage and blasting requirements and for any damages caused by such operations.

CONTRACTOR is hereby informed that work on DISTRICT property could be hazardous. CONTRACTOR shall carefully instruct all personnel working on DISTRICT property that all conditions of the property are potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property. Special care shall be exercised relative to work underground.

In addition to complying with all other safety regulations, CONTRACTOR shall abide by any and all other DISTRICT requirements contained in any specifications, special conditions or manuals, which shall be made available by DISTRICT upon request.

CONTRACTOR shall furnish, erect, and maintain all necessary safety equipment such as fences, barriers, signs, lights, walkways, and provide such flagging and guards as are necessary in the opinion of District or public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

It is the intent of the DISTRICT to provide a safe working environment under normal conditions. CONTRACTOR IS ADVISED THAT DISTRICT'S OPERATIONS AND PROPERTY ARE INHERENTLY HAZARDOUS BECAUSE OF CONDITIONS SUCH AS CONFINED SPACES, POTENTIALLY EXPLOSIVE ATMOSPHERES AND POSSIBLE EXPOSURE TO PATHOGENS.

CONTRACTOR designate one of Contractor's staff as "Site Safety Officer" whose duties shall include the responsibility for enforcing the environmental protection including safety and health, the requirements of the Occupational Safety and Health Act, and other applicable federal, state and local standards. Contractor submit for review by District Contractor's intended traffic flow plan, security plan, program for temporary structures, housecleaning plan, demolition plan, and environmental safety and health plan. After review by the District, the implementation and enforcement of these plans shall become the responsibility of the Site Safety Officer. Any changes in the plans shall be requested by Contractor through the Site Safety Officer for written concurrence by the District.

DISTRICT reserves the right to require that CONTRACTOR bring onto the project or engage the services of a licensed safety engineer at any time during the term of this Agreement. If CONTRACTOR does not have a licensed safety engineer on staff, then DISTRICT may require that

CONTRACTOR engage a subcontractor or sub-consultant as the project's safety engineer. CONTRACTOR shall bear all costs in connection with meeting the requirements of this section.

CONTRACTOR shall maintain all portions of the jobsite in a neat, orderly, clean, and sanitary condition at all times. Contractor shall perform periodic cleaning to ensure that any streets and other County and public properties are maintained free from accumulation of waste materials, dust, mud and debris from Contractor's operations. Daily cleanup throughout the job will be necessary as Contractor progresses with it Work. All dust, mud spoils, and construction debris shall be removed daily from all roadways, ditches, shoulders, and private property. If required by the DISTRICT, toilets shall be furnished by CONTRACTOR where needed for use of its employees and their use shall be strictly enforced.

CONTRACTOR shall keep adequate first aid facilities and supplies available and instruction in first aid for its employees shall be given.

ARTICLE 11 **BONDS**

Before entering upon the performance of the WORK, the CONTRACTOR shall furnish Performance and Labor and Materials Bonds, each in the amount of one hundred percent (100%) of the contract price, as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date of Completion, except as otherwise provided by Law or Regulation or by the Contract Documents. The CONTRACTOR shall also furnish such other Bonds as are required by the District and the requirement in the Bid Documents.

The CONTRACTOR shall guarantee the WORK to be free of defects in material and workmanship for a period of five (5) years following the DISTRICT's acceptance of the WORK. The CONTRACTOR shall agree to make, at the CONTRACTOR's own expense, any repairs or replacements made necessary by defects in material or workmanship which become evident within the five-year guarantee period. The CONTRACTOR's guarantee against defects required by this provision shall be secured by a Warranty Bond, in the amount of ten percent (10%) of the contract price, which shall be delivered by the CONTRACTOR to the DISTRICT prior to acceptance of the WORK. The Warranty Bond shall remain in force for one (1) year from the date of acceptance of the contracted WORK, but may be renewed thereafter. The CONTRACTOR shall make all repairs and replacements within the time required on the Warranty Bond upon receipt of written order from the ENGINEER. If the CONTRACTOR fails to make the repairs and replacements within the required time, the DISTRICT may do the work and the CONTRACTOR and the CONTRACTOR's surety for the Warranty Bond shall be liable to the DISTRICT for the cost. The expiration of the Warranty Bond during the five-year guarantee period does not operate to waive or void the five-year guarantee, as set forth herein.

The form of the Bidder, Performance, Labor and Materials, Payment, and Warranty Bonds are provided by the DISTRICT as part of the Contract Documents. Only such bond forms provided by the DISTRICT are acceptable, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

If the surety on any Bond furnished by the CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within seven (7) days thereafter substitute another Bond and surety, which must be acceptable to the DISTRICT.

All Bonds required by the Contract Documents to be purchased and maintained by CONTRACTOR shall be obtained from surety companies that are duly licensed or authorized in the State of California to issue Bonds for the limits so required. Such surety companies shall also meet such additional requirements and qualifications as may be provided in the Bid Documents and are required by the District.

ARTICLE 12 **INSURANCE**

CONTRACTOR and any subcontractor shall not commence work under this Agreement until CONTRACTOR shall have obtained all insurance required under this paragraph and such insurance shall have been approved by the District's Attorney as to form and carrier and the District Manager as to sufficiency, nor shall CONTRACTOR allow any contractor or subcontractor to commence work on this contract or subcontract until all similar insurance required of the CONTRACTOR and/or subcontractor shall have been so obtained and approved. All requirements herein provided shall appear either in the body of the insurance policies or as endorsements and shall specifically bind the insurance carrier.

CONTRACTOR shall procure and maintain for the duration of the contract all necessary 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, the CONTRACTOR's agents, representatives, employees or subcontractors.

Coverage shall be at least as broad as: (i) Insurance Services Office Commercial General Liability coverage; (ii) Insurance Services Office form number covering Automobile Liability, code 1 (any auto); and (iii) Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.

CONTRACTOR shall maintain limits no less than: (i) General Liability: \$3,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate liability is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit; (ii) Automobile Liability: \$1,000,000 per accident for bodily injury and property damage; (iii) Employer's Liability, Bodily Injury by Accident - \$1,000,000 each accident, Bodily Injury by Disease - \$1,000,000 policy limit, Bodily Injury by Disease - \$1,000,000 each employee.

Insurance requirements for State of California (CALTRANS); Contractor shall maintain limits no less than (i) For each occurrence is \$1,000,000; (ii) Aggregate for product/completed operation is \$2,000,000; (iii) General Aggregate is \$2,000,000; (iv) Umbrella or excess is \$5,000,000.

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 guaranteeing payment of losses and related investigations, claim administration and defense expenses.

The required general liability and automobile policies are to contain, or be endorsed to contain the following provisions: (i) The DISTRICT, its officers, officials, employees, agents and volunteers are to be covered as additional named insured as respects: liability arising out of activities performed by or on behalf of the CONTRACTOR; products and completed operations of the CONTRACTOR; premises owned, occupied or used by the CONTRACTOR; or automobiles owned, leased, hired or borrowed by the CONTRACTOR. The coverage shall contain no special limitations on the scope of protection afforded to the DISTRICT, its officers, officials, employees,

agents or volunteers; (ii) for any claims related to this project, the CONTRACTOR's insurance 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; (iii) 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; (iv) 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; (v) Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the DISTRICT.

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII.

CONTRACTOR shall furnish the DISTRICT with original endorsements effecting coverage required by this clause. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. The endorsements are to be on forms provided by the DISTRICT. All endorsements are to be received and approved by the DISTRICT before work commences. As an alternative to the DISTRICT's forms, the CONTRACTOR's insurer may provide complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications.

ARTICLE 13 **INDEMNIFICATION**

To the fullest extent permitted by law, the CONTRACTOR shall indemnify, defend, and hold harmless the DISTRICT, Mark Thomas & Co. Inc., its consultants, sub-consultants, and the officers, directors, employees, and agents of each and any of them, against and from all claims and liability arising under, by reason of, related, or incidental to the Contract Documents or any performance of the WORK, but not from the sole negligence or willful misconduct of the DISTRICT.

The CONTRACTOR shall reimburse the DISTRICT for all costs and expenses, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court costs of appeal) incurred by said DISTRICT in enforcing the provisions of this Paragraph.

The indemnification obligation under this Article 12 shall not be limited in any way by any limitation on the amount or type of insurance carried by CONTRACTOR or by the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 14 **DISCLAIMER AND INDEMNITY (LABOR CODE SECTION 6400)**

By executing this agreement the CONTRACTOR understands and agrees that with respect to the WORK, and notwithstanding any provision in this contract to the contrary, the CONTRACTOR, and/or its privities, including, without limitation, subcontractors, suppliers and other engaged by the CONTRACTOR in the performance of the WORK shall be "employers" for purposes of California Labor Code section 6400 and related provisions of law, and that neither DISTRICT nor its officials, officers, employees, agents, volunteers or consultants shall be "employers" pursuant to California Labor Code section 6400 with respect to the performance of the WORK by the CONTRACTOR and/or its privities.

The CONTRACTOR shall take all responsibility for the WORK, shall bear all losses and damages directly or indirectly resulting to the CONTRACTOR, any subcontractors, the DISTRICT, its officials, officers, employees, agents, volunteers and consultants, on account of the performance or character of the WORK, unforeseen difficulties, accidents, or occurrences of other causes predicated on active or passive negligence of the CONTRACTOR or of any subcontractor, including, without limitation, all losses, damages or penalties directly or indirectly resulting from exposure to hazards in performance of the WORK in violation of the California Labor Code. The CONTRACTOR shall indemnify, defend and hold harmless the DISTRICT, its officials, officers, employees, agents, volunteers and consultants from and against any or all loss, liability, expense, claim costs (including costs of defense), suits, and damages of every kind, nature and description directly or indirectly arising from performance of the WORK, including, without limitation, all losses, liability, expense, claim costs (including costs of defense), suits, damages and penalties (including, without limitation, penalties pursuant to the California Labor Code) directly or indirectly resulting from exposure to hazards in performance of the WORK in violation of the California Labor Code. This provision shall not be construed to exempt the DISTRICT, or its officials, officers and employees from their own fraud, willful injury or violation of law, whether willful or negligent. By execution of this contract, the CONTRACTOR acknowledges and agrees that the CONTRACTOR has read and understands the insurance and other requirements of this contract, including this indemnity provision, which is a material element of consideration. Approval of the CONTRACTOR's certificates of insurance does not relieve the CONTRACTOR of liability under this provision.

ARTICLE 15 **ASSIGNMENT**

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

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

ARTICLE 16 **NOTICE**

Except as otherwise specified herein, all notices to be sent pursuant to this Agreement shall be made in writing, and sent to the parties at its addresses specified below or to such other address as a party may designate by written notice delivered to the other parties in accordance with this article. All such notices shall be sent by either: (a) personal delivery, in which case notice is effective upon delivery; (b) certified or registered mail, return receipt requested, in which case notice shall be deemed delivered on receipt if delivery is confirmed by a return receipt; (c) nationally recognized overnight courier, with charges prepaid or charged to the sender's account, in which case notice is effective on delivery if delivery is confirmed by the delivery service; or (d) facsimile transmission, in which case notice shall be deemed delivered upon transmittal, provided that (i) a duplicate copy of the notice is promptly delivered by first-class or certified mail or by overnight delivery, or (ii) a transmission report is generated reflecting the accurate transmission thereof. Any notice given by facsimile shall be considered to have been received on the next business day if it is received after 5:00 p.m. recipient's time or on a nonbusiness day.

DISTRICT: **Cupertino Sanitary District**

Attention: Benjamin Porter
20863 Stevens Creek Blvd., Ste. 100
Cupertino, CA 95014
Telephone: (408) 253-7071
Facsimile: (408) 253-5173
Email: bporter@markthomas.com

CONTRACTOR:

[Name of Contractor]
California Contractor's License No. _____
Attention: _____
Address: _____
_____, CA _____
Telephone: _____
Email: _____
Agent for process service:

Name:
Address:
San Jose, CA _____

ARTICLE 17
SEVERABILITY

If any term or portion of this Agreement is held to be invalid, illegal or otherwise enforceable by a court of competent jurisdiction, the remaining provisions of this Agreement shall continue in full force and effect.

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

ARTICLE 18
GOVERNING LAW

The laws of the State of California shall govern this Agreement, without regard for the choice of law doctrine. Venue shall be in the County of Santa Clara County.

CUPERTINO SANITARY DISTRICT

By: _____
Name: _____
Title: _____

[NAME OF CONTRACTOR]

By: _____
Name: _____
Title: _____

APPROVED AS TO FORM:

District Counsel, Cupertino Sanitary District

AGREEMENT CERTIFICATE

STATE OF CALIFORNIA)) SS:
COUNTY OF _____)

I HEREBY CERTIFY that a meeting of the Board of Directors of [Name of Contractor], a corporation existing under the laws of the state of California, held on _____, 2019 the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 2019, by and between this Corporation and _____ and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 2019.

Secretary

(SEAL)

EXHIBITS

- A BID DOCUMENTS
- B TECHNICAL SPECIFICATIONS
- C PREVAILING WAGES
- D BID SCHEDULE

EXHIBIT "C" PREVAILING WAGES

Provisions Required for Public Works Contracts

Pursuant to California Labor Code section 1720 et seq.

HOURS OF WORK

In accordance with California Labor Code section 1810, 8 hours of labor in performance of the services described in the contract documents shall constitute a legal day's work under this contract.

In accordance with California Labor Code section 1811, the time of service of any worker employed in performance of the services described in Exhibit "A" is limited to eight hours during any one calendar day, and forty hours during any one calendar week, except in accordance with California Labor Code section 1815, which provides that work in excess of eight hours during any one calendar day and forty hours during any one calendar week is permitted upon compensation for all hours worked in excess of eight hours during any one calendar day and forty hours during any one calendar week at not less than one-and-one-half times the basic rate of pay.

The CONTRACTOR and its subcontractors shall forfeit as a penalty to the District, Forty Dollars (\$40.00) for each worker employed in the performance of the services described in Exhibit A for each calendar day during which the worker is required or permitted to work more than eight (8) hours in any one calendar day, or more than forty (40) hours in any one calendar week, in violation of the provisions of California Labor Code section 1810 and following.

WAGES

In accordance with California Labor Code section 1773.2, the District has determined the general prevailing wages in the locality in which the services described in an Article 6 are to be performed for each craft or type of work needed to be as published by the State of California Department of Industrial Relations, Division of Labor Statistics and Research, a copy of which is on file in the District Public Works Office and shall be made available on request. The CONTRACTOR and subcontractors engaged in the performance of the services described in Exhibit "A" shall pay no less than these rates to all persons engaged in performance of the services described in Exhibit "A".

In accordance with Labor Code section 1775, the CONTRACTOR and any subcontractors engaged in performance of the services described in Exhibit "A" shall comply Labor Code section 1775, which establishes a penalty of up to Fifty Dollars (\$50.00) per day for each worker engaged in the performance of the services described in Exhibit "A" that the CONTRACTOR or any subcontractor pays less than the specified prevailing wage. The amount of such penalty shall be determined by the Labor Commissioner and shall be based on consideration of the mistake, inadvertence, or neglect of the CONTRACTOR or subcontractor in failing to pay the correct rate of prevailing wages, or the previous record of the CONTRACTOR or subcontractor in meeting applicable prevailing wage obligations, or the willful failure by the CONTRACTOR or subcontractor 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 or subcontractor had knowledge of their obligations under the California Labor Code. The CONTRACTOR or subcontractor shall pay the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate. If a subcontractor worker engaged in performance of the services described in Exhibit "A" is not paid the general prevailing per diem wages by the subcontractor, the CONTRACTOR is not liable for any penalties therefore unless the CONTRACTOR had knowledge of that failure or unless the CONTRACTOR fails to comply with all of the following requirements:

The contract executed between the CONTRACTOR and the subcontractor for the performance of part of the services described in Exhibit A shall include a copy of the provisions of California Labor Code sections 1771, 1775, 1776, 1777.5, 1813 and 1815.

The CONTRACTOR shall monitor payment of the specified general prevailing rate of per diem wages by the subcontractor by periodic review of the subcontractor's certified payroll records.

Upon becoming aware of a subcontractor's failure to pay the specified prevailing rate of wages, the CONTRACTOR shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for performance of the services described in Exhibit "A".

Prior to making final payment to the subcontractor, the CONTRACTOR shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages for employees engaged in the performance of the services described in Exhibit A and any amounts due pursuant to California Labor Code section 1813.

In accordance with California Labor Code section 1776, the CONTRACTOR and each subcontractor engaged in performance of the services described in Exhibit "A" shall keep accurate payroll records showing the name, address, social security number, work, 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 in performance of the services described in Exhibit "A". Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following: (i) The information contained in the payroll record is true and correct; (ii) The employer has complied with the requirements of sections 1771, 1811, and 1815 for any work performed by the employer's employees on the public works project; (iii) The payroll records required pursuant to California Labor Code section 1776 shall be certified and shall be available for inspection by the District and its authorized representatives, the Division of Labor Standards Enforcement, the Division of Apprenticeship Standards of the Department of Industrial Relations and shall otherwise be available for inspection in accordance with California Labor Code section 1776.

In accordance with California Labor Code section 1777.5, the CONTRACTOR, on behalf of the CONTRACTOR and any subcontractors engaged in performance of the services described in the contract documents, shall be responsible for ensuring compliance with California Labor Code section 1777.5 governing employment and payment of apprentices on public works contracts.

In case it becomes necessary for the CONTRACTOR or any subcontractor engaged in performance of the services described in Exhibit A to employ for the services described in Exhibit A any person in a trade or occupation (except executive, supervisory, administrative, clerical, or other non-manual workers as such) for which no minimum wage rate has been determined by the Director of the Department of Industrial Relations, the CONTRACTOR shall pay the minimum rate of wages specified therein for the classification which most nearly corresponds to services described in the contract documents to be performed by that person. The minimum rate thus furnished shall be applicable as a minimum for such trade or occupation from the time of the initial employment of the person affected and during the continuance of such employment.

CD-3 INSURANCE FORMS

INSURANCE FORMS INSTRUCTIONS

For items 3, 4 and 5, the forms provided by the Cupertino Sanitary District must be used. Forms other than these will not be accepted.

1. All documents must be originals - submit in triplicate
2. Insurance Agreement - Must be signed by Contractor.
3. Certificate of Insurance to Cupertino Sanitary District - must be completed by the insurance agent or must provide a certificate on the company's form. They must contain the same information.
4. Endorsement of Additional Insured and Primary Insurance and Notice of Cancellation - must be signed by the insurance agent for general liability and automobile liability only.
5. Comprehensive general liability/commercial general liability endorsement of aggregate limits of insurance per project - must be signed by the insurance agent for general liability only.
6. Waiver of subrogation endorsement worker's compensation insurance - must be signed by the insurance agent for worker's compensation only

INSURANCE AGREEMENT

Contractor is aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for worker's compensation or undertake self-insurance in accordance with the provisions of that Code, and will comply, with such provisions before commencing the performance of the work of this Contract.

Contractor and all subcontractors will carry worker's compensation insurance for the protection of its employees during the progress of the work. The insurer shall waive its rights of subrogation against the District, the District's officers, agents and employees and shall issue an endorsement to the policy evidencing same.

Contractor shall carry at all times, on all operations hereunder, commercial general liability insurance, automobile liability insurance and builder's all risk insurance. All insurance coverage shall be in amounts required by the District and shall be evidenced by the issuance of a certificate in a form prescribed by the District and shall be underwritten by insurance companies satisfactory to the District for all operations, sub-contract work, contractual obligations, product or completed operations, all owned vehicles and non-owned vehicles. Said insurance coverage obtained by the Contractor, excepting worker's compensation coverage, shall name the District, its engineer, and each of its directors, officers, agents and employees, as determined by the District, as additional insureds on said policies. Insurers must be licensed to do business in the State of California. The Insurers must also have an "A" policyholder's rating and a financial rating of at least Class VII in accordance with the current Best's Guide Rating or that is otherwise acceptable to the District.

Before Contractor performs any work at, or prepares or delivers materials to, the site of construction, Contractor shall furnish certificates of insurance evidencing the foregoing insurance coverages and such certificates shall provide the name and policy number of each carrier and policy and that the insurance is in force and will not be canceled or modified without thirty (30) days written notice to the District. Contractor shall maintain all of the foregoing insurance coverages in force until the work under this Contract is fully completed. The requirement for carrying the foregoing insurance shall not derogate from the provisions for indemnification of the District by Contractor under this Contract and for the duration of the warranty period. Notwithstanding nor diminishing the obligations of Contractor with respect to the foregoing, Contractor shall maintain in full force and effect during the life of this Contract, the following insurance in amounts not less than

the amounts specified and having a Best's Guide Rating of A, Class VII or better or that is otherwise acceptable to the District.

LIMITS

Worker's Compensation
& Employers' Liability

In accordance with the Worker's Compensation Act of the State of California – Worker's comp "Statutory" per CA Law; Employers' Liability \$1,000,000 per occurrence.

General Liability - commercial general liability; including provisions for contractual liability, personal injury, independent contractors and products – completed operations hazard.

Combined single limit of \$3.0 million per occurrence; \$5.0 million in the aggregate

Automobile Liability - comprehensive covering owned non-owned and hired automobiles.

Combined single limit of \$1.0 million per occurrence.

Employer's Liability and Bodily Injury

\$1,000,000 per accident for bodily injury or death

Employer's Bodily Injury by Disease

\$1,000,000 per policy limit and by each employee

FOR STATE OF CALIFORNIA (CALTRANS)
In addition to above, Umbrella coverage naming State.

\$5,000,000

(Contractor's Name)

By: _____

Dated: _____ 2019

CERTIFICATE OF INSURANCE TO CUPERTINO SANITARY DISTRICT

This certifies to the Cupertino Sanitary District that the following described policies have been issued to the insured named below and are in force at this time.

Insured: _____

Address: _____

Description of operations/locations/products insured (show contract name and/or number, if any):

=====

WORKER'S COMPENSATION	* Statutory Min.		
	* Employer's Liability		

(Name of insurer)			
	\$ _____	\$ _____	\$ _____
Insurance Company's State License No.	_____		

=====

Check Policy Type:	Each Occurrence	\$ _____
COMPREHENSIVE GENERAL LIABILITY		
<input type="checkbox"/> Premises/Operations	General Aggregate (if applicable)	\$ _____
<input type="checkbox"/> Owners & Contractors Protective	Aggregate	\$ _____
<input type="checkbox"/> Contractual for Specific Contract	Personal Injury	
\$ _____		
<input type="checkbox"/> Products Liability		
<input type="checkbox"/> XCU Hazards		
<input type="checkbox"/> Broad Form P.D.	Fire Damage (any one fire)	\$ _____
<input type="checkbox"/> Severability of Interest Clause		
<input type="checkbox"/> Personal Injury with Employee Exclusion Removed or	Medical Expense (any one person)	\$ _____
COMMERCIAL GENERAL LIABILITY	Self-Insured Retention	\$ _____

_____ (Name of insurer)

Policy No. _____

Expiration Date _____

=====

AUTOMOTIVE/VEHICLE LIABILITY
Commercial Form Each Person
Liability Coverage

BODILY INJURY
Each Accident

PROPERTY DAMAGE

\$ _____ \$ _____
Each Accident

(Name of insurer)

\$ _____ or \$ _____
Combined Single Limits or Aggregate

Policy No. _____ Expiration Date _____

=====

BUILDER'S RISK "ALL RISK"

This is to certify that the following policy has been issued by the below-stated company in conformance with the requirements of the project documents and is in force at this time.

N/A _____
(Name of insurer)

Policy No. _____ Expiration Date _____
Limits of Liability: _____ Deductible: _____

=====

_____ A copy of all Endorsements to the policy(ies) which in any way
(Agent's initial) limit the above-listed types of coverage are attached to this

Certificate of Insurance.

This Certificate of Insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or any other document with respect to which this Certificate of Insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

IT IS HEREBY CERTIFIED that the above policy(ies) provide liability insurance as required by the Agreement between the District and the insured.

By: _____

Dated: _____ 20____

Attach Certificate of Insurance and Additional Insured Endorsement on company forms.

ADDITIONAL INSURED ENDORSEMENT AND ENDORSEMENT OF PRIMARY INSURANCE AND NOTICE OF POLICY CANCELLATION ENDORSEMENT

Project Title and Number: _____

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

The Cupertino Sanitary District ("District"), Apple, Inc., PR Cupertino Gateway, LLC, Caltrans, City of Cupertino, Santa Clara Valley Water District and Mark Thomas & Co. Inc., and its directors, officers, engineers, agents and employees, and all public agencies from whom permits will be obtained and their directors, officers, engineers, agents and employees, are hereby declared to be additional insureds under the terms of this policy, but only with respect to the operations of the Contractor at or upon any of the premises of the District in connection with the Contract with the District, or acts or omissions of the additional insureds in connection with, but limited to its general supervision or inspection of said operations.

The insurance afforded by this policy is primary insurance, and no additional insurance held or owned by the designated additional insured(s) shall be called upon to cover a loss under said additional policy.

Cancellation Notice: The insurance afforded by this policy shall not be suspended, voided, canceled, reduced in coverage or in limits, or materially altered, except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the District. Such notice shall be addressed to the District as indicated below.

POLICY INFORMATION

- 1. Insurance Company: _____
- 2. Insurance Policy Number: _____
- 3. Effective Date of this Endorsement: _____ 20____
- 4. Insured: _____

All notices herein provided to be given by the Insurance Company to the District in connection with this policy and these Endorsements, shall be mailed to or delivered to the District at 20863 Stevens Creek Boulevard Suite 100, Cupertino, California 95014.

I, _____ (print/type name) warrant that I have authority to bind the below listed Insurance Company and by my signature hereon do so bind this Company.

Signature of Authorized Representative: _____
(Original signature required on all Endorsements furnished to the District)

Names of Agent/Agency: _____ Title: _____

Address: _____ Telephone: _____

_____ Facsimile: _____

COMPREHENSIVE GENERAL LIABILITY COMMERCIAL GENERAL LIABILITY ENDORSEMENT
OF AGGREGATE LIMITS OF INSURANCE PER PROJECT

Project Title and Number: _____

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is as follows:

This Endorsement modifies the insurance provided under the General Liability Coverage part of the below-referenced policy of insurance.

The general aggregate limit under LIMITS OF INSURANCE applies separately to the project described as _____

POLICY INFORMATION

1. Insurance Company: _____
2. Insurance Policy Number: _____
3. Effective Date of this Endorsement: _____ 20____
4. Insured: _____
5. Additional Insured: Cupertino Sanitary District, its directors, officers, agents and employees.

All notices herein provided to be given by the Insurance Company to the District in connection with this policy and this Endorsement shall be mailed to or delivered to the District at 20863 Stevens Creek Boulevard Suite 100, Cupertino, California 95014.

I, _____ (print/type name)

warrant that I have authority to bind the below listed Insurance Company and by my signature hereon do so bind this Company.

Signature of Authorized Representative: _____

(Original signature required on all Endorsements furnished to the District)

Names of

Agent/Agency: _____ Title: _____

Address: _____ Telephone: _____

_____ Facsimile: _____

WAIVER OF SUBROGATION ENDORSEMENT
WORKER'S COMPENSATION INSURANCE

Project Title and Number: _____

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

It is agreed that with respect to such insurance as is afforded by the policy, the Insurance Company waives any right of subrogation against the Cupertino Sanitary District, and each of its directors, officers, agents, consultants and employees by reason of any payment made on account of injury, including death resulting therefrom, sustained by any employee of the insured, arising out of the performance of the above-referenced Contract.

POLICY INFORMATION

1. Insurance Company: _____

2. Insurance Policy Number: _____

3. Effective Date of this Endorsement: _____ 20____

4. Insured: _____

All notices herein provided to be given by the Insurance Company to the District in connection with this policy and this Endorsement shall be mailed to or delivered to the District at 20863 Stevens Creek Boulevard Suite 100, Cupertino, California 95014.

I, _____ (print/type name)

warrant that I have authority to bind the below listed Insurance Company and by my signature hereon do so bind this Company.

Signature of Authorized Representative: _____

(Original signature required on all Endorsements furnished to the District)

Names of

Agent/Agency: _____ Title: _____

Address: _____ Telephone: _____

_____ Facsimile: _____

END OF CONTRACT DOCUMENT CD-3

CD-4 NOTICE TO PROCEED

Dated: _____

To: _____

(Contractor)

Address: _____

CONTRACT FOR:

PROSPECT PUMP STATION REHABILITATION PROJECT

You are notified that the Contract Time under the above Contract will commence to run on _____ 2019. On that date, you are to start performing your obligations with respect to Work at the Site under the Contract Documents. In accordance with Article 4 of Contract Document CD-3 (Construction Contract Agreement), the dates of Substantial Completion and Final Completion for the entire Work are _____, 2019, and _____, 2019, respectively.

Before you may start any Work at the Site, you must:

1. Submit certified Safety Program and related information, and comply with all requests of the District's safety officer.
2. Submit copies of applicable permits
3. Submit approved fire protection plan, if applicable
4. Attend preconstruction conference. The preconstruction conference may be arranged through [_____].

CUPERTINO SANITARY DISTRICT,

By: _____

Its: _____

END OF CONTRACT DOCUMENT CD-4

CD-5 BIDDERS BOND

KNOW ALL MEN BY THESE PRESENT:

THAT WE _____

as PRINCIPAL, and _____

_____ as SURETY, are held and firmly bound unto the Cupertino Sanitary District in the penal sum of TEN PERCENT (10%) of THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the Cupertino Sanitary District ("District") for the work described below; for the payment of which sum in lawful money of the United States, well and truly, to be made to the Cupertino Sanitary District to which said bid was submitted, we bind ourselves; our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the surety hereunder exceed the sum of

_____ Dollars(\$ _____).

THE CONDITION OF THIS OBLIGATION IS SUCH,

THAT, WHEREAS, the Principal has submitted the above mentioned bid to the Cupertino Sanitary District, aforesaid, for certain construction specifically described as follows, for which bids are to be opened at the Office of the District Manager, 20863 Stevens Creek Blvd, Suite 100, California 95014, on **Wednesday, August 28, 2019 at 2:00 P.M.**

PROSPECT PUMP STATION REHABILITATION PROJECT

NOW, THEREFORE, if the aforesaid Principal is awarded the contract and, within the time and manner required under the specification, after the prescribed forms are presented to him for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files three bonds with the District, one to guaranty faithful performance, one to guaranty payment for labor and materials another to guaranty correction of defective materials or workmanship as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue. In the event suit is brought upon this bond by the obligee and judgment is recovered, the Surety shall pay all costs incurred by the obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

PROSPECT PUMP STATION REHABILITATION PROJECT

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, 2019.

_____(Seal)

_____(Seal)

_____(Seal)

Principal

_____(Seal)

_____(Seal)

_____(Seal)

Surety

NOTE: Signatures of those executing for the surety must be properly acknowledged.

Accompanying this proposal is either (check appropriate box)

↑ CASH (\$_____)

↑ CASHIER'S CHECK

↑ BIDDER'S BOND

END OF CONTRACT DOCUMENT CD-5

CD-6 FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as Principal, and _____ incorporated under the laws of the State of _____ and authorized to execute bonds and undertakings as Surety, are held firmly bound unto the Cupertino Sanitary District and City of Cupertino, a Special District and City, respectively, of the County of Santa Clara, California, in the sum of (Bid Amount), for payment whereof, well and truly to be made, said Principal and Surety bind themselves, their administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of the foregoing obligation is such that;

WHEREAS, the above bounded Principal is about to enter into a certain contract with the Cupertino Sanitary District, to do and perform the following work; to wit:

PROSPECT PUMP STATION REHABILITATION PROJECT

As required by the plans and specifications, pursuant to the award made to said Contractor by the Board of the Cupertino Sanitary District on **September 4, 2019**, as will more fully appear by reference to the Minutes of said Board of the said District of said date.

“THE CONDITION OF THIS OBLIGATION IS SUCH that if the above bound Principal, his/hers/its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said agreement and any alteration thereof made as therein provided, on his or their 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 defend, indemnify and save harmless District, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by District in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

And the said Surety hereby stipulates and agrees that upon termination of the Agreement, the District reserves the right to refuse tender of the principal by the surety to complete the Work.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the specifications accompanying the same shall in anyway effect 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 agreement or to the work or to the specifications.”

NOW, THEREFORE, if the above bounded Principal shall well and truly perform the work contracted to be performed under said contract, then this obligation shall be void; otherwise, to remain in full force and effect.

Signed and sealed this _____ day of _____, 2019.

BY: _____

Contractor
(Corporate seal)

Surety
(Corporate seal)

The amount of the within obligation hereby fixed by the District Board in the sum of (Bid Amounts), that sum being One Hundred percent (100%) of the contract price, is by said District Board deemed sufficient and adequate, and is the sum fixed by it for that purpose.

APPROVED AS TO FORM:

Marc Hynes
District Counsel

Benjamin Porter
District Manager/Engineer

CUPERTINO SANITARY DISTRICT,
of Santa Clara County

BY _____
President, Board of Directors
Cupertino Sanitary District

ATTEST:

Secretary, Board of Directors
Cupertino Sanitary District

END OF CONTRACT DOCUMENT CD-6

CD-7 PAYMENT BOND
(Section 9550, Civil Code)

Bond No. _____

WHEREAS, the Cupertino Sanitary District, hereafter referred to a "Obligee", has awarded to Contractor _____, hereafter referred to as "Principal", a contract for the work described as follows:

PROSPECT PUMP STATION REHABILITATION PROJECT

AND, WHEREAS, said Principal is required to furnish a bond in connection with said contract to secure the payment of claims of laborers, mechanics, material men and other persons as provided by law.

NOW, THEREFORE, we the undersigned Principal and Surety are bound unto the Obligee in the sum of **(\$ Amount)** the sum being fifty percent (50%) of the contract price for which payment we bind ourselves, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That if said Principal or its subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by such claimant, or any amounts required to be deducted, withheld and paid over to the Franchise Tax Board from the wages of employees of the Principal and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor, that the surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligations shall be void. In case suit is brought upon this bond, the surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall insure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Dated: _____, 2019

Correspondence or claims relating to this bond should be sent to the surety at the following address:

[NAME OF THE CONTRACTOR]

By: _____

Principal

By: _____

Attorney-in-fact

NOTE: Signatures of those executing for the surety must be properly acknowledged.

CERTIFICATE OF ACKNOWLEDGMENT

State of California
County of _____

On this _____ day of _____ in the year 2019, before me
_____, personally appeared _____ personally
known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name
is subscribed to this instrument as the attorney-in-fact of
_____ and acknowledged to me that he (she)
subscribed the name of the said company thereto as surety, and his (her) own name as attorney-in-
fact.

(SEAL) _____

Notary Public

END OF CONTRACT DOCUMENT CD-7

CD-8 WARRANTY BOND

KNOW ALL MEN BY THESE PRESENT:

THAT _____, as Principal, hereinafter called Contractor and _____ as Surety, hereinafter called Surety, are held and firmly bounded unto the CUPERTINO SANITARY DISTRICT as Obligee, hereinafter called DISTRICT, in the amount of _____ (\$_____), the sum being ten percent (10%) of the contract, for the payment whereof, Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, Contractor, by written agreement dated _____, 2019 entered into a contract with the District for the construction of the

PROSPECT PUMP STATION REHABILITATION PROJECT

Which contract is by reference made a part hereof, and is hereinafter referred to as the Contract; and

WHEREAS, the Contract contains provisions for the correction of any defects due to defective materials or workmanship in the work performed under said contract;

NOW, THEREFORE, the condition of this obligation is such that if the Contractor, upon receiving notice within a period of one (1) year from the date of acceptance of the work included within the contract of any defects in the work performed under the Contract, which are directly attributable to defective materials or workmanship, shall promptly correct said defects, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

If any action shall be brought by District upon this bond, a reasonable attorney's fee, to be fixed by the Court, shall be and become a part of the District's judgment in any such action.

No right of action shall accrue on this bond to, or for the use of, any person or corporation other than the District named herein or the heirs, executors, administrator or successor of the District.

SIGNED AND SEALED this _____ day of _____, 2019.

CONTRACTOR: [NAME OF CONTRACTOR]

BY: _____ Title: _____

BY: _____ Title: _____

END OF CONTRACT DOCUMENT CD-8

CD-9 LABOR AND MATERIAL BOND FOR SANITARY SEWER CONSTRUCTION

KNOW ALL MEN BY THESE PRESENTS;

WHEREAS, the CUPERTINO SANITARY DISTRICT, hereinafter designated as "District"), and _____ (hereinafter designated as "Principal") are about to enter into an agreement providing for the construction by Principal of sanitary sewer replacement "**PROSPECT PUMP STATION REHABILITATION PROJECT**" in the County of Santa Clara, State of California; and

WHEREAS, under the terms of said agreement, Principal is required before entering upon the performance of the work, to file a good and sufficient bond with district to secure the claims to which reference is made in Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code of the State of California.

NOW, THEREFORE, we, the Principal, and _____, as Surety, are held and firmly bound unto the CUPERTINO SANITARY DISTRICT and all contractors, subcontractors, laborers, material men, and other persons employed in the performance of said agreement and referred to in the aforesaid Civil Code, in the penal sum of _____ (\$_____), lawful money of the United States, for the payment of which sum, well and truly to be made, bind ourselves and our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT; if the above bound Principal shall fail to pay for any materials furnished or labor thereon of any kind in connection with the performance of said agreement, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, that said Surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable expenses and fees, including reasonable attorney's fees incurred by the District in successfully enforcing such obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgment therein rendered.

This bond shall insure to the benefit of any and all persons, companies, and corporations entitled to file claims under Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond. Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall remain in full force and effect.

The Surety, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said agreement, or to the work to be performed thereunder, or the specifications accompanying the same shall in any manner 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.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety, this _____ day of _____, 2019.

[NAME OF CONTRACTOR]

Principal:

by _____
Title: _____ (SEAL)

Surety

by _____
Attorney in Fact [NAME]

(To be signed by Principal and
Surety with current Notarial
Acknowledgement and seal
attached)

END OF CONTRACT DOCUMENT CD-9

CD-10 AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS

PROSPECT PUMP STATION REHABILITATION PROJECT

THIS AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS (“Agreement and Release”), made and entered into this [_____] day of [_____] , 20___, by and between the _____ (“District”), and _____ (“Contractor”), whose place of business is at _____.

RECITALS

- 1. District and Contractor entered into Contract Number _____ (the “Contract”).
- 2. The Work under the Contract has been completed.

Now, therefore, it is mutually agreed between District and Contractor as follows:

AGREEMENT

- 1. Contractor will not be assessed liquidated damages except as detailed below:

Original Contract Sum \$ _____

Modified Contract Sum \$ _____

Payment to Date \$ _____

Liquidated Damages \$ _____

Payment Due Contractor \$ _____

- 2. Subject to the provisions of this Agreement and Release, District will forthwith pay to Contractor the sum of \$ _____ Dollars and _____ Cents (\$ _____) under the Contract, less any amounts withheld under the Contract or represented by any Notice to Withhold Funds on file with District as of the date of such payment.
- 3. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against District arising from the Contract, except for the claims described in paragraph 4 of this Document. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against District, and all if its agents, employees, consultants, inspectors, representatives, assignees and transferees except for the Disputed Claims set forth in paragraph 4 of this Document. Nothing in this Agreement and Release shall limit or modify Contractor’s continuing obligations described in paragraph 6 of this Document.
- 4. The following claims are disputed (hereinafter, the “Disputed Claims”) and are specifically excluded from the operation of this Agreement and Release:

Claim No. Date Submitted Description of Claim Amount of Claim

[Insert information, including attachment if necessary]

5. Consistent with California Public Contract Code Section 7100, Contractor hereby agrees that, in consideration of the payment set forth in paragraph 2 of this Document, Contractor hereby releases and forever discharges District, and all of its agents, employees, consultants, inspectors, assignees and transferees from any and all liability, claims, demands, actions or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract
6. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.
7. Contractor shall immediately defend, indemnify and hold harmless the Cupertino Sanitary District, Santa Clara County, its Engineer (Mark Thomas & Co. Inc.), any of their Representatives, and all of their agents, employees, consultants, inspectors, assignees and transferees, from any and all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities that may be asserted against them by any of Contractor's suppliers and/or Subcontractors of any tier and/or any suppliers to them for any and all labor, materials, supplies and equipment used, or contemplated to be used in the performance of the Contract, except for the Disputed Claims set forth in paragraph 4 of this Document.
8. Contractor hereby waives the provisions of California Civil Code Section 1542, which provides as follows:

A general release does not extend to claims that the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him, must have materially affected his settlement with the debtor.
9. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable, and if any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal or other law, ruling, or regulation, then such provision, or part thereof shall remain in force and effect only to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.
10. Contractor represents and warrants that it is the true and lawful owner of all claims and other matters released pursuant to this Agreement and Release, and that it has full right, title and authority to enter into this instrument. Each party represents and warrants that it has been represented by counsel of its own choosing in connection with this Agreement and Release.
11. All rights of District shall survive completion of the Work or termination of the Contract, and execution of this Agreement and Release.

* * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * *

CUPERTINO SANITARY DISTRICT,
a Special District of Santa Clara County

By: _____

Its: _____

ATTEST:

District Clerk

[CONTRACTOR]

By: _____

Name: .

Its: _____

By: _____

Name: .

Its: _____

REVIEWED AS TO FORM:

District Attorney

_____, 20 _____

END OF CONTRACT DOCUMENT CD-10

CD-11 SUBSTITUTION REQUEST FORM

To: Cupertino Sanitary District,
A Special District of Santa Clara County ("District")

Project: **PROSPECT PUMP STATION REHABILITATION PROJECT**

Contractor: _____

Subcontractor/Supplier: _____

Drawing Sheet Reference/Detail No: _____

The undersigned Bidder submits for consideration the following equipment instead of the specified item for the above project:

<u>Section</u>	<u>Paragraph</u>	<u>Specified Item</u>
_____	_____	_____
_____	_____	_____

Proposed Substitution: _____

The undersigned encloses the information required herein. If this Contract Document CD-11 is being submitted by a Bidder wishing to use "or equal" item(s) as provided in Bidding Document BI-3 (Instructions to Bidders), the undersigned Bidder must also enclose the technical information (other than cost) otherwise required for a post-Award of Contract Request for Substitution ("RFS").

The undersigned has (a) attached manufacturer's literature, including complete technical data and laboratory test results, if applicable, (b) attached an explanation of why proposed substitution is a true equivalent to specified item, (c) included complete information on changes to Drawings and Specifications that the proposed substitution will require for its proper installation, and (d) filled in the blanks below:

Does the substitution affect dimensions shown on Drawings?

Are the manufacturer's guarantees and warranties on the proposed substitution items identical to those on the specified items? If there are differences, please specify each and every difference in detail.

What effect does the substitution have on other contractors, trades, or suppliers?

What are the differences between the proposed substitution and the specified item? If proposed substitution has a color or pattern, provide a color board showing proposed substitution in relation to the other adjacent colors and patterns.

Will granting the requested substitution cause any schedule delay? (If yes, please explain)

The undersigned Bidder certifies that the function, appearance, and quality of the proposed substitution are equivalent or superior to those of the specified item.

Submitted by:

Bidder/Contractor
[note applicable]

For Use by District:

_____ Accepted _____ Accepted as Noted

Signature

_____ Not Accepted _____ Received Too Late

Name

By: _____
District's Representative

Address

Date: _____

City/State/Zip

Remarks: _____

Telephone: _____

Date: _____

END OF CONTRACT DOCUMENT CD-11

CD-12 ESCROW AGREEMENT SECURITY DEPOSITS IN LIEU OF RETENTION

P.C.C. §22300

THIS ESCROW AGREEMENT ("Escrow Agreement") is made and entered into this ____ day of _____, 20__, by and between the CUPERTINO SANITARY DISTRICT, a Special District of Santa Clara County (hereinafter "District"), whose address is 20863 Stevens Creek Boulevard Suite 100, Cupertino, California 95014; _____ ("Contractor"), whose place of business is located at _____; and **[District, as escrow agent ...OR... [____], a state or federally chartered bank in the State of California, whose place of business is located at _____]** ("Escrow Agent").

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

1. Pursuant to Section 22300 of Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by District pursuant to project entered into between District and Contractor **for PROSPECT PUMP STATION REHABILITATION PROJECT** in the amount of _____ dated _____ (the "Contract"). Alternatively, on written request of Contractor, District shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, Escrow Agent shall notify District within ten Days of the deposit. The market value of the securities at the time of substitution shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between District and Contractor. Securities shall be held in name of _____, and shall designate Contractor as the beneficial owner.
2. District shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified in paragraph 1 of this Document.
3. When District makes payment(s) of retention earned directly to Escrow Agent, Escrow Agent shall hold said payment(s) for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when District pays Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of District. Such expenses and payment terms shall be determined by District, Contractor, and Escrow Agent.
5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to District.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from District to Escrow Agent that District consents to withdrawal of amount sought to be withdrawn by Contractor.
7. District shall have the right to draw upon the securities in event of default by Contractor. Upon seven Days written notice to Escrow Agent from District of the default, Escrow

Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by District.

8. Upon receipt of written notification from District certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.
9. Escrow Agent shall rely on written notifications from District and Contractor pursuant to paragraphs 5 through 8, inclusive, of this Document and District and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth.
10. Names of persons who are authorized to give written notice or to receive written notice on behalf of District and on behalf of Contractor in connection with the foregoing, and exemplars of their respective are as follows:

On behalf of District: On behalf of Contractor:

Title

Name

Signature

Address

City/State/Zip

Title

Name

Signature

Address

City/State/Zip

On behalf of Escrow Agent:

Title

Name

Signature

Address

City/State/Zip

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

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

District Contractor

Title Title

Name Name

Signature Signature

Escrow Agent

Title

Name

Signature

REVIEWED AS TO FORM:

District Counsel

Date

END OF CONTRACT DOCUMENT CD-12

GENERAL CONDITIONS

GC-0 DISTRICT STANDARD AND MODIFIED SPECIFICATIONS

SECTION I WORK CONTRACTED BY THE DISTRICT

Comply with "Section 1 – Work Contracted by the District – General Conditions" of the *Cupertino Sanitary District Standard Specifications dated July 16, 2014 and revised September 11, 2015* and as herein provided. When referencing to Caltrans Standard Specifications, it shall be the 2010 date version.

Add to Paragraph 1.04 Inspection and Observation:

- Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- Comply with manufacturers' instructions, including each step in sequence. When manufacturers' instructions conflict with Contract Specifications, request clarification from District Engineer before proceeding.

Replace Paragraph 1.05 Construction Stakes:

The District will provide one set of construction staking as follows:

- Flag limits of clearing and work zones
- 25 foot interval for mains and laterals
- 2 straddle staking for manholes and junction box
- 4 stakes for limit of boring and receiving pits

Stakes destroyed by Contractor or any additional staking requested by the Contractor will be provided as additional costs to the Contractor.

Add to end of first paragraph of Paragraph 1.06 Materials and Samples:

MATERIAL DELIVERY REQUIREMENTS

- Transport, handle, and store pipe and fittings as recommended by manufacturer.
- Inspect shipments promptly to ensure products comply with requirements, quantities are correct, and products are undamaged. New pipe and fittings that are damaged before or during installation it shall be repaired or replaced, as recommended by the manufacturer or required by the Engineer. The costs of such repair or replacement shall be borne by the Contractor and be accomplished prior to proceeding with the project.
- Deliver, store and handle other materials as required to prevent damage. Materials that are damaged or lost shall be repaired or replaced by the Contractor at no additional expense to the District.

MATERIAL STORAGE AND HANDLING REQUIREMENTS

- Store and protect products in accordance with manufacturers' instructions.
- Provide off-site storage and protection when site does not permit on-site storage or protection. For onsite storage and access routes, Contractor shall follow the requirements set forth in the Contract Plans and Paragraph 1.14 Closing Streets and Traffic Handling.
- Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

Add to end of last paragraph of Paragraph 1.06 Materials and Samples:

- Coordinate with District any product or material testing required by the District via an independent testing firm. The independent firm will perform tests, inspections and other services, at the Contractor's expense, specified in individual specification sections and as required by the District. Testing, inspections and source quality control may occur on or off project site.
- Perform off-site testing as required by the District and/or City of Cupertino.
- Submit all reports prepared by the independent firm, via email electronically, indicating observations and results of tests and indicating compliance or non-compliance with Contract Specifications.
- Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested. Contractor shall notify District Engineer and independent firm twenty-four (24) hours prior to expected time for operations requiring services. Contractor shall make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by District Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Price.
- Limits On Testing Authority:
 - a. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - b. Agency or laboratory may not approve or accept any portion of the work.
 - c. Agency or laboratory may not assume duties of Contractor.
 - d. Agency or laboratory has no authority to stop the Work.

Add to Paragraph 1.18 Protection of Work and Cleaning Up:

- Maintain work areas free of waste materials, debris, and rubbish.
- Maintain site in clean and orderly condition.
- Broom and wash down paved areas to control dust and remove tracked mud during construction and at end of each workday. Mechanical street sweeping may be required if excessive amounts of dirt, mud and dust are present.
- Collect and remove waste materials, debris, and rubbish from site daily and dispose at approved off-site location.

Paragraph 1.43 and 1.44 Measurement and Payment

- Paragraphs 1.43 and 1.44 are deleted in its entirety.
- Measurement and Payment clauses are provided separately in each section of the Technical Specification (CP).

Add to Paragraph 1.60 Time of Completion:

- Complete all work within 110 working days. GC-2

Add New Paragraph 1.64, "Pre-Construction Meeting"

- Attend Pre-Construction Meeting:

- The District Engineer will schedule a Pre-Construction Meeting after Notice of Award with Contractor, which will include the following agenda items:
 1. Execution of District-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of products, schedule of values, and progress schedule.
 5. Designation of personnel representing parties in Contract, District and the Contractor. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 6. Scheduling, Critical Path Schedule and Order of Work.
 7. Site Mobilization and Equipment staging.
 8. Traffic Control and Work Hours.
 9. Daily Clean Up Procedures.
 10. Safety Program (including trench safety).
 11. Verify that Contractor has notified appropriate stakeholders, police and fire departments and post office of construction dates. Contractor must submit copies of the written notifications to the Engineer.
 12. Utility and environmental compliance.

Add New Paragraph 1.65, “Submittal Procedures”

- Submit electronically via e-mail. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
- Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with requirements of the Contract Plans and Contract Specifications.
- District shall review and return submittals within five (5) working days after receipt.
- Submit initial construction schedules within seven (7) days after NTP. After District review, resubmit required revised data within three (3) days.
- Submit updated Progress Schedule on Monday of each week following start of construction. Submit computer generated horizontal bar chart with separate line for each section of Work, identifying first work day of each week.
- Submit the following:
 1. List of major products proposed for use, with name of manufacturer, trade name, and model number of each product. All products must be approved by District prior to start of construction. See Paragraph 1.42 Trade Names for more information on Products and Products Substitutions.
 2. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
 3. Methods of construction, reconnection and restoration of existing service laterals.
 4. Detailed descriptions of the methods of modifying existing manholes.
 5. Sewer Bypass Plans, methods and list of equipment to be utilized.
 6. Description of the method to remove and dispose of the host pipes
 7. The Safety Plan in conformance with the Contract Documents and OSHA regulations.
 8. Traffic Control Plans
 9. Equipment Storage Plans
 10. Test reports including compaction tests

MATERIALS

MA-0 DISTRICT STANDARD AND MODIFIED SPECIFICATIONS

Comply with “Section III – Materials” of the Cupertino Sanitary District Standard Specifications dated July 16, 2014 and revised September 11, 2015 and as herein provided:

Add to paragraph 3.04 High Density Polyethylene (HDPE):

- Pipe shall be SDR 11 for directional drilling.
- Pipe shall be SDR 17 for open cut and pipe bursting.

MA-1 DISTRICT FURNISHED MATERIALS

- 6” trasher pumper stored at District’s Florence Pump Station. Contractor will coordinate with District for picking up and using of the District’s trasher pumper.
- Three NT3153 Flygt Pumps (Attached herein).
- Electrical Control Cabinet and appurtenances (Attached herein)

CONSTRUCTION PROCEDURE

Comply with “Section 4 – Construction Procedure” of the Cupertino Sanitary District Standard Specifications dated July 16, 2014 and revised September 11, 2015, Caltrans Standard Specifications Dated 2010, and as follows:

CP-1 MOBILIZATION

- **PROJECT STARTUP**
 - Perform preparatory work and operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, including setting up contractor’s work area.
 - Field office is not required.
- **PROJECT RECORD DOCUMENTS**
 - Maintain one set of the following record documents on site and record actual revisions to the Contract Plans and Contract Specifications, Addenda, Change Orders and all other modifications to the Contract.
 - Record information shall be concurrent with construction progress.
- **PROTECTING INSTALLED CONSTRUCTION**
 - Protect installed Work and provide special protection where specified in individual specification sections.
 - Provide temporary and removable protection for installed products, as required.
- **CLOSEOUT PROCEDURES**
 - Submit written notice to the District that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
 - Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- **FINAL CLEANING**
 - Execute final cleaning prior to final project assessment.
 - Remove waste and surplus materials, rubbish, and construction facilities from site.
- **VIDEO INSPECTION**
 - District will perform all video inspections at no cost to the Contractor.
- **RECORD DRAWINGS AND AS-BUILTS.**
 - Mark each item to record actual construction
 - Provide one-set of redlined as-builts
- **PERMITS**
 - Comply with City Encroachment Permit, included as attachment to this specification, issued to the Cupertino Sanitary District.
- **PROPERTY OWNERS’ COORDINATION**
 - Pedestrian pathway will require coordination with property owner. Minimize disruption.

MEASUREMENT AND PAYMENT:

The contract lump sum price paid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, including but not limited to providing submittals, coordination with District/property owners, preparation of construction schedules, compliance with

permits and regulatory agencies, and for doing all the work involved in mobilization as specified herein and no separate payment will be made therefor.

CP-2 SITE CLEARING AND GRUBBING

- Conform to Section 15, “Existing Facilities” of the State Standard Specification.
- Conform to Section 16, “Clearing and Grubbing” of the State Standard Specification.
- Conform to District Standard Specifications.
- Protect trees designated to remain are tagged or identified.
- Call Local USA Underground not less than two working days before performing Work. Requested underground utilities to be located and marked within and surrounding construction areas.
- Verify and document private irrigation system that will need to be removed for construction and later replace in kind.
- Remove or abandon facilities when it is no longer used or active.

MEASUREMENT AND PAYMENT:

The contract lump sum price paid for Site Clearing and Grubbing shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in site clearing and grubbing as specified herein and no separate payment will be made therefor.

CP-3 TEMPORARY BYPASS SEWER SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. District will furnish one 6” trasher pump for Contractor’s use.
- B. Stage construction shown on the plans is one method of construction phasing. Contractor may propose separate construction staging plan to the District for review and approval. This section includes requirements for implementing a temporary pumping system for the purpose of diverting existing sewage flow around work area. Bypass pumping shall consist of furnishing and maintaining all power, primary and standby pumps, appurtenances and bypass piping required to maintain existing flows around portions of existing gravity sewers being repaired, replaced, or rehabilitated of stage 1, 2 and 3. All flow shall be pumped around segment during the installation of the new sewer, sewer connections or reconnections, and the replacement of sewer manhole, or wet well. The Contractor shall be responsible for providing a bypass system adequate to bypass all flows around the work site.

Contractors shall be responsible for all sewage pumping and any spills that may occur for any reason including, but not limited to, equipment failure, clogging, hose or pipe breakage, or high flows.

The design, installation, and operation of the temporary bypass pumping system shall be the Contractor’s responsibility. The Contractor shall employ services of a subcontractor who can demonstrate to the District that he specializes in the design and operation of temporary bypass pumping facilities. The subcontractor shall provide at least five references of projects a similar size and complexity of this project performed by his firm within the past 3 years. The bypass system shall meet the requirements of

all codes and regulatory Agencies having jurisdiction, including the District of Woodside

1.2 QUALITY ASSURANCE

- A. Follow national standards and as specified herein.
- B. Perform leakage and pressure tests on discharge piping using clean water, before operation. Notify Engineer 24 hours prior to testing.
- C. Maintain and inspect temporary pumping system every two hours. Responsible operator: on site when pumps are operating.
- D. Keep and maintain spare parts for pumps and piping on site, as required.
- E. Maintain adequate hoisting equipment and accessories on site for each pump.

1.3 SUBMITTALS

- A. General: Submit under the provisions of Section 00 7200, Division 1 General Requirements.
- B. The Contractor and his/her subcontractor shall prepare a specific, detailed description of the proposed pumping system and the Vendor's references with his bid proposal.
- C. Submit following
 1. Detailed plan and description of proposed pumping system. The Contractor shall submit to the Engineer detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flow at least two weeks prior to pipe installation. The plan must be specific and complete, including such items as schedules, size, location, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper protection of the facilities, including protection of the access and bypass pumping location from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. The plan shall include but not limited to details of the following:
 - a. Size and location of manhole or access points for suction and discharge hose or piping.
 - b. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill, if buried
 - c. Temporary pipe supports and anchoring required.
 - d. Thrust and restraint block sizes and locations.
 - e. Sewer plugging method and type of plugs.
 - f. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
 - g. Backup pump, power and piping equipment.
 - h. Calculations of static lift, friction losses, and flow velocity. Pump curves showing pump operating range.
 - i. Design plans and computation for access to bypass pumping

locations indicated on drawings.

- j. Calculations for selection of bypass pumping pipe size.
- k. Method of noise control for each pump and/or generator.
- l. Method of protecting discharge manholes or structures from erosion and damage.
- m. Schedule for installation and maintenance of bypass pumping lines.
- n. Procedures to monitor upstream mains for backup impacts.
- o. Procedures for setup and breakdown of pumping operations.
- p. Standby power generator and size and location
- q. Fully redundancy of equipment has sufficient capacity to pump the peak flow.
- r. Plan showing the staging area for pumps and fencing
- s. Personnel attendance schedule.
- t. The Contractor shall meet with District of Woodside to confirm their requirements. Proof of this meeting and documentation of requirements shall be submitted to the District.
- u. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage.

- 1) Maintain copy of emergency plan on site for duration of project.
- 2) Certify bypass system will meet requirements of codes, and regulatory agencies having jurisdiction.
- 3) The Contractor shall notify the Engineer and the District two (2) working days prior to commencing the bypass pumping operation. No construction for the sewage bypass system shall commence until all work has been reviewed and approved by the District Engineer.

1.4 CONTRACTORS RESPONSIBILITY FOR OVERFLOWS AND SPILLS

- A. Schedule and perform work in manner that does not cause or contribute incidence of overflows, releases or spills of sewage from sanitary sewer system or bypass operation.

1.5 DELIVERY AND STORAGE

- A. Transport, deliver, handle, and store pipe, fittings, pumps, ancillary equipment and materials to prevent damage and following manufacturer's recommendations.
 - 1. Inspect all material and equipment for proper operation before initiating work.
- B. Material found to be defective or damaged due to manufacturer or shipment.
 - 1. When Engineer deems repairable: Repair as recommended by manufacturer. When Engineer deems not repairable: Replace as directed by Engineer before initiating work.
 - 2. Repair or replacement of defective or damaged material and equipment will be at no cost to District.

1.6 COORDINATION

- A. The Contractor shall schedule any gravity sewer down-time with the District Sewer Operation personnel and the Engineer prior to removing any of the existing

facilities from service.

- B. All pumping or by-passing working, the arrangement or layout of the pumping and by- passing facilities, and the facilities to be utilized in such work shall be approved prior to the time said pumping and by-passing work is started.
- C. Once all of the required repair, rehabilitation, and replacement work is completed, the Contractor shall coordinate placing the new sewer in service with the District of Woodside Sewer Operations personnel and the Engineer.
- D. Bypass pumping must be monitored with Contractor personnel at all times. If pumping operation continues pass normal working hours, the pumps shall be monitored 24 hours a day onsite as long as the operation is in place.

1.7 RESTORATION

- A. The Contractor shall provide complete restoration including, but not limited to all backfilling, grassing and sodding, and routine site restoration. Item not covered in the Bid Schedule shall be included in the cost for other items.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Discharge and Suction Pipes: Approved by Engineer.
 - 1. Discharge piping: Determined according to flow calculations and system operating calculations.
 - 2. Suction piping: Determined according to pump size, flow calculations, and manhole depth following manufacturer's specifications and recommendations.
- B. Polyethylene Plastic Pipe:
 - 1. High density solid wall and following ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-DR) based on Outside Diameter, ASTM D1248 and ASTM D3550
- C. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults. High-Density Polyethylene (HDPE).
 - 1. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.
 - a. Defective areas of pipe: Cut out and joint fused as stated herein.
 - 2. Assembled and joined at site using couplings, flanges or butt-fusion method to provide leak proof joint. Follow manufacturer's instructions and ASTM D 2657.
 - a. Threaded or solvent joints and connections are not permitted.
 - 3. Fusing: By personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment.
 - 4. Butt-fused joint: True alignment and uniform roll-back beads resulting from use of proper temperature and pressure.
 - a. Allow adequate cooling time before removal of pressure.
 - b. Watertight and have tensile strength equal to that of pipe.
 - c. Acceptance by Engineer before insertion.
 - 5. Use in streams, storm water culverts and environmentally sensitive areas.

- D. Flexible Hoses and Associated Couplings and Connectors.
 - 1. Abrasion resistant.
 - 2. Suitable for intended service.
 - 3. Rated for external and internal loads anticipated, including test pressure.
 - a. External loading design: Incorporate anticipated traffic loadings, including traffic impact loading.
 - 4. When subject to traffic loading, compose system, such as traffic ramps or covers.
 - a. Install system and maintain H-20 loading requirements while in use or as directed by the Engineer.
- E. Valves and Fittings: Determined according to flow calculations, pump sizes previously determined, and system operating pressures.
- F. Plugs: Selected and installed according to size of line to be plugged, pipe and manhole configurations, and based on specific site.
 - 1. Additional plugs: Available in the event a plug fails. Plugs will be inspected before use for defects which may lead to failure.
- G. Aluminum "irrigation type" piping or glued PVC piping will not be permitted.
- H. Discharge hose will only be allowed in short sections when approved by Engineer.

2.2 EQUIPMENT

A. Pumps

- 1. Fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in priming system. The pumps may be electric or diesel powered with a fuel storage capacity for 24 hours of continuous operations. The Contractor shall provide all of the required diesel fuel and power for the system.
- 2. Open channels or trenches shall not be used to convey flow.
- 3. Pumping equipment must have the capacity to convey one hundred (100) percent of peak flows around the construction area. The flow shall be intercepted at the upstream end of the construction area and shall be pumped through temporary piping of adequate size. The flow shall be discharged into a manhole on the downstream side of the construction area, thus bypassing the sewer segment(s) under construction
- 4. The maximum allowable bypass pumping system wet well level during the bypass pumping operation will be a minimum of 3 feet and 6 inches below the lowest overflow elevation along the incoming sewer. The Contractor is responsible for providing a pumping system that can meet any required suction heads or provide a submersible pump to feed the suction of the primary pumping system.
- 5. The pump discharge piping shall be suitably sized for the flow to be pumped and shall discharge into an approved downstream manhole or wet well. The discharge pipe in the manhole or wet well shall be suitably braced and directed so that damage to existing facilities and equipment is prevented. If multiple pumps are required to meet the required pumping capacities, the Contractor shall provide the necessary fittings and connections for connecting multiple pump discharges to a single discharge pipe.
- 6. The pumping system shall be equipped with the necessary float switches or

- level monitoring devices required for starting and stopping the pump. Float switches shall also be provided to sound an alarm if the water level in the bypass pumping system wet well reaches a critical depth.
7. All pumps used must be constructed to allow dry running for long periods of time to accommodate cyclical nature of effluent flows.
 8. The Contractor shall provide the necessary control power for the bypass pumping system
 9. Bypass pumps shall be sound attenuated with a maximum noise level of 72 dBA at nine (9) meters or (27.5').

B. Provide.

1. Necessary stop/start controls for each pump.
2. One standby pump of each size maintained on site. Back-up pumps shall be one-line, isolated from primary system by a valve.
3. Quiet flow pumps at request of Engineer.
4. Discharge piping – to prevent the accidental spillage of flows, all discharge systems shall be temporary constructed of rigid pipe with positive, restrained joints.

2.3 DESIGN REQUIREMENTS

A. Bypass pumping systems:

1. Existing pump serves three gravity lines as follows:

SERVICE SUMMARY TABLE		
Location	Estimated Average Dry Flow (gpm)	Estimated Dry Flow Peak Flow (gpm)
West side of Saratoga Sunnyvale 8" pipe	33	82
East side of Saratoga Sunnyvale Road 12" pipe	56	164
From eastside along Prospect Road 8" pipe	44	110

2. Contractor shall submit to District bypass pump system design prepared by a registered civil engineer. The design flow for the bypass pump shall match the anticipated flow at which time Contractor plans to perform the work.
 3. Bypass pump system shall be operable for the period which Contractor plans to shut-down.
- B. The Contractor shall provide all pipeline plugs and pumps of adequate size to handle peak flow, and temporary discharge piping to ensure total flow of main can be safely diverted around work zone.
- C. The Contractor must have full redundancy equipment available and ready for immediate operation and use in the event of an emergency or breakdown. Primary and back-up bypass pumping systems shall have sufficient capacity to pump the peak flow. One standby pump for each pump size utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL AND MAINTENANCE

- A. Test:

The Contractor shall perform leakage and pressure tests of the bypass pumping discharge pipe using clean water prior to actual operation. The Contractor shall get the water meter from Cal Water to get clean water for leakage test. The pressure and leakage test shall be conducted at 1 ½ times the maximum pressure the system will experience based on the approved Bypass Pumping Plan for a period of two hours. No leakage is permitted during this test. The Engineer will be given 24 hours' notice prior to testing. In addition, the Contractor shall demonstrate that the pumping system is in good working order and is sufficiently sized to successfully handle flows by performing a test run for a period of 24 hours prior to beginning the Work.
- B. Inspection:

The Contractor shall inspect bypass pumping system every two hours to ensure that the system is working properly. The contractor shall provide and keep on-site manual and a log book of all bypass pumping operations 24 hours per day, 7 days per week if the bypass pumping system is to be utilized.
- C. Maintenance Service:

The Contractor shall insure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.
- D. Extra Materials:
 - 1. Spare parts for pumps and piping shall be kept on-site as required.
 - 2. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.
- E. The release of raw wastewater onto the ground or into a receiving stream is prohibited. In the event that such spillage or overflows do occur during the course of or as a result of the Work, the Contractor performing the Work shall immediately eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. On elimination of the spillage or overflow, the Contractor is to clean up and disinfect the area. Work to stop or contain such events is to be deemed emergency in nature and sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay. Damages arising from blockages, back-ups, spillage, or overflows of sewage during the course of the Work or because of the Work shall be the sole responsibility of the Contractor. The Contractor is responsible for paying all costs of cleanup and all fines imposed for overflows or spills during construction.

3.1 INSTALLATION AND REMOVAL

- A. Provisions and requirements must be reviewed by Engineer before starting construction.
- B. Remove manhole sections or make connections to existing sewer and construct temporary bypass pumping structures at access location indicated on Drawings and as required to provide adequate suction conduit.
- C. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, remove in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.
- D. When working inside manhole or force main, exercise caution. Follow OSHA, Local, State and Federal requirements. Take required measures to protect workforce against sewer gases and/or combustible or oxygen-deficient atmosphere, and confined spaces.
Installation of Bypass Pipelines:

1. Pipeline may be placed along shoulder of roads.
 - a. Do not place in streets or sidewalks.
 2. When bypass pipeline crosses local streets and private driveways, place in roadway ramps.
 - a. When roadway ramps cannot be used, place bypass in trenches and cover with temporary pavement as approved by Engineer.
- E. During bypass pumping operation, protect sewer lines from damage inflicted by equipment.
- F. Upon completion of bypass pumping operations, and after the receipt of written permission from Engineer, remove piping, restore property to pre-construction condition and restore pavement.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for temporary sewer bypass system shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in providing temporary sewer bypass/pumping system, except District will furnish one 6" trasher pump for Contractor's use at not cost and no separate payment will be made therefor.

CP-4 BEST MANAGEMENT PRACTICES (BMP)

- Control potential sources of water pollution before they come in contact with storm water systems or watercourses. Control material pollution and manage waste and non-storm water at the job site by implementing effective handling, storage, use, and disposal practices. Preparation Manual, Dewatering Guide, and BMP Manual are available from the State's Construction Storm Water and Water Pollution Control web site at: <http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm>.
- Conform Paragraph 1.34, Storm Water Pollution Plan, of the District Standard Specifications.
- Conform to Section 13, "Water Pollution Control" of the State Standard Specifications.
- Follow Contract Plans on City of Saratoga and Cupertino's Best Management Practices requirements.
- Provide onsite waste facility at the job site.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for best management practices (BMP) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in the implementation of the best management practices as specified herein and no separate payment will be made therefor.

CP-5 TEMPORARY FENCE

- Provide temporary fence as shown on the plans and as directed by the Engineer.
- Install temporary fence and Contractor's entrance gates as required to secure construction area.
- Repair damaged temporary fence on the same day as notice is provided.
- Remove and dispose when no longer needed.
- Materials:

- Temporary fence shall conform to the Specifications for permanent fence of similar character as provided in Section 80, "Fences," of the Caltrans Standard Specifications. Used materials may be installed provided the used materials are good, sound, and are suitable for the purpose intended, as determine by the District Engineer.
- Materials may be commercial quality provided the dimensions and sizes of the Materials are equal to, or greater than, the dimensions and sizes shown on the plans or specified herein.
- Post shall be metal with concrete bases, or approved equal. Galvanizing and painting of steel items will not be required.

MEASUREMENT AND PAYMENT

Temporary fence will be measured for payment per linear foot.

The contract unit price paid per linear foot for temporary fence shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in the installation of temporary fence and gates, maintenance, removal and disposal as specified herein and no separate payment will be made therefor.

CP-6 CONSTRUCTION STAGING AND TRAFFIC HANDLING

STAGE CONSTRUCTION

Stage Construction as shown on the plans are one method for construction staging. Contractor may propose different construction staging to accelerate project completion and/or for other reasons. If Contractor will deviate from the staging plan shown on the plans, Contractor shall submit new staging plan for District's review and approval.

MAINTAINING TRAFFIC

Maintaining traffic shall conform to the provisions in Sections 7-1.08, "Public Convenience," Section 7-1.09, "Public Safety," and Section 12, "Construction Area Traffic Control Devices," of the State Standard Specifications and these special provisions.

Closure is defined as the closure of a traffic lane or lanes, including shoulder and sidewalk within a single traffic control system.

Closures shall conform to the provisions in "Traffic Control System for Lane Closure" of these special provisions. Work that interferes with public traffic shall be limited to the hours when lane closures are allowed, except for work required under Sections 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety."

Pedestrian access facilities shall be provided through construction areas within the right of way as shown on the plans and as specified herein.

Full compensation for providing pedestrian facilities shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

CONSTRUCTION AREA TRAFFIC CONTROL DEVICES

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the State Standard Specifications and these special provisions.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 100 pounds) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 100 pounds) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/listing.cfm?code=workzone

CONSTRUCTION AREA SIGNS

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

The Contractor shall furnish and install four Project Signs, "Cupertino Sanitary District, Prospect Pump Station Rehabilitation" at locations designated by the Engineer before starting major construction activities visible to roadway users. Upon completion of the project, the Contractor shall remove and dispose of said signs. Unless otherwise shown on the plans or specified in these special provisions, the color of construction area warning and guide signs shall have black legend and border on orange background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

TEMPORARY PAVEMENT STRIPING AND REPLACEMENT OF REMOVED STRIPING IN-KIND

This work shall consist of removing existing pavement stripes and markers at the locations shown on the plans, installing temporary striping and restoring removed striping in-kind.

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General," of the State Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety," of the Standard Specifications. The

painted temporary traffic stripe shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary traffic stripe is required.

Temporary painted traffic stripe shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of State Standard Specifications

Lane lines removed shall be restored in-kind and shall be placed in conformance with the provisions in Section 85, "Pavement Markers," of the State Standard Specifications and these special provisions.

The Contractor shall furnish the Engineer certificates of compliance for the pavement markers in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Retroreflective pavement markers shall be marked as abrasion resistant on the body of the markers.

Left turn lane striping shall be sprayable thermoplastic traffic stripes applied in conformance with the provisions of Section 84, "Traffic Stripes and Pavement Markings." of the State Standard Specifications and shall be applied to the pavement at a minimum thickness of 0.039-inch and a minimum rate of 0.13-lb/ft.

PLASTIC K-RAIL

This work shall consist of furnishing, installing, and maintaining plastic K-rail at each location shown on the plans, as specified in these special provisions or where designated by the Engineer.

Plastic K-Rail shall be orange in color with minimum height of 32". Plastic K-Rail shall have full connection to create continuous connection capability.

Plastic K-Rail shall be filled with water.

BARRICADE

Barricades shall be furnished, placed and maintained at the locations shown on the plans, specified in the State Standard Specifications or in these special provisions or where designated by the Engineer. Type 3 Barricades shall be 6 feet in length and shall be secured with four sandbags. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the State Standard Specifications and these special provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of State Standard Specifications regarding retroreflective sheeting for barricades.

Construction area sign and marker panels conforming to the provisions in Section 12-3.06, "Construction Area Signs," of the State Standard Specifications shall be installed on barricades in a manner determined by the Engineer at the locations shown on the plans.

Sign panels for construction area signs and marker panels installed on barricades shall conform to the provisions in Section 12-3.06A, "Stationary Mounted Signs," of the State Standard Specifications and per plans.

CHANNELIZER

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the State Standard Specifications and these special provisions.

Channelizers shall be surface mounted and conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of the State Standard Specifications.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be

removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

PORTABLE CHANGEABLE MESSAGE SIGNS

Work includes furnishing, placing, operating, maintaining, and removing portable changeable message signs.

Comply with Section 12-3.12 "Portable Changeable Message Signs," of the State Standard Specifications.

Approaching drivers must be able to read the entire message for all phases at least twice at the posted speed limit before passing portable changeable message sign. You may use more than 1 portable changeable message sign to meet this requirement.

Only display the message shown on the plans, "Construction Ahead, Expect Delay" or ordered by the Engineer or specified in these special provisions.

Portable changeable message sign must have 24-hour timer control or remote control capability.

The text of the message displayed on portable changeable message sign must not scroll, or travel horizontally or vertically across the face of the message panel.

Continuously repeat the entire message in no more than 2 phases of at least 3 seconds per phase.

Place portable changeable message sign as far from the traveled way as practicable where it is legible to traffic and does not encroach on the traveled way.

MEASUREMENT AND PAYMENT

Construction area signs will be measured and paid per lump sum. The contract lump price paid for construction area signs shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, construction area signs, including project identification signs, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Existing stripes removed, temporary striping and new permanent striping shown on the plans will be paid per linear feet. The contract unit price paid per linear foot for removing existing striping, placing temporary striping and placing permanent striping (in-kind) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, maintaining striping complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Plastic K-Rail shown on the plans will be paid per linear feet. The contract unit price paid per linear foot for plastic K-rail includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, maintaining plastic K-rail complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Barricades shown on the plans will be paid per each for various types of barricades as shown on the plans and bid schedule. The contract unit price paid for barricade per each includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals including placing signs on barricade and sand bags are required for stabilization, and for doing all the work involved in furnishing, placing, maintaining barricade complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Channelizers shown on the plans will be paid per each. The contract unit price paid per each for barricade includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals including placing signs on barricade and sand bags are required for stabilization, and for doing all the work involved in furnishing, placing, maintaining barricade complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Changeable message signs will be paid per each. The unit price paid for portable changeable message signs includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, modifying messages, maintaining portable changeable message signs, complete in place, including transporting from location to location, removing, and repairing or replacing defective or damaged portable changeable message signs, as shown on the plans, as specified in the State Standard Specifications and these special provisions, and as directed by the Engineer.

CP-7 REMOVAL OF SIDEWALK AND ELECTRICAL CABINET

Concrete sidewalk as shown on the plans shall be removed at construction or at expansion joints only.

Electrical cabinet and concrete pad, when no longer in use, shall be removed and dispose by the Contractor. Holes created from removal of the concrete pad shall be filled with top soil.

MEASUREMENT AND PAYMENT

Concrete sidewalk to be removed will be paid per square foot as shown on the plans and bid schedule. The contract unit price paid per square foot for removal includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals including saw cutting as required at expansion joints, and for doing all the work involved in furnishing materials and labor for concrete sidewalk removal, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Electrical cabinet, pad and associated appurtenances to be removed will be measured and paid by lump sum. The contract lump sum price paid for removal includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing materials and labor for removal, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

CP-8 DEMOLITION OF EXISTING DRY AND WETWELLS

Existing piping, valves, pumps, electrical system located within the existing drywell and wetwells shall be removed as shown on the plans and as directed by the Engineer. Contractor shall remove and dispose all piping, valves, pumps, and electrical system. Holes made from removal shall be filled with concrete epoxy.

MEASUREMENT AND PAYMENT

Demolition of drywell and wetwells will be measured and paid per lump sum. The contract lump price paid for demolition shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing equipment and labor for demolition, including but not limited to removal, disposal, patching holes, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

CP-9 DRYWELL AND WETWELL

PART 1 GENERAL

1.1 SUMMARY

Section includes work within dry well and wet well

- A. Rehabilitation of existing wetwell walls
- B. Ductile iron pipe, fittings and appurtenances
- C. PVC inside manhole drop
- D. Installation of three NT3153 pumps
- E. Installation of 12" connection between two wetwells

1.2 REFERENCES

- A. AASHTO T180 (American Association of State Highway and Transportation Officials) - Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12 inch Drop.
- C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.
- D. ANSI/ASTM D2321 - Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
- E. ANSI/ASTM D2729 – Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings.
- F. ASTM D1785 – Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
- G. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- H. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.3 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over structure, prior to subsequent backfill operations.

1.4 SUBMITTALS

- A. General: Submit under the provisions of Document 00 7200, General Conditions, submittal.
- B. Submit shop drawings and manufacturers data in accordance with the provisions of Division I, General Conditions
- C. Shop Drawings: Indicate wet well, manhole locations, elevations, piping and sizes and elevations of penetrations.
- D. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- E. Copy of Certificate or Report showing that the Precast Concrete Manufacturer conforms of this specification.
- F. Certificates and Compliance. Certificates of compliance shall be provided for all products and materials proposed to be used under this Section as specified in the referenced standards of the following supplemental requirements:
- G. Calculation and Details of Precast Concrete Structural Sections, including buoyancy calculations to be provided and sealed by a Professional Engineer, registered in the California, employed by the Manufacturer showing or charting the following:
 - 1. Manufacturer's Part No. or Catalogue No.
 - 2. Inside diameter and height excluding base slab
 - 3. Wall thickness and base or top thickness where applicable
 - 4. Handling weight and lifting hole or loop description and locations
 - 5. Wire size, spacing, location, and steel area provided per vertical foot
 - 6. Reinforcing bar grade, size, spacing and location.
 - 7. Design load for Flat Slab.
 - 8. Concrete mix number and design strength.
 - 9. Height, width, slope and annular space of the tongue and groove.
- H. Pipe Connector Details, Material Specification and pipe installation procedure.
- I. Joint Material Details and Material Specifications. Calculations showing the Flexible Joint Sealant cross section.
- J. Lifting Device and Hole Details that include design loads.
- K. Structural analysis design calculations for Flab Slab Top Precast Components, performed in accordance with the Reference of this Specification, showing that allowable stresses with not be exceeded. All calculations must be sealed by a Professional Engineer, registered in the State of California.
- L. Calculations or test results verifying that the lifting device components and holes are designed in accordance with OSHA Standard.
- M. Concrete 28 day compression strength results for every day production of Precast Components for the project was performed, showing the required strength according to the guidelines established in ACI 318.
- N. Reinforcing and Cement mill reports for materials used in the Manufacture of Precast Components for this project.

1.5 CLOSEOUT SUBMITTALS

- A. Accurately record actual locations embedded items, utilities, and components which are concealed from view. Submit to the Town of Woodside at project closeout
- B. Project Record Documents: Record location of pump stations, control panel, pipe runs, connections, manholes, valve box, cleanouts, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- D. All tests and inspection reports and all transit mix delivery slips

1.6 FIELD MEASUREMENTS

- A. Verify field measurements and elevations are as indicated.

1.7 COORDINATION

- A. Coordinate the Work with termination of sanitary sewer laterals at property lines, connection to sewer mains, and trenching.

1.8 QUALITY ASSURANCE

- A. Per work in accordance with ACI301, California Plumbing Code.
- B. Maintain one copy of latest construction documents on site; including design drawings, approved shop drawings and permit drawings, and special inspection and testing agreement.
- C. Acquire cement and aggregate from same source for all work.
- D. Perform Sewer Work in accordance with West Bay Sanitary District and Town of Woodside Standards.

PART 2 WETWELL REHABILITATION

2.1 HIGH-PERFORMANCE COATINGS

- A. High-performance coating: CIM 1000 or approved equal. Two-component, high solids, elastomeric asphalt modified urethane. Designed for spray, squeegee, or roller application.
 - 1. Elastomeric Waterproofing, ASTM C836 and C957: Exceeds all criteria.
 - 2. Solids by volume: 88 percent.
 - 3. Volatile Organic Compounds (VOC): 0.76 pounds per gallon (92 g/L).
 - 4. Mullen Burst Strength, ASTM D751, 50 mils in CIM Scrim: 150 pounds per square inch.
 - 5. Tear Strength, ASTM D624, Die C: 150 pounds per inch.
 - 6. Tensile Strength, ASTM D412, 100-mil sheet: 900 pounds per square inch.
 - 7. Extension to Break, ASTM D412: 400 percent.
 - 8. Recovery from 100 Percent Extension:
 - a. After 5-minutes: 98 percent.
 - b. After 24-hours: 100 percent.
 - 9. Coating Performance, Crack Bridging:
 - a. 10 Cycles at minus 15 degrees F (minus 26 degrees C): Greater than 1/8-inch.
 - b. After Heat Aging: Greater than 1/4-inch.
 - 10. Coating Performance, Weathering, ASTM D822: 5000 hours: no cracking.
 - 11. Softening Point, ASTM D36: Greater than 325 degrees F (160 degrees C).
 - 12. Deflection Temperature, ASTM D648: below minus 60 degrees (minus 50 degrees C).
 - 13. Service Temperature: minus 60 degrees F to 220 degrees F (minus 50 degrees C to 105 degrees C).
 - 14. Hardness, ASTM D2240, Shore A, 77 degrees F (25 degrees C): 60.
 - 15. Permeability to Water Vapor, ASTM E96, Method E, 100 degrees F (38 degrees C), 100-mil sheet: 0.03 perms.
 - 16. Abrasion Resistance, Weight Loss, ASTM D4060: 1.2 mg.
 - 17. Adhesion to Concrete, Dry, Elcometer: 350 pounds per square inch.
 - 18. Color: Black.
- B. Primer: CIM 61 BG Epoxy Primer. Two-component, high solids, epoxy primer. Use as a primer coat on dry, porous substrates such as concrete.
 - 1. Solids by Volume: 80 percent mixed.
 - 2. Volatile Organic Compounds (VOC): 1.41 pounds per gallon (170 g/L).
- C. Bonding Agent: CIM Bonding Agent. Organosilane compound dispersed in isopropyl alcohol. Ensures a continuous and uniform bond between surfaces. Use the bonding agent over non-porous surfaces such as steel, except where primer has been installed. Do not use where solvent cleaners are prohibited.
 - 1. Solids by Volume: Less than 1 percent.

2. Volatile Organic Compounds (VOC): 6.4 pounds per gallon (743 g/L).
- D. Patching Material: CIM 1000 Trowel Grade. Liquid applied, chemical and corrosion resistant urethane elastomer, chemically thickened to allow trowel application with minimum sag. Use as a crack filler and for application to vertical surfaces and cold joints.
1. Elastomeric Waterproofing, ASTM C836 and C957: Exceeds all criteria.
 2. Solids by volume: 89 percent.
 3. Volatile Organic Compounds (VOC): 0.74 pounds per gallon (88 g/L).
 4. Mullen Burst Strength, ASTM D751, 50 mils in CIM Scrim: 150 pounds per square inch.
 5. Tear Strength, ASTM624, Die C: 150 pounds per inch.
 6. Tensile Strength, ASTM D412, 100-mil sheet: 800 pounds per square inch.
 7. Extension to Break, ASTM D412: 300 percent.
 8. Recovery from 100 Percent Extension:
 - a. After 5-minutes: 98 percent.
 - b. After 24-hours: 100 percent.
 9. Coating Performance, Crack Bridging:
 - a. 10 Cycles at minus 15 degrees F (minus 26 degrees C): Greater than 1/8-inch.
 - b. After Heat Aging: Greater than 1/4-inch.
 10. Coating Performance, Weathering, ASTM D 822: 5000 hours: no cracking.
 11. Softening Point, ASTM D36: Greater than 325 degrees F (160 degrees C).
 12. Deflection Temperature, ASTM D648: below minus 60 degrees (minus 50 degrees C).
 13. Service Temperature: minus 60 degrees F to 220 degrees F (minus 50 degrees C to 105 degrees C).
 14. Hardness, ASTM D2240, Shore A, 77 degrees F (25 degrees C): 60.
 15. Permeability to Water Vapor, ASTM E96, Method E, 100 degrees F (38 degrees C), 100-mil sheet: 0.03 perms.
 16. Abrasion Resistance, Weight Loss, ASTM D4060: 1.2 mg.
 17. Adhesion to Concrete, Dry, Elcometer: 350 pounds per square inch.
 18. Color: Black.
- E. Reinforcing Fabric and Joint Cover Sheet: CIM Scrim. Stitch bonded polyester. Compatible with coating materials.
1. Weight: 3 ounces per square yard (100 g/m²).
 2. Tensile Strength, ASTM D1682: 57.1 pounds (30 kg).
 3. Elongation, ASTM D1682: 61.65 percent.
 4. Mullen Burst Strength, ASTM D3726: 176.8 pounds per square inch (1,215 kPa).
 5. Trapezoid Tear Strength, ASTM D1117: 16.1 pounds (7.2 kg).

2.2 SURFACE PREPARATION FOR WET WELL

- A. Prepare surface in accordance with manufacturer's instructions.
- B. Provide clean, dry, and structurally sound concrete surface. All surface of the structure shall be cleaned with a high pressure water jet sprayer with an operating pressure of at least 3,500 psi. Pressure washes the structure to remove all dirt, grease, sand, and surface contaminants on the wall and floor leaving a clean damp surface.
- C. Abrasive Blasting:
 1. Prepare concrete surface to receive high-performance coating by abrasive blasting.
 2. Remove dirt, soil, grease, oil, paint, coatings, form release agents, curing compounds, laitance, loose material, unsound concrete, and other foreign

- materials that would inhibit performance of high-performance coating in accordance with ASTM D4258 and by abrasive blasting.
3. Obtain a firm, sound concrete surface in which bug holes are fully opened or repaired.
 4. Remove sharp concrete edges and projections.
 5. Perform abrasive blasting in accordance with ASTM D4259-88.
 6. Receive approval by Engineer of blasting media.
 7. Maintain air supply for abrasive blasting free of oil and water in accordance with ASTM D4285.
 8. Expose aggregate to obtain a profile of ICRI CSP 4 to 6 in accordance with ICRI 03732.
- D. Repair concrete surface to be free of holes. Fully open bug holes before repair. Repair defects in the concrete surface, such as bug holes, air pockets, and honeycomb by filling and smoothing off with patching material, epoxy patching compound, or grout. Abrasive blast repaired surfaces.
 - E. Ensure substrate is clean and dry in accordance with manufacturer's instructions. Remove surface laitance from concrete surface to expose aggregate to obtain a profile of ICRI CSP 4 to 6 in accordance with ICRI 03732.
 - F. Repair cracks in concrete surface with material suitable for type and width of crack, compatible with substrate and high-performance coating, and approved by the Engineer.
 - G. The interior wall surface shall be air-dried. The relative humidity of the wall surfaces shall be less than 100% of the ambient environment. The structure may not show damp surfaces prior to the application of the lining.
 - H. Moisture Tests: Do not apply primer or high-performance coating to concrete surface unless two or more of the following moisture tests confirm appropriate moisture levels for properly prepared substrates:
 1. Plastic Sheet Method (ASTM D4263): Pass/Fail.
 2. Relative Humidity Test: Less than 75 percent relative humidity at 70 degrees F.
 3. Calcium Chloride Test: Less than 5 pounds per 1,000 square feet per 24 hours.
 4. Radio Frequency Test: Less than 5 percent moisture.

2.3 APPLICATION

- A. Apply primer to concrete surface a minimum of 5-mils wet thickness. A Uniform coating free of holidays or pinholes is necessary to minimize outgassing effects curing the application of the high-performance coating to porous surfaces such as concrete. Surfaces may require additional coats to obtain a pinhole free finish.
- B. Allow primer to cure in accordance with manufacturer's instructions before top coating with the high-performance coating.
- C. Apply high-performance coating in accordance with manufacturer's instructions.
- D. Keep material containers tightly closed until ready for use.
- E. Keep equipment, air supplies, and application surfaces dry.
- F. Mix and apply when high-performance coating is above 60 degrees F (15 degrees C).
- G. Do not use adulterants, thinners, or cutback solutions.
- H. Blend and mix 2-component materials in accordance with manufacturer's instructions. Do not thin. Do not hands mix components
- I. Maintain air supply for material spray application free of oil and water in accordance with ASTM D4285.
- J. Apply high-performance coating directly to a clean and dry surface or to reinforcing fabric. Vertical surfaces will require multiple coats.

- K. Apply a 6 to 12-inch wide strip of joint cover sheet over cracks over 1/8-inch wide, non-working joints, and edges. Adhere center joint cover sheet over all joints by applying a tack coat of the high-performance coating.
- L. Apply sufficient high-performance coating to achieve 60-mils wet film thickness for containment of wastewater.
- M. Joint Lines:
 1. Prepare for joint lines should rain or other conditions require work stoppage or extended delay.
 2. Install joint lines clean and straight. Install overlap 6-inches minimum to ensure an impervious joint.
 3. Severely abrade with wire brush or sandpaper and apply bonding agent to all areas where the high-performance coating has cured beyond its recoat window.
- N. Recoating:
 1. Recoat the high-performance coating system within the recoat window to obtain maximum interlayer adhesion to build specific thickness.
 2. Immersion Service: Minimize areas to be recoated outside the recoat window, except at joint lines.
 3. Non-Immersion Service: Severely abrade with wire brush or surface grinder, apply bonding agent, and recoat, if high-performance coating has cured more than the recoat window. Acceptable adhesion can only be achieved through aggressive abrading.

2.4 CURING

- A. Cure high-performance coating in accordance with manufacturer's instructions.
- B. Curing Time:
 1. Allow sufficient time for solvents to evaporate from the cured high-performance coating before placing into service.
 2. Allow minimum solvent release time of 24-hours to 48-hours at 60 degrees F (15 degrees C) for a 60-wet mil coating thickness.
- C. Receive approval of cured coating by Engineer.

MEASUREMENT AND PAYMENT

Rehabilitation of existing wetwells will be measured and paid per lump sum. The contract lump price paid for rehabilitation of existing wetwells shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer and no separate payment will be made therefor.

PART 3 DUCTILE IRON PIPE, FITTINGS AND APPURTENANCES

3.1 SLEEVE-TYPE FLEXIBLE COUPLINGS

- A. Construction. Sleeve-type flexible couplings shall be provided where shown on the Contract Documents. Sleeve-type flexible couplings shall be of steel, without pipe stop, and shall be of sizes to fit the pipe and fittings shown. The middle ring shall be not less than 1/4-inch in thickness and shall be a minimum of 7 inches long. The followers shall be single-piece contoured mill section welded and cold expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket. Sleeve-type flexible couplings shall be manufactured by, or approved equal:
 1. Dresser, Style 38 or 138
 2. Smith-Blair, Style 411

- B. Pipe Preparation. The ends of the pipe, where specified or shown, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.
- C. Gaskets. Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. The gaskets shall be immune to attack by impurities normally found in water, wastewater, and wet well ventilation air, and shall be suitable for use with temperatures at 180 degrees F. All gaskets shall meet the requirements of ASTM D2000, AA709Z, meeting Suffix B13 Grade 3, except as noted above.
- D. Buried couplings shall include stainless steel nuts, bolts, washers, and tie rods.
- E. Sleeve-type couplings shall be sized for specific pipe material indicated in pipe schedule.
- F. Reducing and/or transition couplings shall be used to join new pipe to existing pipe where shown on the Drawings. CONTRACTOR shall field verify existing pipe dimensions prior to ordering materials.
- G. Where cement mortar coated pipe is to be provided with couplings, cement mortar coatings shall be left back for coupling. Pipe shall be coated with amine-cured epoxy at location of coupling and cement mortar coating intersection. Pipe lining shall be repaired due to welding of tie rods to piping.

3.2 FLANGE COUPLING ADAPTERS

- A. Flange adapters shall be fabricated from high strength steel. Flanges shall be supplied to AWWA C207 as well as all ANSI standards. Compression ends shall have wedge gasket for efficient sealing. Gasket material shall be suitable for raw wastewater. All miscellaneous metalwork items shall be Type 316 stainless steel.
- B. Pipe ends shall be properly prepared for accepting the flange adapter in accordance with manufacturer's recommendations. The outside diameter and pipe type shall be verified prior to ordering adapters. Flange adapters shall be lined and coated with fusion bonded epoxy, Protective Coatings.
- C. Where cement mortar coated pipe is to be provided with couplings, cement mortar coatings shall be left back for coupling. Pipe shall be coated with amine-cured epoxy at location of coupling and cement mortar coating intersection. Pipe lining shall be repaired due to welding of tie rods to piping.
- D. Flange adapters shall be manufactured by, or equal.
 - 1. Dresser, Style 128.
 - 2. Smith-Blair

3.3 PIPE FLANGES

- A. Flanges. Flanges shall conform to either ANSI/AWWA C207 Class D or ANSI B16.5 150-lb. class. Where the design pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to either ANSI/AWWA C207 Class E, Class F, or ANSI B16.5 150-lb. class. Flanges shall have flat faces and shall be attached with bolt holes straddling the vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of ANSI/AWWA C207. Flanges for miscellaneous small pipes shall be in accordance with the standards specified for these pipes.
- B. Blind flanges. Blind flanges shall be in accordance with ANSI/AWWA C207, or with the standards for miscellaneous small pipes.
- C. Flange coating. All machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is

completed.

- D. Flange bolts. Studs and bolts shall extend through the nuts a minimum of 1/4-inch. All bolts and nuts shall be Type 316 stainless steel.
- E. Flange gaskets. Gaskets for flanged joints shall be full-faced, 1/16-inch thick compressed sheets of aramid fiber base, with nitrile binder and non-stick coating, suitable for temperatures to 700 degrees F, a pH of one to eleven, and pressures to 1000 psig. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted. Flange gaskets shall be suitable for service including raw wastewater.
- F. Flange gasket suppliers, or approved equal:
 - 1. John Crane, Style 2160
 - 2. Garlock
 - 3. Klinger
- G. Flange Insulating Joints. Where shown or where existing flange insulating joints are removed, flange insulated joints shall be used to insulate the pipe. Insulating joints shall also be provided between dissimilar pipes. The insulation shall include non-conductive full-faced gaskets and sleeves and washers for the bolts. Insulating joints shall be provided for flange and plain end where required.

3.4 VALVES

- A. Valves shall be the same size as the pipelines in which they are installed, unless specifically sized.
- B. Install no valve with its stem pointing down, unless specifically shown on the Drawings.
- C. The CONTRACTOR shall furnish all valves, valve-operating units, stem extensions, and other accessories. All valves of the same style or type shall be furnished by a single manufacturer. All valves shall have the name of the maker and the working water pressure for which they are designed cast in raised letters upon some appropriate part of the body. All valves and gates shall be new and of current manufacture. All shut-off valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers containing position indicators, and valve extensions.
- D. Wherever stainless steel is specified in this Section, it shall be AISI Type 316, unless otherwise specified.
- E. Gate and globe valves shall be installed with stems horizontal or vertical above the pipe, except as specifically indicated otherwise.
- F. Valve Flanges. The flanges of valves shall be in accordance with Section 00 2600,
- G. Protective Coating. Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4-inch and larger, as well as the exterior surfaces of all valves, shall be coated as specified in Section 09800, Protective Coatings. Flange faces of valves shall not be coated. The valve manufacturer shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications.
- H. Bolts and Miscellaneous Metalwork. Where dissimilar metals are being bolted, stainless steel bolts shall be used. Underground bolts shall be Type 316 stainless steel, unless specifically noted to the otherwise.

3.5 PIPE SLEEVE

- A. Pipe sleeves shall be provided where pipelines pass through new concrete walls that are to be watertight. The sleeves shall be non-metallic, non-corrosive, thermoplastic material and shall be formed to have a water stop and anchor plate at least 4 inches larger than the main outside diameter. The sleeves shall be as manufactured by, or equal:
 - 1. Link-Seal Century Line
 - 2. Thunderline Corporation

3.6 PIPE SUPPORT SYSTEMS

A. General.

1. Piping shall be supported to accommodate loading, expansion, and contraction.
2. No attempt has been made to show all required pipe supports on all locations. The absence of pipe supports and details on Contract Documents shall not relieve the CONTRACTOR of the responsibility for providing them where required.
3. Where piping connects to equipment, it shall be supported by a pipe support and not by the equipment.
4. Pipe support system components shall withstand the dead loads imposed by the weight of the pipes filled with water, plus any insulation, and shall have a minimum safety factor of 5. At each support, every pipe shall be provided with a pipe clamp or guide. The CONTRACTOR shall size and place all pipe support systems, and shall submit load calculations and pipe support design and locations to the ENGINEER for review prior to installation.
5. No punched strap, wire, or other makeshift devices will be accepted.
6. All exposed hangers, rods, clamps, protective shields, metal framing support components, and hanger accessories shall be hot dip galvanized. Submerged or potentially submerged (i.e., below grade within a structure, such as above the wet well; this does not include locations within the pump station building) components shall be Type 316 stainless steel.
7. All pipe supports shall be in accordance with the Contract Documents or as directed by the ENGINEER.

B. Vertical Pipe Supports.

1. Where exposed pipes change from horizontal to vertical, the pipes shall be supported on the horizontal runs within 2 feet of the change in direction.
2. For vertical runs exceeding 10 feet, pipes shall be supported by a base elbow.
3. All vertical pipes shall be supported at intervals of no more than 8 feet, on wall rests, and at all points necessary to ensure rigid construction.
4. All pipe supports shall be in accordance with the Contract Documents or as directed by the ENGINEER.

- C. Special Supports. Any required pipe supports for which the supports specified in this Section are not applicable shall be fabricated or constructed from standard structural steel shapes, concrete, and anchor hardware similar to items previously specified herein and shall be subject to the approval of the ENGINEER.

MEASUREMENT AND PAYMENT

DIP pipes, fitting, valves and appurtenances will measured and paid per lump sum. The contract lump price paid shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer and no separate payment will be made therefor.

PART 4 INSTALLATION OF THREE NT 3153 PUMPS

District will furnish three Flygt pumps and horizontal mounting kits to the Contractor at no expense. Contractor shall work with Shape, Inc. in the installation of three pumps as shown on the plans and as required by the manufacturer's specifications.

MEASUREMENT AND PAYMENT

Installation of pups will be measured and paid per lump sum. The contract lump price paid shall include full compensation for furnishing all labor, materials except for three Fygt pumps and horizontal mounting kits, tools, equipment, and incidentals, and for doing all the work, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer and no separate payment will be made therefor.

PART 5 INSTALLATION OF 12" CONNECTION BETWEEN TWO WETWELLS

Contractor shall remove existing fixture attached to 5" pipe connector between two existing wetwell and keep existing 5" connector in operable condition.

Contractor shall drill 15" diameter hole between two existing wetwell and install 12" pipe connector as shown on the plans.

MEASUREMENT AND PAYMENT

Installation of 12 inch connector between two existing wet wells will measured and paid per lump sum. The contract lump price paid shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer and no separate payment will be made therefor.

PART 6 INSTALLATION OF PVC INSIDE WETWELL DROPS

Contractor shall install two PVC inside drop fixtures as shown on the plans within the existing wetwell after wetwell has been rehabilitated.

MEASUREMENT AND PAYMENT

Installation of two PVC inside drop fixtures will measured and paid per lump sum. The contract lump price paid shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer and no separate payment will be made therefor.

CP-10 MANHOLE

- Conform to Paragraph 4.16, "Manholes" and 4.17, "Protection of Manholes Backfilling of the District Standard Specifications.
- Conform to other Paragraphs of Section 4 of the District Standard Specifications in regards to excavation, safety, disposal, backfilling, etc. as applicable for the construction of the sewer manhole.
- This includes removal of top half of existing VCP within the manhole and channelizing bottom of manhole.
- This includes reconnecting existing 8" sewer main with two 45 degree PVC bends and band coupler.

MEASUREMENT AND PAYMENT

Measurement will be made per each of manholes installed.

The contract unit price paid each manholes will be measured per each and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work

necessary including but not limited to pipe connection, channelization, asphalt concrete pavement restoration or concrete collar, complete in place as shown on the plans, as specified in these specifications, and as directed by the District Engineer.

CP-13 FORCE MAIN

- Conform to Paragraph 4.01 through 4.20 of the District Standard Specifications
- Excavation of pit may disrupt existing flushing inlet. Provide shop drawing for work around to maintain sewer flow if required.
- Replace paragraphs 4.09 Jacking/Micro-Tunneling (Horizontal Directional Drilling) with:
 - A. Submit method and equipment to be used in jacking or micro-tunneling (horizontal directional drilling) to District Engineer for approval with a description of Contractor's proposed operations before proceeding with the work. Approval of the proposed method by the District Engineer will not relieve the Contractor of the responsibility for damages of any nature, which occur as a result of the method used.
 - B. The Contractor shall be responsible for any jacking or micro-tunneling the casing into place with sufficient accuracy to permit installation of the pipe within it to the grade shown on the plans.
 - C. Submit detailed construction staging and operations of work required to complete installation of force main as shown on the plans.
 - D. Existing flushing inlet has a lateral service that will need to be maintained while a new manhole is to be constructed.

MEASUREMENT AND PAYMENT

Measurement will be made for 6" HDPE SDR 11 (Directional Drilling) by linear foot.

The contract unit price paid per linear feet for 6" HDPE by directional drilling shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved, including but not limited to boring pits/receiving pits, shoring, excavation, backfill, pavement restoration, channelization of manholes, and connections complete in place, as directed by the Engineer, as shown on the plans, and no separate payment will be made therefor.

CP-12 QUICK COUPLER AND ENCLOSURE

After 6" HDPE has been installed, contractor shall install 6" quick coupler and enclosure as shown on the plans.

MEASUREMENT AND PAYMENT

Measurement will be made per lump sum.

The contract lump price paid shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved, including but not limited to backfilling boring pits/receiving pits, shoring, excavation, backfill, pavement restoration complete in place, as directed by the Engineer, as shown on the plans, and no separate payment will be made therefor.

CP-13 CONCRETE PAD AND SIDEWALK

Concrete sidewalk and pad shall conform to the provisions of Section 73, "Concrete Curb and Sidewalk" of the State Standard Specifications and as herein provided.

The CONTRACTOR shall furnish all materials for concrete pad and sidewalk work in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished concrete in accordance with the requirements of the Contract Documents.

Concrete used for curb, gutters, sidewalks, and concrete pad shall have a minimum 28-day compressive strength of 3,000 psi, a maximum aggregate size of 3/4 inches, a minimum of five sacks of cement per cubic yard, and a maximum water to cement ratio of 0.50 by weight.

All concrete shall have an air entrainment of 4.0 ± 1.0 percent.

Concrete forms shall be metal, wood, plywood, or other approved material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade indicated. Metal forms shall be an approved type that will accomplish such results.

Reinforcement steel shall be deformed bars conforming to ASTM A615 Grade 60 or ASTM A706. Welded wire fabric shall conform to latest edition of CRSI Manual of Standard Practice.

Expansion joint filler shall be 1/2-inch thick, asphalt-impregnated, expansion joint material, conforming to ASTM D994.

Curing shall begin as soon as free water has disappeared from concrete surfaces after placing and finishing. Curing materials shall be applied and maintained so as to protect the concrete from moisture loss. Water used in curing shall be potable. Curing shall be accomplished by moist curing method. Unformed surfaces shall be covered with absorptive materials wetted before placing. Absorptive materials or forms used in curing shall be kept continually wet.

MEASUREMENT AND PAYMENT

Concrete pad will be measured for payment as a lump sum bid item. Sidewalk will be measured for payment by square feet.

The contract lump sum price paid for concrete pad and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved including reinforcement, drill and bond dowels per plans, complete and in place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

The contract unit price paid for sidewalk shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved with concrete sidewalk restoration, complete and in place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

CP-14 BOLLARDS

Bollards shall be installed as shown on the plans. Bollard shall be steel with minimum 6" in diameter as manufactured by Ideal Shield, Inc. or approved equal and shall be 6 feet long. Bollard shall be installed with yellow reflective bollard covers.

MEASUREMENT AND PAYMENT

Bollards will be measured for payment as a lump sum bid item.

The contract lump sum price paid for bollard shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved including drilling 12” diameter hole and backfilling with concrete, complete and in place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

CP-15 DECOMPOSED GRANITE PEDESTRAIN WALKWAY

Contractor shall construct decomposed pedestrian walkway as shown on the plans and specified herein.

Decomposed granite must be decomposed granite rock screenings graded from 3/8-inch particles to dust. The color of decomposed granite must be uniform and tan to golden brown.

The material must comply with the following gradation:

Grading Requirements

Sieve Size	Percent Passing
3/8-inch	90-100
No. 4	80-100
No. 8	75-80
No. 16	55-65
No. 30	40-50
No. 50	25-35
No. 100	20-25
No. 200	5-15

Note: Gradation based upon AASHTO T11-82 and T27-82

MEASUREMENT AND PAYMENT

Decomposed granite pedestrian walkway will be measured by the square foot.

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Decomposed Granite”. This price shall be full compensation for furnishing and placing of decomposed granite rock, all materials, tools, labor, equipment and incidentals including but not limited to grading, formwork, conforming to existing pathway and backfilling complete in place and no separate payment will be made therefor.

CP-16 RESTORE IRRIGATION SYSTEM

Contractor shall restore damaged irrigation system in kind as soon as practical so that the existing landscaped area will be watered. Irrigation system shall be restored within 2 weeks after it has been removed due to construction.

MEASUREMENT AND PAYMENT

Restore Irrigation System will be measured for payment as a lump sum bid item.

The contract lump sum price paid for restoring existing irrigation system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved including grading and formwork, complete and in place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

CP-17 ELECTRICAL SPECIFICATION

1.01 SECTION INCLUDES

- A. Work Included:
 - 1. Provide all required labor, project equipment and materials except for District's furnished materials, tools, construction equipment, safety equipment, transportation, and test equipment, and satisfactorily complete all electrical work shown on the Drawings, included in these Specifications, or required for a complete and fully operating facility. In addition, provide wiring and connections to existing equipment and for the equipment that will be provided under other sections of these Specifications.
 - 2. Provide all conduit for the Instrumentation and Controls as specified herein. Install all Instrumentation and Control as provided by District. All other necessary Instrumentation and Controls wire shall be provided as herein specified and specified elsewhere in these specifications.
 - 3. Auxiliary Devices: Provide conduit and wire for power and control for all auxiliary devices such as solenoid valves, pressure switches, and instruments that are included as part of a manufacturer's packaged system as specified herein and specified elsewhere in these specifications. Contractor shall be responsible for conduit and wire to these auxiliary devices even if not specifically shown on the Drawings or specified herein.
- B. Safety: Conduct operations in accordance with NFPA 70E, Standard for Electrical Safety Requirements for Employee Workspaces.
- C. Operation and Maintenance Manuals:
 - 1. Furnish manuals for all electrical, instrumentation and control equipment specified in the equipment Specifications.
 - 2. In each manual, include equipment descriptions, record shop drawings, operation and maintenance instructions, parts ordering data and ratings for the equipment furnished for this project.
- D. Drawings: The Electrical Drawings are diagrammatic; exact locations of electrical products shall be verified in the field with the Engineer. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the requirements or descriptions in this Specification shall take precedence in the event of conflict.
 - 1. Locations of equipment, inserts, anchors, motors, panels, pull boxes, manholes, conduits, stub-ups, fittings, lighting fixtures, power and convenience outlets, exterior lighting units and ground wells are approximate unless dimensioned; verify locations with the Engineer prior to installation. Field verifies scaled dimensions on Drawings.
 - 2. Review the Drawings and Specification Divisions of other trades and perform the electrical work that will be required for the installations.

3. Should there be a need to deviate from the Electrical Drawings and Specifications, submit written details and reasons for all changes to the Engineer for favorable review.

1.02 WORKMANSHIP

- A. All electrical installations shall conform to the codes and standards outlined in this Section.
- B. Assign a qualified representative who shall supervise the electrical construction work from beginning to completion and final acceptance.
- C. Perform all labor using qualified craftsmen, who have had experience on similar projects. Provide first-class workmanship for all installations.
- D. Ensure that all equipment and materials fit properly in their installations.
- E. Perform any required work to correct improperly fit installations at no additional expense to the Owner.

1.03 EXCAVATION AND BACKFILL

- A. Provide the excavations for electrical equipment foundations and trenches for conduits as shown on the Drawings.
- B. Exercise caution during all excavation work and avoid damage to existing underground pipes. Exercise extreme caution when working near existing electrical conduits and facilities. Field verifies the location of all electrical facilities before proceeding with any nearby work.

1.04 CONDUCTOR IDENTIFICATION

- A. Identify all wires and cables in conformance with the requirements of these specifications. This requirement applies to all equipment provided or included under this contract, as well as to all conductors provided or worked on during this contract.

1.05 INSTALLING EQUIPMENT

- A. Provide the required inserts, bolts and anchors, and securely attach all equipment and materials to their supports.
- B. Install all floor-mounted equipment on 3-inch-high reinforced concrete pads. The Contractor, suppliers, and fabricators shall take this requirement into consideration when designing, fabricating, and installing panels, motor control centers, and other enclosures so that height above the floor of the operating handles of electrical devices meets the requirements of these Specifications and applicable codes.

1.06 CUTTING, DRILLING, AND WELDING

- A. Provide any cutting, drilling, and welding that is required for the electrical construction work.
- B. Structural members shall not be cut or drilled, except when favorably reviewed by the Engineer. Use a core drill wherever it is necessary to drill through concrete or masonry.
- C. Provide the required welding for equipment supports. Conduits and fittings shall not be welded to structural steel.
- D. Perform patch work with the same materials as the surrounding area and finish to match.

1.07 FIELD TESTS

- A. Give sufficient notice to the Engineer prior to any test to permit witnessing the test.
- B. It is the intent of these tests to ensure that all electrical equipment is operational within industry and manufacturer's tolerances and is installed in accordance with the Contract Documents and manufacturer's instructions. The tests and inspections shall determine the suitability for energization.
- C. Submit a test report which includes the following:

1. Name of project, name of person performing test, and date of test
2. Description of equipment tested
3. Description of test
4. List of test equipment used and calibration date
5. Test results
6. Conclusions and recommendations
7. Appendix, including appropriate test forms

The test report shall be bound and its contents certified. Submit the completed report directly to the Engineer no later than thirty (30) days after completion of the test unless directed otherwise. Number of reports to be submitted for review shall be the same as the number required for shop drawing submittals.

- D. Safety practices shall include, but are not limited to, the following requirements:
 1. Occupational Safety and Health Act of 1970, OSHA.
 2. Accident Prevention Manual for Industrial Operations, Seventh Edition, National Safety Council, Chapter 4.
 3. Applicable state and local safety operating procedures.
- E. Retesting will be required for all unsatisfactory tests after the equipment or system has been repaired. Retest all related equipment and systems if required by the Engineer. Repair and retest equipment and systems, which have been satisfactorily tested but later, fail, until satisfactory performance is obtained.
- F. Putting Equipment and Cables into Service: Submittal and favorable review of the specified factory and field tests shall occur before the Contractor is permitted to place the respective equipment or cable into service.
- G. Miscellaneous Tests
 1. Insulation Resistance, Continuity, and Rotation: Perform routine insulation resistance, continuity and rotation tests for all distribution and utilization equipment including all motors 1/2 horsepower and larger prior and in addition to tests performed by the testing laboratory specified herein. Supply a suitable and stable source of test power to the test laboratory at each test site. The testing laboratory shall specify requirements. Notify the testing laboratory when equipment becomes available for acceptance tests. Work shall be coordinated to expedite project scheduling. All testing shall be performed in the presence of the Engineer. The testing laboratory shall be responsible for implementing all final settings and adjustments on protective devices and tap changes. Any system material or workmanship that is found defective on the basis of acceptance tests shall be reported directly to the Engineer. The testing laboratory shall maintain a written record of all tests and upon completion of project, assemble and certify a final test report.
 2. Motor Current: Measure and record current in each phase for each new motor. Include measurement of the motor terminal voltages and motor currents when the motor is being operated at normal operating loads. For motors that are part of variable frequency drive systems, use true-RMS-reading instruments in making the measurements.
 3. Operational Tests: Operationally test all circuits to demonstrate that the circuits and equipment have been properly installed, adjusted and are ready for full-time service. Demonstrate the proper functioning of circuits in all modes of operation including alarm conditions, and demonstrate satisfactory interfacing with the data acquisition and alarm systems.

1.08 EQUIPMENT PROTECTION

- A. Exercise care at all times after installation of equipment, motor control centers, etc., to keep out foreign matter, dust, dirt, debris, or moisture. Use protective sheet metal covers, canvas, heat lamps, etc., as needed to ensure equipment protection.

1.09 CLEANING EQUIPMENT

- A. Thoroughly clean all soiled surfaces of installed equipment and materials.
- B. Clean out and vacuum all construction debris from the bottom of all equipment.
- C. Provide and touch-up to original condition any factory painting that has been marred or scratched during shipment or installation, using paint furnished by the equipment manufacturer.

1.10 CLEANUP

- A. Upon completion of the electrical work, remove all surplus materials, rubbish, and debris that accumulated during the construction work. Leave the entire area neat, clean, and acceptable to the Engineer.

OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 – general

1.01 WORK INCLUDED

A. General

1. Provide a complete arc flash hazard study to help protect individuals working in the facilities from electrical arc flash injuries. These individuals may include any workers who inspect, maintain or operate energized electrical equipment.
2. All references to codes, standards, and published material below apply to latest applicable edition.
3. The study is needed for compliance with the applicable standards for new system installations (California Electrical Code, CEC 110.16) and for worker safety in operating facilities (OSHA 29 CFR 1910, NFPA 70E).
4. Provide Arc Flash Hazard Warning Labels. These labels are intended to assist technicians and others in the selection of proper Personal Protective Equipment when working around exposed and energized conductors.

B. Scope

1. Accurate electrical system single-line diagram as required by NFPA 70E, “Standard for Electrical Safety in the Workplace”, as referenced in OSHA 29 CFR 1910 Subpart S, Appendix A. Include the following on the single line diagram.
 - a. Nameplate data for electrical components (e.g. transformers, medium voltage switchgear, panelboards, switchboards, motor control centers, etc.)
 - b. Cable sizes, types and lengths between electrical equipment components.
 - c. Unique characteristics of the equipment installation which may impact the magnitude of the potential hazard (e.g. open space versus enclosure).
 - d. Verified overcurrent device settings.
2. Short Circuit Study in accordance with ANSI standard C37 and IEEE standard 141 (Red Book).
3. Coordination Study in accordance with IEEE 242 “Buff” to determine the proper overcurrent device settings that will balance system reliability through selective coordination while minimizing the magnitude of an electrical arc flash hazard incident.
4. Incident Energy Study in accordance with the IEEE 1584 “IEEE Guide for Performing Arc Flash Hazard Calculations” as referenced in NFPA 70, “Standard for Electrical Safety in the Workplace”, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE selection are not acceptable.


1.02 SUBMITTALS

- A. Comprehensive report that includes:
 - 1. Report summary with analysis methodology, findings and recommendations.
 - 2. Summary of input data for utility source, equipment and cables.
 - 3. Available fault current at each equipment location with comparison to equipment rating.
 - 4. Overcurrent device settings (e.g. pick-up, time delay, curve).
 - 5. Incident energy level (calories/cm²) for each equipment location and recommended PPE.
 - 6. Overcurrent device coordination curves including related section of the single-line diagram.
- B. LABELS
 - 1. Installed warning labels (orange <40 cal/cm²) or danger label (red > 40 cal/cm²) in accordance with ANSI Z535.4. The label must be readable in both indoor and outdoor environments for at least 3 years and contain the following information (see sample label, attached);
 - a. Arc hazard boundary (inches).
 - b. Working distance (inches).
 - c. Arc flash energy at the working distance (calories/cm²).
 - d. PPE category with reference to NFPA 70E definitions.
 - e. Voltage rating of the equipment.
 - f. Limited approach distance (inches).
 - g. Restricted approach distance (inches)
 - h. Prohibited approach distance (inches)
 - i. Equipment/bus name.
 - j. Date prepared.

PART 2 – EXECUTION

2.01 QUALITY ASSURANCE

- 1. Provide all necessary material, equipment, labor, and technical supervision to perform the arc flash hazard analysis.
- 2. Utilize engineers and technicians that are experienced and regularly perform electrical power system testing.
- 3. Personnel performing the arch flash analysis shall be trained and experienced in accordance with NETA Training Specifications concerning the apparatus and systems being evaluated.

 WARNING	
Arc Flash and Shock Hazard Appropriate PPE Required	
488 Inch	Flash Hazard Boundary
40.0	cal/cm² Flash Hazard at 45 inches
Class 4	See NFPA 70E for definitions
480 VAC	Shock Hazard when cover is removed
00	Glove Class
42 Inch	Limited Approach (Fixed Circuit)
12 inch	Restricted Approach
1 inch	Prohibited Approach
Bus: CPK431A LINE Prot: F5/SUB CPK431A	

CONDUIT, RACEWAYS, AND FITTINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provisions: Applicable provisions of District's Standard Specifications shall become part of this Section as if repeated herein.
- B. Work specified in other sections:
 - 1. Earthwork, Excavation and Backfill of Trenches
 - 2. Concrete, Grout and Precast Structures

1.02 REFERENCE STANDARDS

- A. American National Standards Institute (ANSI) Publications:
 - 1. C80.1 Specification for Zinc Coated Rigid Steel Conduit
 - 2. C80.3 Specifications for Zinc Coated Electrical Metallic Tubing
- B. Federal Specifications (FS):
 - 1. FS W-C-1094 W-C-1094A Conduit and Conduit Fittings, Plastic, Rigid
 - 2. FS WW-C-540 WW-C-540A Conduit, Metal, Rigid, (Electrical, Aluminum)
WW-C-540C Conduit, Metal, Rigid & Coupling, Elbow & Nipple, Electrical Conduit, Aluminum
 - 3. FS WW-C-566 WW-C-566C Flexible Metal Conduit
- C. National Electrical Manufacturers Association (NEMA) Publications:
 - 1. RN 1 Polyvinyl Chloride Externally Coated Galvanized Rigid Steel Conduit and Electrical Metallic Tubing
 - 2. TC 6 PVC and ABS Plastic Utilities Duct for Underground Installation
 - 3. TC 14 Filament-Wound Reinforced Thermosetting Resin Conduit
- D. Underwriters Laboratories (UL) Standards:
 - 1. 6 Rigid Metal Electrical Conduit
 - 2. 360 Liquid-Tight Flexible Steel Electrical Conduit

3. 651 Electrical Rigid Nonmetallic Conduit
4. 651A Type EB and A Rigid PVC Conduit and HDPE Conduit

1.03 SUBMITTALS

- A. Submit material or equipment data as required.

1.04 LOCATIONS

- A. As shown on plans and directed by the Engineer.

PART 2 - PRODUCTS

2.01 CONDUIT, RACEWAYS

A. General:

1. Rigid steel conduit shall be used in all conduit systems, except where otherwise shown on the Drawings, where flexible conduit is required, or where these Specifications require, or allow the use of polyvinyl chloride (PVC) conduit.
2. The minimum size raceway shall be 3/4-inch unless indicated otherwise on the Drawings.

- B. Galvanized Rigid Steel Conduit (GRS) shall be hot-dip galvanized after fabrication, conforming to ANSI C80.1 and UL 6. Couplings shall be threaded type. Where PVC coated rigid steel conduit is called for, it shall be hot-dip galvanized, conforming to NEMA RN 1, with factory-applied PVC coating 40 mils thick.

C. Flexible Conduit:

1. Flexible metal conduit shall be liquid-tight, shall have a moisture- and oil-proof PVC jacket extruded over a galvanized, flexible steel conduit, and shall conform to UL 360.
2. Flexible conduit for hazardous locations shall be UL listed for the applicable Class, Division, and Group.

- D. Rigid Nonmetallic Conduit: Rigid nonmetallic conduit shall be PVC Schedule 40 (PVC-40) conduit approved for underground use and for use with 90°C wires, and shall conform to UL 651.

2.02 CONDUIT SUPPORTS

- A. Supports for individual conduits shall be galvanized malleable iron one-hole type with conduit back spacer.
- B. Supports for multiple conduits shall be hot-dip galvanized Unistrut or Superstrut channels, or approved equal. All associated hardware shall be hot-dip galvanized.
- C. All channels, strut, threaded rods, nuts and clamps in corrosive areas shall be of epoxy resin reinforced fiberglass material. Provide Robroy, Superstrut, or approved equal.

2.03 FITTINGS

- A. Fittings for use with rigid steel shall be hot dipped galvanized steel or galvanized cast ferrous metal; access fittings shall have gasketed cast covers and be Crouse-Hinds Condulets, Appleton Unilets, or approved equal. Provide threaded-type couplings and connectors; set-screw type and compression-type are not acceptable.
- B. Fittings for use with either rigid nonmetallic conduit or duct shall be PVC and have solvent-weld-type conduit connections. If such are not available, then the Specification for PVC coated galvanized rigid steel fittings shall apply.
- C. Fittings for flexible conduit shall be Appleton Type ST, O-Z Gedney Series 4Q, or approved equal.
- D. Union couplings for conduits shall be the Erickson type and shall be Appleton Type EC, O-Z Gedney 3-piece Series 4, or approved equal. Threadless couplings shall not be used.
- E. Bushings:

1. Bushings shall be the insulated type.
 2. Bushings for rigid steel shall be hot dip galvanized insulated grounding type, 0-Z Gedney Type HBLG, Appleton Type GIB, or approved equal.
- F. Conduit seals shall have zinc electroplate and shall be Crouse-Hinds Type EYS or EZS; Appleton Type EYS, ESU, or EY series; or approved equal.

2.04 CONDUIT SEALANTS

- A. Moisture Barrier Types: Sealant shall be a non-toxic, non-shrink, non-hardening, putty type hand applied material providing an effective barrier under submerged conditions.

2.05 WARNING TAPE

- A. Provide electrical warning tape in duct bank as shown on the Drawings. The tape shall be 6 inches wide, red with black lettering stating "CAUTION BURIED ELECTRIC LINE." The tape shall be made of 6-mil polymer with 36,000 psi tensile strength.

PART 3 - EXECUTION

3.01 CONDUIT, RACEWAY AND FITTING INSTALLATION

- A. From pull point to pull point, the sum of the angles of all of the bends and offsets shall not exceed 270 degrees.
- B. For power, control and signal circuits, provide conduit per Conduit Use Tables below, unless specifically indicated otherwise on the Drawings:
1. Exception: For raceways leaving a building above grade and then going below grade, provide PVC-coated GRS from a point 3 feet above grade to a point 5 feet from the building wall.
- C. At all boxes and equipment, provide insulated type metallic grounding bushings for metallic conduits. Bond together all conduits to provide continuity of the equipment grounding system. Size bonding conductor per code.
- D. Provide flexible conduit in lengths of not more than 18 inches at connections to motors, valves and any equipment subject to vibration or relative movement.
- E. Conduits embedded in concrete floors on grade shall be installed between grids of reinforcing steel, or shall be encased below the floors, provided the concrete is thickened in a manner satisfactory to the Engineer. Installation of conduit below the bottom of this slab is not acceptable; embedding or encasing is required
- F. Provide galvanized rigid steel factory ells for GRS raceways. Provide GRS for offsets in both GRS raceways.
- G. Underground Raceways: Where possible, slope all underground raceways to provide drainage; for example, slope conduit from equipment located inside a building to the handhole located outside the building.
- I. Conduit Supports: Properly support all conduits as required by the NEC. Run all conduits exposed except where the Drawings indicate that they are to be embedded in the floor slab, walls, or ceiling, or to be installed underground.
1. Exposed Conduits:
 - a. Support exposed conduits within 1 foot of any outlet and at intervals not exceeding NEC requirements; wherever possible, group conduits together and support on common supports. Support exposed conduits fastened to the surface of the concrete structure by one-hole clamps, or with channels. Use conduit spacers with one-hole clamps. Coordinate conduit locations with piping, equipment, fixtures, and with structural and architectural elements. Conduits attached to walls or columns shall be as unobtrusive as possible and shall avoid windows. Run all exposed conduits parallel to building lines.
 - b. Group together exposed conduits in horizontal runs located away from walls and support on trapeze hangers. Arrange such conduits uniformly and neatly. Trapeze hangers shall consist of channels of adequate size, suspended by means of rods

or other suitable means from the ceiling or from pipe hangers. Install such runs so as not to interfere with the operation of valves or any other equipment, and keep at least 6 inches clear of any pipe which may operate at more than 100°F. Treat cut surfaces or damaged ends with corrosion-resistant coatings such as "Devcon Z", prepared by Subox Coatings; "Galvanox Type I", prepared by Pedley-Knowles; or approved equal. Application shall follow manufacturer's recommendation.

2. Conduits Embedded in Concrete: Provide concrete cover at least equal to that of the reinforcing steel, space at 3 conduit diameters apart except where they cross at angles greater than 45 degrees, and install so as not to reduce the structural integrity of the concrete element.
- J. When expansion joints are crossed, whether conduit is embedded or exposed, provide watertight expansion fittings and bonding jumpers. In hazardous locations, provide Crouse-Hinds UNF/UNV, Appleton, or equal. In unclassified locations, provide Crouse-Hinds XD, Appleton, or equal.
- K. Spare Raceways: After completing a conduit run between manholes, handholes, or pullboxes, prove the integrity of the conduit run. Use an air compressor to blow in a pull-line, then use the pull-line to pull a mandrel through the entire conduit run. Install a new 3/16-inch nylon, 800 pound test pull-line which has tape measure marking every foot to indicate length. Plug the ends of the conduit, with conduit cap plugs.
- M. All conduit penetrations through interior walls and floors shall be sealed with fire retardant type conduit sealant.
- N. Conduit Identification: In each manhole, handhole, pullbox, cabinet, motor control center or other equipment enclosure, identify each conduit using the conduit number shown on the Drawings by means of a stamped brass tag affixed with stainless steel wire; where affixing a tag is not feasible, identify conduits by stenciling. Stencil all exposed conduits for identification at least once in each room.
- O. Conduit Seals:
 1. Moisture Seals: Provide in accordance with NEC Paragraph 300-5(g).
 2. Gas Seals: Provide in accordance with NEC Paragraph 501-5.
- Q. Conduit in finished areas shall be installed concealed.
- R. Conduit shall not be supported from T-bar ceiling suspension wires.
- S. Flexible metallic conduit shall have a maximum length of 6 feet. Flexible metallic conduit shall not be considered as a ground conductor. Flexible metallic conduit shall only be installed in exposed or accessible locations.
- T. Rigid PVC conduit shall be stored on a flat surface and shielded from the sun.

CONDUIT USE TABLE

Circuit Type	Exposed	Embedded in Concrete or Slab on Grade	Underground Duct Bank Encased In Concrete or Direct Buried	Underground Structures
Power & 120 Vac Control	PVC Coated GRS	GRS	PVC-40	PVC Coated GRS
Signal	PVC Coated GRS	GRS	PVC-40	PVC Coated GRS

* Provide ground wire sized per NEC requirements for all circuits.

Notes:

1. Generally, the Conduit Use Tables apply.
2. Signal circuits are those subject to RF interference or induced current. MSPs, TSPs, telephone cable, coaxial cable, and manufacturer's cables specially designed for low level signals are all presumed to be part of signal circuits.

3. Provide fiberglass conduit where indicated on the Drawings.

LOW VOLTAGE WIRE AND CABLE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provisions: Applicable provisions of Section 00 3200 become a part of this Section as if repeated herein.
- B. Related Work Described Elsewhere: Section 00 4100.

1.02 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 1. B3-74 Specification for Soft or Annealed Copper Wire
 2. B8-77 Specification for Concentric Lay Stranded Copper Conductors, Hard, Medium-Hard, or Soft
 3. B173-71 Specification for Rope Lay Stranded Copper Conductors Having Concentric Stranded Members
- B. Insulated Cable Engineers Association (ICEA):
 1. S-66-524 Cross-Linked Thermosetting Polyethylene Insulated Wire and Cable
- C. International Electrical Testing Association (NETA);
 1. ATS Acceptance Testing Specifications
- D. Underwriters Laboratories (UL) Standards:
 1. 44 Rubber Insulated Wire and Cable
 2. 62 Flexible Cords and Fixture Wire
 3. 83 Thermoplastic-Insulated Wires and Cables
 4. 510 Insulating Tape
 5. 719 Non-Metallic Sheath Cable
 6. 1063 Stranded Conductors for Machine Tool Wire

1.03 SUBMITTALS

- A. Submit material or equipment data in accordance with the Product Information category of the General Conditions and the submittal requirements.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. General: All conductors shall be copper. Wire or cable not specifically shown on the Drawings or specified, but required, shall be of the type and size required for the application and in conformance with the applicable code. All insulated conductors shall be identified with printing colored to contrast with the insulation color.
- B. Power and Control Conductors, 600 Volts and Below:
 1. Stranded copper wires shall be 600 volt Type THWN, sizes #12 and #10 AWG only.
 2. Stranded copper wire shall be 600 volt Type THWN, Class B stranding, sizes #14 AWG and larger.

2.02 SPLICES AND TERMINATIONS OF CONDUCTORS

- A. Splices:
 1. Wire and Cable Splicing Materials and Applications:
 - a. For Lighting Systems and Power Outlets: Wire nuts shall be twist-on type insulated connectors utilizing an outer insulating cover and a means for connecting and holding the conductors firmly. They shall be UL listed and suitable for connecting two to four solid copper conductors of #14 or #12 AWG size or two or three #10 AWG solid copper conductors.

- b. All Equipment: Crimp type connectors shall be insulated type, suitable for the size and material of the wires and the number of wires to be spliced and for use with either solid or stranded conductors. They shall be UL listed.
 - c. Division 16 Equipment and Power Conductors: Bolted pressure connectors shall be suitable for the size and material of the conductors to be spliced. They shall be UL listed and of the split bolt or bolted split sleeve type in which the bolt or set screw does not bear directly on the conductor.
 - d. All Equipment: Epoxy splice kits shall include epoxy resin, hardener, and mold, and shall be suitable for use in wet locations and hazardous locations.
- B. Terminations:
- 1. Low Voltage Terminations:
 - a. Crimp type terminals shall be UL listed, self-insulating sleeve type, with ring or rectangular type tongue, suitable for the size and material of the wire to be terminated, and for use with either solid or stranded conductors.
 - b. Terminal lugs shall be UL listed and of the split bolt or bolted split sleeve type in which the bolt or set screw does not bear directly on the conductor. Tongues shall have NEMA standard drilling.
 - c. Crimp with manufacturer recommended ratchet-type tool with calibrated dies. Hand crimping tools are not acceptable.
- C. Tape used for splices and terminations shall be compatible with the insulation and jacket of the cable and shall be of plastic material. Tape shall conform with UL 510.
- D. Wire markers shall be heat shrink type (Raychem; T&B; or approved equal) or plastic sleeve type. Wire numbers shall be permanently imprinted on the markers.

PART 3 - EXECUTION

3.01 CONDUCTOR INSTALLATION

- A. Provide the following types and sizes of conductors for the uses indicated for 600 volts or less:
 - 1. Stranded Copper, Sizes #12 and #10 AWG: As shown on the Drawings for circuits for receptacles, switches and light fixtures with screw-type terminals.
 - 2. Stranded Copper, Size #14 AWG and Larger, Individual Conductors or CC: As shown on the Drawings for the control of motors or other equipment. Size #14 shall not be used for power supplies to any equipment.
 - 3. Stranded Copper, Sizes #12 AWG and Larger: As shown on the drawings for motors and other power circuits.
- B. Color Coding: Provide color coding for all circuit conductors. Insulation color shall be white for neutrals and green for grounding conductors. An isolated ground conductor shall be identified with an orange tracer in the green body. Ungrounded conductor colors shall be as follows:
 - 1. 120/208 Volt, 3 Phase: Red, black and blue.
 - 2. 277/480 Volt, 3 Phase: Yellow, brown and orange.
 - 3. 120/240 Volt, 1 Phase: Red and black.
- C. Color coding shall be in the conductor insulation for all conductors #10 AWG and smaller; for larger conductors, color shall be either in the insulation or in colored plastic tape applied at every location where the conductor is readily accessible (e.g., enclosures, pull boxes, and junction boxes).
- D. Exercise care in pulling wires and cables into conduit or wire ways so as to avoid kinking, putting undue stress on the cables or otherwise abrading them. No grease will be permitted in pulling cables. Only soapstone, talc, or UL listed pulling compound will be permitted. The raceway construction shall be complete and protected from the weather before cable is pulled into it. Swab conduits before installing cables and exercise care in pulling, to avoid damage to conductors.
- E. Wrap all cables in manholes with fireproofing tape. Extend tape 1-inch into ducts.

- F. Cable bending radius shall be per applicable code. Install feeder cables in one continuous length unless splices are favorably reviewed.
- G. Provide an equipment grounding conductor, whether or not it is shown on the Drawings, in any flexible conduit or any raceway in which all or any portion of a run consists of non-metallic duct or conduit. For flexible conduit, an external bonding jumper is an acceptable alternative.
- H. In panels, bundle incoming wire and cables, No. 6 AWG and smaller, lace at intervals not greater than 6 inches, neatly spread into trees and connect to their respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Perform lacing with plastic cable ties or linen lacing twine. Where plastic panel wiring duct is provided for cable runs, lacing is not necessary when the cable is properly installed in the duct.
- I. For cables crossing hinges, utilize extra flexible stranded wire, make up into groups not exceeding 12, and arrange so that they will be protected from chafing and excess flexing when the hinged member is moved.

3.02 CONDUCTOR SPLICES AND TERMINATIONS

- A. Splices: Install all conductors without splices unless necessary for installation, as determined by the Engineer. Splices, when permitted and terminations shall be in accordance with the splice or termination kit manufacturer's instructions. Splice or terminate wire and cable as follows:
 - 1. Watertight Splices: Splices in concrete pull boxes, for any type of cable or wire, shall be watertight. Make splices in low voltage cables using epoxy resin splicing kits rated for application up to 600 volts.
- B. Terminations: Terminate stranded #14 wire using crimp type terminals where not terminated in a box lug type terminal. Terminals must be coordinated with type of terminal board where provided.

3.03 CONDUCTOR IDENTIFICATION

- A. Except for interior lighting and receptacle circuits, identify each wire or cable at each termination and in each pull box, junction box, hand hole, and manhole using numbered and lettered wire markers. All electrically common conductors shall have the same number. Each electrically different conductor shall be uniquely numbered. Identify panelboard circuits using the panelboard identification and circuit number. Identify motor control circuits using the equipment identification number assigned to the control unit by the motor control center manufacturer and the motor control unit terminal number. Identify other circuits as shown in the circuit schedule or as favorably reviewed by the Engineer.
- B. Conductor numbering shall be coordinated with the Interconnection Diagrams as specified.
- C. Conductors between terminals of different numbers shall have both terminal numbers shown at each conductor end. The terminal number closest to the end of the wire shall be the same as the terminal number.

3.04 FIELD TESTS

- A. Insulation Resistance Tests: For all circuits 150 volts to ground or more and for all motor circuits over 1/2 horsepower, test cables per NETA Paragraph 8.3.1. The insulation resistance shall be 20 mega ohms or more. Submit results for review.
- B. Phase Rotation: The phase rotation of all circuits shall be clockwise in sequence. The Contractor shall verify that each three-phase service, feeder and branch circuits meet this requirement. A record shall be kept at each circuit tested and, on completion, given to the Engineer for review.

BOXES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provisions: Applicable provisions of other portion of these specification become part of this Section as if repeated herein.
- B. Work Included:
 - 1. Installation of all necessary outlet boxes for wiring devices, lighting fixtures, and signal equipment as noted on the Drawings.
 - 2. Installation of junction boxes as required for the consolidation of conduit runs.
 - 3. Installation of pull boxes as necessary to aid in pulling in conductor.

1.02 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) Publication:
 - 1. A123 Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Product
- B. Federal Specifications (FS):
 - 1. W-C-586 Conduit Outlet Boxes, Bodies, and Entrance Caps, Electrical, Cast Metal
 - 2. W-J-800 Junction Box, Extension, Junction Box Cover, Junction Box (Steel, Cadmium or Zinc Coated)
- C. Underwriters Laboratories, Inc. (UL) Publications:
 - 1. 50 Electrical Cabinets and Boxes
 - 2. 514 Outlet Boxes and Fittings

1.03 SUBMITTALS

- A. Submit material or equipment data in accordance with the Product Information category of the General Conditions and the submittal requirements of Section 00 3200.

PART 2 - PRODUCTS

2.01 OUTLET, JUNCTION AND PULL BOXES

- A. Sheet Metal Boxes: Sheet metal boxes shall conform to UL 50, with a hot-dipped galvanized finish conforming to ASTM A123. Outlet boxes and switch boxes shall be designed for mounting flush wiring devices. Boxes and box extension rings shall be provided with knockouts. Boxes shall be formed in one piece from carbon-steel sheets. Outlet boxes shall not be less than 4 inches square and 1-1/2 inches deep. Ceiling boxes shall withstand a vertical force of 200 pounds for 5 minutes. Wall boxes shall withstand a vertical downward force of 50 pounds for 5 minutes. Gangable and through-wall types are not acceptable. Boxes shall conform to FS W-J-800D and UL 514.
- B. Cast Metal Boxes: Box bodies and cover shall be cast or malleable iron with a minimum wall thickness of 1/8-inch at every point, and not less than 1/4-inch at tapped holes for rigid conduit. Bosses are not acceptable. Mounting lugs shall be provided at the back or bottom corners of the body. Covers shall be secured to the box body with No. 6 or larger brass or bronze flathead screws. Boxes shall be provided with neoprene cover gaskets. Where only cast aluminum is available for certain types of fixture boxes, an epoxy finish shall be provided. Outlet boxes shall be of the FS types. Boxes shall conform to FS W-C-586C and UL 514.
- C. Non-metallic Boxes: Non-metallic boxes shall be hot-compressed fiberglass, one-piece, molded with reinforcing of polyester material, with minimum wall thickness of 1/8-inch.
- D. Pull Boxes and Junction Boxes: Except where NEMA 4X fiberglass boxes are called for, all boxes shall be fabricated from carbon steel per UL 50. Boxes shall be welded construction with all seams or joints closed and reinforced. Boxes shall be galvanized

after construction. Boxes intended for outdoor use shall be cast metal with threaded hubs and neoprene gasketed covers, or shall be of the fiberglass reinforced polyester type of 1/8-inch minimum thickness. Cover retention shall be by corrosion resistant stainless steel screws.

1. All boxes for wiring operating at 601 volts or higher shall be constructed without hinges and shall be pad lockable.
2. All boxes and cabinets shall be securely fastened to building structural members so as to prevent movement in any direction. Boxes shall not be supported by lighting fixtures, suspended ceiling support wires or freely hanging rods.
 - a. Covers of boxes and cabinets mounted in horizontal plane (top or bottom) shall either weigh not more than 40 pounds or shall require not more than 40 pounds of force to open or close.
 - b. Covers of boxes and cabinets mounted in vertical plane (front, back, sides) shall either weigh not more than 60 pounds or shall require not more than 60 pounds of force to open or close. All covers over 30 pounds shall be furnished with angle support at bottom to carry weight of cover for assembly.
 - c. Covers of boxes and cabinets weighing more than 30 pounds shall be provided with lifting handles or some means of grasping other than edges.
- E. Precast Pull Boxes: Precast concrete pull boxes shall be provided as shown on the Drawings and shall be Christy or approved equal. Provide precast concrete extensions as required. Covers shall be precast concrete marked to identify the service as indicated.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Outlet Boxes:
 1. Provide fixture outlets with proper fixture connectors.
 2. Box mounting height shall be dictated by the wiring device enclosed.
 3. Blanking covers shall be installed on all unused openings.
 4. Sheet metal boxes shall be used in dry non-corrosive locations where the conduit system is routed concealed in the walls and ceilings.
 5. Cast metal or molded non-metallic surface mounted boxes shall be used in exterior and/or in all wet locations.
 6. Bonding jumpers shall be used around all concentric or eccentric knockouts.
 7. Boxes shall be securely mounted to the building structure independent of conduits entering or exiting the boxes.
- B. Junction Boxes and Pull Boxes:
 1. Boxes shall be installed where required and where indicated on the Drawings.
 2. Boxes shall be readily accessible.
 3. Boxes shall not be installed in finished areas.
 4. Pull boxes shall be provided at least every 150 feet on long straight conduit runs. Spacing shall be reduced by 50 feet for each 90 degree bend. See Section 16110 for maximum bends in conduit systems.
 5. Box dimensions shall be in accordance with size and quantity of conductors and conduits entering and leaving box per NEC Article 370 requirements.
- C. Precast concrete pull boxes shall be installed in excavations as shown on the Drawings and as required. Precast concrete pull boxes and manhole installation shall conform to the following requirements:
 1. Pull box shall be placed on six inches, minimum, of crushed rock or compacted sand.
 2. Ground conductor shall be looped around the entire circumference of the pull box. Install above all insulated cables.
 3. Covers shall be installed on all pull boxes.

4. Precast pull boxes shall be installed level and flush with surrounding surfacing in paved areas and 1-1/2 inch above final grade in unpaved areas.

ELECTRICAL SERVICE CONTROL CABINET

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work under this section includes products, assemblies and basic installation methods required for electrical projects systems specified herein but shall not be limited to the following:
 1. Install District's furnished electrical component
 2. Electrical Service/Control Cabinet by Tesco
 3. Circuit Breakers
 4. Transformers

1.02 SUBMITTALS:

- A. Submit the following items:
 1. Review and confirm Tesco Submittals
 2. Panelboard

1.03 SERVICE VOLTAGES:

- A. Service equipment: Existing 480 volts, 3 phase, 4 wire WYE.

PART 2 - PRODUCTS

2.01 ELECTRICAL SERVICE/CONTROL CABINET

- A. General:
 1. Shall be as manufactured by TESCO – District furnished material.
- B. Bussing
 1. Buses shall be of sufficient cross-sectional area to meet UL Standard 891 on temperature rise. Through bus shall be extruded aluminum plated with Alstan 70 or 80 process, rated as indicated, and shall be braced to have a short circuit current as indicated. Aluminum bus connections shall be made with Belleville washers. The short circuit rating of the bus shall have a minimum rating of 50,000 RMS symmetrical amps unless otherwise noted on the drawings.
- C. Automatic Transfer Switch.
- D. Self-Contained Meter and Main Breaker - Existing.
- E. Soft Starter

2.02. CIRCUIT BREAKERS

- A. Manufacturer: General Electric, Square – D, Cutler Hammer, Siemens, or approved equal.
- B. Overcurrent Devices; Molded case, thermal magnetic circuit breakers 40 degrees Celsius, ambient compensated.
- C. Terminal Lugs: Approval for use with copper conductors.
- D. Additional Features: Refer to single line diagram for the following:
 - Number and type of circuit breakers
 - Bus ampacity and arrangements
 - Terminal lug size and location
 - Interrupting capacity
 - Service voltage

- Mounting arrangement
- G. Standards: shall be designed to meet the following applicable industry standards:
1. Underwriters' Laboratories - UL67, UL50
 2. NEMA PB1
 3. National Electrical Code

PART 3 – EXECUTION

3.01 ELECTRICAL SERVICE/CONTROL CABINET AND CONTROL PANEL:

- A. Set cabinets plumb and symmetrical with building lines.
- B. Free-standing cabinets and distribution panels, should be accurately aligned, leveled and bolted in place on integral full-length channels securely fastened to the concrete support pad.
- C. "Train" interior wiring: Bundle and clamp using specified plastic wire wraps.
- D. Touch-up paints any marks, blemishes, or other damaged finish suffered during installation.
- E. Replace cabinets, doors or trim exhibition dents, bends, warps or poor fit which may impede ready access, security or integrity.
- F. Install nameplates, legend plates, and panel directories, as specified herein.

GROUNDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provisions: Applicable provisions other section of specification become a part of this Section as if repeated herein.
- B. Work Included: Furnish all labor, material, equipment, tools and services necessary for the installation, connection and testing of all grounding as specified herein and as shown on the Drawings.

1.02 REFERENCE STANDARD

- A. American Society for Testing and Materials (ASTM) Publication:
 1. B228-02 Standard Specification for Concentric-Lay-Stranded Copper Clad Steel Conductors
- B. National Fire Protection Association (NFPA):
 1. 70 National Electric Code (NEC)
- C. International Electrical Testing Association (NETA) Publication:
 1. ATSAcceptance Testing Specifications for Electrical Equipment for Power Systems

1.03 SUBMITTALS

- A. Submit material or equipment data in accordance with these specifications.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The grounding systems shall consist of the ground rods, grounding conductors, ground bus, ground fittings and clamps, and bonding conductors to water piping and structural steel as shown on the Drawings. One system shown provides service and separately derived system grounds. A second system is an electronic ground system to provide for the discharge of static electricity.

2.02 SYSTEM COMPONENTS

- A. Ground Rods: Ground rods shall be cone pointed copper clad Grade 40 HS steel rods conforming to ASTM B228-02. The welded copper encased steel rod shall have a conductivity of not less than 27% of pure copper. Rods shall be not less than 3/4-inch in diameter and 10 feet long, unless otherwise indicated. Rods longer than 10 feet shall be made up of 10-foot units joined together with threaded couplings. The manufacturer's trademark shall be stamped near the top.
- B. Ground Conductors: Buried conductors shall be medium-hard drawn bare copper; other conductors shall be soft drawn copper. Sizes over No. 6 AWG shall be stranded. Coat all ground connections except the exothermic welds with electrical joint compound, non-petroleum type, UL listed for copper and aluminum applications.
- C. Ground Connections: Connection to ground rods and buried connections shall be by exothermic weld. Lugs for attachment of cables to steel enclosures shall be of the binding post type with a 1/2-13NC stud. Each post shall accommodate cables from #4 AWG to #2/0 AWG.
- D. Ground Rod Boxes: Boxes shall be a 9-inch-diameter precast concrete unit with hot-dip galvanized traffic covers. Units shall be 12-inches deep. Covers shall be embossed with the wording "Ground Rod."
- E. Ground Bus: Ground bus shall be a high conductivity copper alloy strap measuring 3/16-inch by 3/4-inch and of lengths as shown on the Drawings. Bus shall be predrilled and tapped to accept 8-32 brass machine screws on 12-inch centers.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Ground all equipment for which a ground connection is required per NEC whether or not the ground connection is specifically shown on the Drawings.
- B. Provide a ground rod box for each ground rod so as to permit ready access for the connection and/or removal of any pressure connectors to facilitate testing.
- C. Where ground rods must be driven to depths over 8 feet, increase rod diameter used, sufficiently to prevent the rod from bending or being damaged.
- D. Bond metallic water piping at its entrance into each building. Ground separately derived electrical system neutrals to the metallic water piping in addition to the system driven ground, per NEC requirements.
- E. Provide a ground wire in every conduit carrying a circuit of over 150 volts to ground.
- F. Provide UFER grounding electrode as shown on Drawings.
- G. Effectively bond structural steel for buildings to the grounding system using exothermic welds.

3.02 TESTING

- A. Conduct ground resistance tests using a ground megohmmeter with a scale reading of 25 ohms. Maximum resistance shall not exceed 10 ohms.
- B. Test methods shall conform to NETA Standard using the three electrode method. Conduct tests only after a period of not less than 48 hours of dry weather.
- C. Furnish to the Engineer a test report with recorded data of each ground rod location.

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Section includes but is not limited to:
 1. Furnishing and installing an automatic transfer switch.

1.2 SUBMITTALS

- A. Submit the following items:
 - 1. Automatic transfer switch.
 - 2. Wiring diagrams.

1.3 REFERENCES

- A. UL 1008 Standard for Automatic Transfer Switches
- B. NFPA 70 – National Electrical Code, Articles 517, 700, 701 and 702
- C. NFPA 110 – Standard for Emergency and Standby Power Systems
- D. NEMA Standard ICS10-2005 – AC Automatic Transfer Switches
- E. NEMA Standard ICS1-109.21 – Testing of Electrical Equipment
- F. NEC Articles 700, 701, 702
- G. International Standards Organization ISO 9001:2008

PART 2 - PRODUCTS

2.1 AUTOMATIC TRANSFER SWITCH WITH TIME DELAY

- A. Automatic Transfer Switch: An open transition type automatic transfer switch of the ampere rating and number of poles shown on the plans shall be furnished and installed. It shall be mechanically and electrically interlocked, electrically operated by power from the source to which it is transferring, and mechanically held in both normal and emergency positions. The neutrals of the normal and emergency power sources shall be connected together only during the transfer and retransfer operation and remain connected together until power source contacts close on the source to which transfer or retransfer is being made. The overlapping neutral transfer contacts shall not overlap for a time duration greater than 100 milliseconds. It shall be listed by Underwriters Laboratories under UL Std. 1008 for emergency systems and shall be rated for continuous duty and all classes of load.
- B. When the voltage of any phase of the normal source drops below 70% of nominal voltage for more than three seconds, contacts shall close to initiate engine starting. When the generator set reaches at least 90% of rated voltage and frequency, the switch shall transfer to the emergency source after a 0-10 second adjustable time delay.
- C. When all phases of the normal source have been restored to 90% or more of rated voltage for an adjustable time of 0-30 minutes, the switch shall retransfer the load to the normal source and signal the engine to shut down. A five-minute unloaded running time delay shall be provided in the transfer switch or the engine starting controls.
- D. In the event of failure of the automatic transfer mechanism, or for testing purposes, means for manual operation/bypass operation shall be provided. The transfer switch shall include a test switch to simulate normal source power failure and an automatic battery charger with an output voltage matching the engine starting system.
- C. An adjustable electronic plant exerciser time switch controller shall be provided in transfer. Time switch shall allow for a weekly genset testing schedule, with run time adjustable from 15 to 90 minutes minimum. In addition, the controller shall also be able to accept remote signal (via telephone line, contact closure, etc.) for transfer.
- D. Provide the following discreet dry contacts, each rated 1 amp, 30 volts DC
 - 1. ATS in "Normal" Position
 - 2. ATS in "Emergency" Position
 - 3. Normal Power Available
 - 4. Emergency Power Available.
- E. The following accessories shall be provided:
 - 1. Relay Expansion Module – For open transition transfer that includes one form C contact for source availability of the normal and emergency sources.

2. Enclosure Heater – A 125 Watt enclosure heater with transformer and thermostat (adjustable from 30°F to 140°F) for outdoor installations.
 3. Connectivity Module – To enable remote monitoring and control capabilities.
 4. Surge Suppression – A TVSS with a surge current rating of 65kA shall be provided with individually matched fused metal oxide varistors.
 5. Current Sensing Card – To measure either single or three phase load current.
 6. Extension harness – For units to accommodate customer mounting of controls and switch.
- F. As manufactured by ASCO or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install unit in accordance with manufacturer's drawings and instruction manuals.
- B. Provide all control wiring connections to genset for testing, manual and automatic operation. Label and tape all control wires at ATS and genset and all junction and pull boxes.
- C. Set and adjust plant exerciser time switch control for weekly operation, with time of day and duration of test as directed by Town's representative.

INSTRUMENTATION AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

- A. Work Included:
 1. Provide all tools, equipment, materials except for District furnished materials, and supplies and be responsible for all labor required to complete the installation, startup and operational testing of a complete and operable Instrumentation and Control (I&C) System as indicated on the Drawings and as specified herein.
 2. Provide all the necessary equipment components and interconnections along with the services of manufacturers' engineering representatives necessary to ensure that the Owner receives a completely integrated and operational I&C system as herein specified.
 3. Provide all terminations for wiring at field-mounted instruments, equipment enclosures, alarm and status contacts.
 4. Provide all Instrumentation and Control wire required for a fully functioning Instrumentation and Controls System as shown on the Drawings.
 5. The work in this section shall be performed by an I & C subcontractor as described below.
- B. Work Specified in Other Sections:
 1. Process piping, installation of inline instrumentation, and other mechanical work and equipment as specified herein.
 2. Instruments and controls that are not directly used for process control, i.e., those provided as part of a package system.
 3. Applicable provisions of other sections of specifications, which includes all instrumentation and controls conduit and wire for specific requirements for wire, conduit, grounding, and other electrical equipment.

1.02 REFERENCE STANDARDS

- A. American National Standard Institute (ANSI) Publications:
 1. Y14.15a Drafting Practice
 2. C62.1 Surge Arresters.

- B. Instrumentation Society of America (ISA) Publications:
 1. S5.4 Instrument Loop Diagrams.
 2. S20 Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
 - C. American Society for Testing and Materials (ASTM) Publication:
 1. A276-03 Standard Specification for Stainless Steel Bars and Shapes.
- 1.03 I&C SUBCONTRACTOR QUALIFICATIONS
- A. An I&C Subcontractor shall be an electrical contractor who has demonstrated experience in purchasing, calibrating, fabricating, installing and testing the Instrumentation and Control (I&C) products listed in this Specification Section. Normally, the I&C Subcontractor is a systems house regularly engaged in the business of panel fabrication, control component procurement, programmable logic controller and personal computer (PC) application in the process control industry.
 - B. The I&C Subcontractor has been regularly engaged for a period greater than five years in performing all aspects of the type of work specified in this Section and shown on the Drawings and must be qualified as specified below.
 - C. The I&C Subcontractor shall submit 1) proof in the form of names and references of jobs over the past five years where this work was accomplished, 2) present samples and an explanation of representative work performed, 3) submit the name and qualifications (resumes) of the proposed employees of the firm who would be responsible for the day-to-day work, and 4) an explanation of how the I&C Subcontractor will carry out and implement the responsibilities described in the following section.
 - D. I & C work shall be performed by Tesco and Flygt or approved equal.
- 1.04 I&C SUBCONTRACTOR SYSTEM RESPONSIBILITIES
- A. General: The I&C equipment as specified in this Section shall be considered an integrated system. Entire system installation including calibration, verification, startup, operation testing, and training shall be performed by qualified personnel, possessing all the necessary skills and equipment, and who have had experience performing similar installations. Instrumentation and control systems drawings are diagrammatic only; it is the responsibility of the Contractor to obtain technical data, determine performance requirements, develop instrumentation detail installation designs, and coordinate the selection of specified equipment with Contractor supplied equipment to meet the design conditions stated.
 - B. Certain primary elements, final control elements, etc., which are installed in the process lines are specified under other sections of these Specifications; however, the installation of these elements shall be under the supervision of the I&C subcontractor to the extent recognized by previous labor agreements.
 - C. System Responsibilities:
 1. Instrumentation and control system drawings are diagrammatic only. Ensure that all components of the instrumentation system, including primary measuring, indicating, transmitting, receiving, recording, totalizing, controlling, and alarming devices and all appurtenances are completely compatible and shall function as outlined and shall furnish and install such additional equipment, accessories, etc., as are necessary to meet these objectives at no additional cost to the Owner.
 2. Compatibility: See that all components of the instrumentation system, including equipment specified under other Sections, are completely compatible and function properly as a system. Provide such additional equipment, accessories, etc., as are necessary to meet these objectives at no additional cost to the Owner.
 3. Coordination: For control components, devices, and systems as specified herein, as shown on plans and as directed by the Engineer.
 - a. Provide technical advice to mechanical and electrical subcontractors as necessary regarding their installation of instruments.
 - b. Verify the correctness of installation of all instruments.

- c. Verify that the proper type, size, and number of control wires with their conduits are provided.
 - d. Verify that proper electric power circuits provided for all components and systems.
 - e. Resolve all manufacturers' installation discrepancies between requirements and the detail requirements of the Drawings and Specifications.
 - f. Supervise final signal connections, both electric and pneumatic, to all process instrumentation and control equipment.
 - g. Adjust, startup, and test all process instrumentation and control equipment.
 - h. Provide specified documentation and training.
4. Performance: While the Drawings provide sufficient information to establish the form and function of the systems and their relationships, the responsibility for system integration and performance rests solely with the Contractor. The Engineer provides technical instruction and guidance where needed.
 5. Site and Instrument Inspection: Inspect site for conformance to Drawings, paying special attention to space allocation and dimensions shown or required on Drawings. Inspect each instrument and piece of equipment for damage, defects, completeness, and correct operation before installing.

1.05 SUBMITTALS

- A. Shop Drawings: Submit shop drawings (diagrams) for review in complete bound sets indexed by Specification number, with exterior tabs marked by subject. Submit manufacturer's catalog cuts for each item for which shop drawings are not required. Manufacturer's catalog cuts, specifications or data sheets shall be clearly marked to delineate the options or styles to be furnished. Show dimensions, physical configurations, methods of connecting instruments together, mounting details, and wiring schematics. Drawings shall be complete with device tag numbers, wire numbers and terminal board numbers. Submit fabrication details, nameplate legends, and control panel internal wiring and piping schematic drawings. Submit panel graphic drawings where applicable. Include material lists and/or bills of material.
 1. Loop Diagrams:
 - a. Submit Instrument Loop Diagrams per ISA S5.4 to provide necessary detail for connection of analog instrument and control system components including those components specified in other sections of these Specifications.
 - b. Provide with the Instrument Loop Diagrams all instrument model numbers, ranges, set points, sizes, process fluids, specification reference numbers, and all other information listed as "desirable and optional items of information" per ISA S5.4.
 2. Interconnection Diagrams:
 - a. Submit point-to-point type interconnection diagrams conforming to ANSI Y14.15a. Include each conduit run, with wire fill noted for each run. Include electric panel and circuit numbers for all sources of 120 Vac power. Show conduit and wiring interconnections between each control panel, instrument, multiplexer or telemetry unit, motor control center, motor combination starter, valve actuator, and other field-mounted device. Include all equipment and appurtenances provided in this contract regardless of the Division in which it is specified.
 - b. Add to all diagrams the instrument model numbers, instrument ranges, set points, sizes, process fluids, specification reference numbers and other information listed as "desirable and optional items of information per ISA S5.4."
 3. Elementary Diagrams: Submit an elementary diagram (also known as a schematic diagram) for control, protection, and monitoring circuits. Elementary diagrams are not required for lighting, communications and those systems clearly defined on the

single line diagram. Show all interconnections between power sources, apparatus, and device elements of a particular system or equipment, and all interlocks with other systems in a manner, which fully indicates circuit function and operation. Refer to the Drawings for functional and operational requirements.

- B. Specification Forms:
 - 1. Submit completed Specification Forms per ISA S20, including those instrumentation and control components directly related to process control, but specified in other divisions of these Specifications.
 - 2. Include on each form the assigned tag numbers, manufacturer's part numbers, and device data. More than one tag numbered item may be included on a sheet.
- C. As-Built Drawings: Submit a revised set of shop drawings that incorporates all change orders and modifications made during performance of the work. In addition to updated loop diagrams, interconnect diagrams, and elementary diagrams, submit equipment and device wiring diagrams and other drawings as necessary to depict the "as-built" condition of equipment. Include all installed field and panel conduit and piping/tubing runs and routing, tray systems, supports, mounting details, interconnection diagrams with cable, wire, tube, and termination numbers. Coordinate all drawings with the conductor identification requirements in Sections 00 3500. Submit a copy of CAD produced drawings on magnetic media in AutoCAD DWG format.
- D. Operation and Maintenance Manuals: Furnish Operation and Maintenance Manuals, including Instruction Manuals and Part Lists, for all electrical, instrumentation and control equipment as required by Section 00 3200. Obtain data from manufacturers, and format and bind as specified. Obtain distribution method instructions from the Owner or his representative.
 - 1. Schedule: Deliver at least two (2) copies of manuals in 3-ring binders (8-1/2 by 11 inch format) not later than the equipment shipment date.
 - 2. Contents: Include in manuals not less than the following information, as applicable, for each instrument, equipment, subsystem and/or control loop:
 - a. General, introduction and overall description, purpose, functions, simplified theory of operations, etc.
 - b. Specifications (including equipment specification data sheet as described above under Shop Drawings), sufficiently detailed for reordering exact duplicates of the original items.
 - c. Installation instructions, procedures, sequences, tolerances, and precautions.
 - d. Operational procedures.
 - e. Shutdown procedures.
 - f. Maintenance, calibration, and repair instructions.
 - g. Parts list and spare parts recommendations.
 - h. Calibration curves, rating tables and any other data showing the relationship of the variable inputs and the calibrated output of all measuring devices and controlled equipment.
 - 3. Format:
 - a. Use drawings and pictorials to illustrate the text to the extent necessary to insure a clear, concise presentation. If manuals have been written to cover a family of similar instruments or equipment, strike out inapplicable information in a neat fashion or emphasize applicable portion by heavily weighted arrows, circles or boxes; whichever provides the clearest and neatest presentation.
 - b. Group manuals by system control panels, including field instrumentation connected or associated with the panel. Where identical instruments are used in more than one control loop or subsystem, include only one instruction manual, per panel grouping; however, an index by tag number for all instruments shall identify its location in that manual.

- c. Provide control loop and/or subsystem operational descriptions to identify the function of each instrument and its relation to the other instruments in the loop.
 - 4. Binding: Bind each manual in a cover which indicates the panel or process area to which it applies manufacturer's name, local address and telephone number, and year of purchase. Punch and bind manuals in standard three ring binders and include system name and subcontractor's name on binding.
 - E. Accessory and Maintenance Materials: Submit data for the following items:
 - 1. Special Tools and Accessories: Special tools, instruments, and accessories for maintaining instruments and equipment requiring periodic repair and adjustment as specified elsewhere herein. Also, furnish special lifting and handling devices for equipment requiring such devices.
 - 2. Maintenance Materials and Spare Parts: Submit a list of manufacturer recommended spare parts for each item specified. Refer to other sections of these Specifications.
 - F. Test Reports: Submit the following test reports as described herein:
 - 1. Factory Testing of Control Panels.
 - 2. Instrument Verification Report.
 - 3. Final Operational Testing.
 - G. Demonstration and Final Operation Test Plan and Results: Submit a document that outlines all procedures to be used in final operational testing of instrument and control systems. Include a description of each system, the scope of testing, test methods and materials, testing instruments and recorders, a list of functional parameters to be recorded on each item, and Shop Drawings showing temporary bypasses, jumpers, and devices.
- 1.06 QUALITY ASSURANCE
- A. Standard of Quality: The Contractor shall provide equipment of the types and sizes specified which has been demonstrated to operate successfully. Provide equipment which is new and of recent proven design.
- 1.07 INSPECTIONS
- A. The Engineer may inspect the fabricated equipment at the factory before shipment to job site. Provide the Engineer with sufficient prior notice so that an inspection can be arranged at the factory.
 - B. Inspection of the equipment at the factory by the Engineer will be made after the manufacturer has performed satisfactory checks, adjustments, tests and operations.
 - C. Favorable review of the equipment at the factory only allows the manufacturer to ship the equipment to the project site. The Contractor shall be responsible for the proper installation and satisfactory startup operation of the equipment to the satisfaction of the manufacturer and the Engineer.
- 1.08 DRAWINGS
- A. Drawings: The Drawings are diagrammatic; exact locations of equipment shall be determined in the field by the Engineer. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the requirements or descriptions in this Specification shall take precedence in the event of conflict.
 - 1. Locations of equipment, inserts, anchors, motors, panels, pull boxes, manholes, conduits, stub-ups, fittings, power and convenience outlets, and ground wells are approximate unless dimensioned; verify locations with the Engineer prior to installation. Field verifies scaled dimensions on Drawings.
 - 2. Review the Drawings and Specification Divisions of other trades and perform the instrumentation work that will be required for the installations.
 - 3. Should there be a need to deviate from the Instrumentation Drawings and Specifications, submit written details and reasons for all changes to the Engineer for favorable review.

4. Resolution of varying interpretations of the Contract Documents shall conform to the requirements of the General Conditions.
 5. The Drawings provide details of installation and supersede the manufacturer's recommendation where a conflict exists.
- 1.09 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Box, crate, or otherwise enclose and protect instruments and equipment during shipment, handling, and storage. Keep all equipment dry and covered from exposure to weather, moisture, corrosive liquids and gases or any element, which could degrade the equipment. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Notify the Engineer in writing in the event that any equipment or material is damaged. Obtain prior favorable review by the Engineer before making repairs to damaged products.

PART 2 PRODUCTS

2.01 MATERIALS AND STANDARD SPECIFICATIONS

- A. Provide instruments, equipment and materials suitable for service conditions and meeting standard specifications such as ANSI, ASTM, ISA, and SAMA. The intent of this Specification is to secure instruments and equipment of a uniform quality and manufacture throughout the plant. All instruments in the plant of the same type shall be made by the same manufacturer.

2.02 MULTISMART AND VARIABLE FREQUENCY DRIVE EQUIPMENT (FURNISHED BY DISTRICT VIA TESCO AND FLYGT)

- A. MultiSmart Pump Station Manager from Flygt (See guideline and specifications attached herein)
- B. Variable Frequency Drive from ABB Inc. (See guideline and specifications attached herein)

2.03 WET WELL LEVEL CONTROLLER

- A. The wet well level controller shall be the Hydroranger 200 (6 relay) model as shown on the plans and as manufactured by Siemens.
- B. The level controller shall be complete with the appropriate ultrasonic level sensor and lead-in cable.

2.04 NAMEPLATES

- A. For each piece of equipment, provide a manufacturer's nameplate showing his name, location, the pertinent ratings and the model designation.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved phenolic nameplate. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel screws or, where favorably reviewed by the Engineer, with epoxy cement. Where no inscription is indicated on the Drawings, furnish nameplates with an appropriate inscription furnished by the Engineer upon prior request by the Contractor.
- C. Each control device, including pushbuttons, control switches, and indicating lights, shall have an integral legend plate or nameplate indicating the device function. These shall be inscribed as indicated on the Drawings or as favorably reviewed by the Engineer.
- D. Provide CAUTION or SAFETY nameplates to alert operators of special conditions that may result in faulty equipment operations. Devices containing batteries that must be replaced periodically must be clearly identified. Nameplates are not required if the device senses and displays a low battery warning.

2.05 NAME TAGS

- A. All instrumentation and equipment items or systems shall be identified by name tags. Field equipment shall be tagged with the assigned instrumentation tag number listed in the Specifications.

- B. Name tags shall be stainless steel with engraved or stamped black characters of 3/16 inch minimum height. Tags shall be attached to equipment with a tag holder and stainless steel band with a worm screw clamping device. Use 20-gauge stainless steel wire where banding is impractical. For field panels or large equipment cases use stainless steel screws; however, such permanent attachment shall not be on an ordinarily replaceable part.
- 2.06 FIELD-MOUNTED EQUIPMENT
- A. All instrument and control equipment mounted outside of protective structures shall be equipped with suitable surge arresting devices to protect the equipment from damage due to electrical transients induced in the interconnecting lines from lightning discharges or nearby electrical devices. Protective devices used on 120 Vac inputs to field mounted equipment shall be secondary valve surge protectors conforming to the requirements of ANSI C62.1.
- 2.07 EQUIPMENT OPERATING CONDITIONS
- A. All equipment shall be rated for normal operating performance with varying operating conditions over the following minimum ranges:
 - 1. Electrical Power: 120 Vac \pm 10%, 60 Hz, unregulated, except where specifically stated otherwise on the Drawings or in the Specifications, or when two-wire, loop-powered devices are specified.
 - 2. Air: 85 +5 psig.
 - 3. Field Instruments:
 - a. Outdoor Areas:
 - 1) Ambient Temperature: +20°F to +120°F.
 - 2) Ambient Relative Humidity: 5% to 100%.
 - 3) Weather: Rain and sleet.
 - b. Indoor Unheated Areas:
 - 1) Ambient Temperature: +40°F to +120°F.
 - 2) Ambient Relative Humidity: 5% to 95%, non-condensing.
 - c. Indoor Environmentally Controlled Areas:
 - 1) Ambient Temperature: +60°F to +104°F.
 - 2) Ambient Relative Humidity: 10% to 90%, non-condensing.
- 2.08 EQUIPMENT LOCATIONS
- A. Provide equipment and materials suitable for the types of locations in which they are located as defined under Division 16. All equipment specified for field mounting shall be weatherproof and splash proof as a minimum. If electrical or electronic components are contained within the equipment, they shall be housed in NEMA 3R gasketed cases, and NEMA 4X in corrosive locations unless noted otherwise on the Drawings.
- 2.09 ANALOG SIGNAL INDICATED UNITS
- A. For all instruments with local or remote indicators, provide indicators scaled in actual engineering units, i.e., gallons per minute, feet, psi, etc., rather than 0 to 100%, unless noted otherwise on the Drawings.
- 2.10 SIGNAL TRANSMISSION
- A. Analog: Signal transmission between electrical or electronic instruments shall be 4-20 mA and shall operate at 24 Vdc. Signal output from all transmitters and controllers shall be current regulated and shall not be affected by changes in load resistance within the unit's rating. Where practical, milliampere signals from the field shall be converted to a voltage signal at the external terminals of each panel, and all instruments within a panel shall be parallel wired.
 - B. Nonstandard transmission systems such as impulse duration, pulse rate, and voltage regulated will not be permitted except where shown on the Drawings. When transmitters with nonstandard outputs do occur, their output shall be converted to 4-20 mA prior to transmission.

- C. Discrete: All alarm and status signals shall be 120 Vac unless specified otherwise. Proprietary data highway or serial bit transmissions such as RS232C shall be allowed to the extent shown on the Drawings.

2.11 FASTENERS

- A. Fasteners for securing equipment to walls, floors and the like shall be either hot-dip galvanized after fabrication or stainless steel. Provide stainless steel fasteners in corrosive locations. When fastening to existing walls, floors, and the like, provide capsule anchors, not expansion shields. Size capsule anchors to meet load requirements. Minimum size capsule anchor bolt is 3/8 inch.

PART 3 EXECUTION

3.01 MOUNTING

- A. Mount and install equipment as indicated. Mount field instruments on pipe mounts or other similar means in accordance with suppliers' recommendation. Where mounted in control panels, mount according to requirements of that section.
- B. Equipment specified for field mounting shall be suitable for direct pipe mounting or surface mounting, surface-mounted indicators and equipment with calibration adjustments or requiring periodic inspection shall be mounted not lower than 3 feet 6 inches nor higher than 6 feet above walkways, platforms, catwalks, and the like.
- C. All devices shall be accessible to operators for servicing, operating, reading, etc. Provide permanent platforms to assure devices are continuously accessible.

3.02 SYSTEM STARTUP

- A. ISAC shall perform programming, setup and testing of the telemetry system including configuring the Monitoring Center for remote operation of the pump station, recognizing alarms and poling the system for integrity.
- B. The system Integrator shall be responsible for setup and testing all other equipment including level sensors and coordinating with ISAC.

3.03 FIELD WIRING

- A. Ring out signal wiring prior to termination and perform surge withstand tests where required (see Section 16010, Part 3 for methods). Verify wire number and terminations are satisfactory as designated on the Loop and Interconnect Diagrams. Verify all terminations are tight and shields are uniformly grounded at one location.

3.04 ELECTROMAGNETIC INTERFERENCE (EMI)

- A. Construction shall proceed in a manner which minimizes the introduction of noise (RFI/EMI) into the I&C System.
- B. Cross signal wires and wires carrying ac power or control signals at right angles.
- C. Separate signal wires from wires carrying ac power or switched ac/dc control signals within control panels, terminal cabinets, telemetry equipment, multiplexer cabinets, and data loggers as much as possible. Provide the following minimum separations within such equipment unless indicated otherwise on the Drawings.

Power Wiring Capacity	Separation (Inches)
120 volts ac or 10 amps	12
240 volts ac or 50 amps	18
480 volts ac or 200 amps	24
4,160 volts ac or 800 amps	48

3.05 SIGNAL GROUNDING

- A. Proper grounding of equipment and systems in this Division is critical if computer and associated networks and peripherals are involved. The Drawings and Section 16450, specify safety grounding for all equipment in this Division.
 - B. A single-point grounding system for instrument signals is required for all instrument panels. This instrument single point grounding system does not use building steel or conduit systems for its ground path.
 - 1. Ground all signal shields, signal grounds, and power supplies at an isolated signal bus within each instrument panel, rack, or enclosure. The shields at the far ends of these signal cables must be disconnected (floated) from any ground to prevent ground loops.
 - 2. Do not connect the rack or enclosure frames to the signal grounding buses.
 - 3. Connect each isolated signal ground bus within each panel using a stranded, insulated copper wire of size 6 AWG or larger directly to a grounding ground rod installed per the Drawings.
- 3.06 PREPARATION
- A. Ensure that installation areas are clean and that concrete or masonry operations are completed prior to installing instruments and equipment. Maintain the areas in a broom-clean condition during installation operations.
 - B. Panels shall be protected during construction to prevent damage to front panel devices and prevent dust accumulation in the intervals. Other protective measures (lamp, strip heaters, etc.) shall be included as weather conditions dictate.
- 3.07 FIELD TESTING
- A. General: The purpose of the field testing is to verify instruments are calibrated and operationally performing their intended function. Provide the services of factory trained and experienced engineers to perform verification and operational testing as prescribed below. Since the initial calibration of instruments may not satisfy the final operation of system, perform recalibration or adjust set points as required to satisfy the performance requirements of the system. Notify the Engineer and Owner in writing a minimum of 48 hours prior to the proposed date for commencing final operational testing and acceptance.
 - B. System Verification Testing: Verify that each instrument is operating and calibrated as specified in the by simulating inputs at the primary element in each system loop and verify performance at loop output devices (i.e. recorder, indicator, alarm, etc., except controllers). Simulate inputs at 0%, 25%, 50%, 75%, and 100% of span or with on-off inputs, as applicable. During system verification:
 - 1. Make initial or provisional settings on levels, alarms, etc.
 - 2. Verify controllers by observing that the final control element moves in the proper direction to correct the process variable as compared to the set point.
 - 3. Cause malfunctions to sound alarms or switch to standby to check system operation.
 - 4. Check all instruments thoroughly for correct operation.
 - 5. Test that the remote operating and monitoring of the Pump Station from the Monitoring Center is performing correctly.
 - 6. Immediately correct all defects and malfunctions disclosed by tests.
 - 7. Submit a report certifying completion of verification of each instrument system. This report shall include a data sheet on each instrument tested that indicates instrument tolerances, instrument calibration verification, data and initial settings made to devices.
 - C. Final Operational Testing: Upon completion of instrument verification, test all systems under process conditions in the presence of the Owner or designated representative. The test for each portion thereof shall be witnessed, documented and signed off upon completion by the Engineer. The intent of this test is to demonstrate and certify the operational interrelationship of plant instrumentation and control systems. This testing shall include, but not be limited to:

1. Making final adjustments to levels, alarms, etc.
 2. Checking all alarms, failure interlocks, and operational interlocks.
 3. Verifying all inputs and outputs are fully functional.
 4. Immediately correcting all defects and malfunctions and retesting.
- D. Submit the witnessed test results and a transmittal letter indicating that all required systems have been tested satisfactorily and the systems meet all the functional requirements of their applicable specifications.
- 3.08 INSTRUCTION OF OWNER'S PERSONNEL
- A. Provide the services of a factory trained and field experienced instrumentation engineer to conduct group training of up to five of the Owner's designated personnel in the operation of each instrument system. This training shall be for the time period of four hours and shall be performed during the operational testing period. Include instruction covering operating principles and adjustments, routine maintenance and repair, and "hands on" operation. The text for this training shall be the Operation and Maintenance Manuals furnished under these Specifications.

MEASUREMENT AND PAYMENT

MEASUREMENT

- A. Installation of Electrical Pump Cabinet Control will be measured for payment as lump sum.
- B. Conduit and Wire will be measured for payment as lump sum.
- C. Instrument and Control System will be measured for payment as lump sum.
- D. Electrical Startup will be measured for payment as lump sum.

PAYMENT

- A. The contract lump price paid for installation of electrical pump cabinet control panel (furnished by District) shall include all materials, labor, equipment and related work items to install electrical service and control cabinet with automatic transfer switch, complete in place, as shown on the plans and as directed by the Engineer.
- B. The contract lump price paid for conduit and wire shall include all materials, labor, equipment and related work items to install conduit and wire, including but not limited to pull boxes, ropes, grounding, and other appurtenances and connection of existing generator to the new control panel, complete in place, as shown on the plans and as directed by the Engineer.
- C. The contract lump price paid for instrument and control system (furnished by District) shall include all materials, labor, equipment and related work items to install electrical instrument and control system including automatic transfer switch, complete in place in operable condition, as shown on the plans and as directed by the Engineer.
- D. The contract lump price paid for electrical startup shall include all materials, labor, equipment and related work items for electrical startup, including but not limited to power and communication hookup and testing, complete in place, as shown on the plans and as directed by the Engineer.