BID DOCUMENTS COVER SHEET

CONTRACT DOCUMENTS

FOR

D-4005 Water Valve Replacement

AT

DIABLO VALLEY COLLEGE

321 Golf Club Road, Pleasant Hill, California CA 94523

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

Engineer:
Mike Vidra
BKF
1646 N. California Blvd., Suite 400
Walnut Creek, CA 94596

May 2, 2016
SECTION 00010

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NOTICE INVITING BIDS

D-4005 Water Valve Replacement

DIABLO VALLEY COLLEGE
321 Golf Club Road, Pleasant Hill, California CA 94523

NOTICE IS HEREBY GIVEN that the Governing Board of the Contra Costa Community College District (District), Martinez, California, will receive sealed bid proposals for the furnishing of all labor, materials, equipment, transportation and services for the construction of the project entitled D-4005 Water Valve Replacement.

Construction Cost Estimate (Range): $200,000.00 to $350,000.00

California License Required: A-General Engineering OR B-General Building Contractor OR C-34 Pipeline OR C-36 Plumbing

Scope of Work includes but is not limited to: Provide all labor and equipment to replace valves in approximately 23 separate locations on the Campus’ potable water and irrigation systems in addition to installing new water line as shown on the drawings. Excavation and abatement of asbestos-cement pipe is required. See the drawings and specifications (as listed in Section 00010) for the detailed scope of work.

Hard copies of plans and specifications shall be available for purchase at ARC located at 5753 Pacheco Blvd., Pacheco, California, Phone: (925) 682-6930. To purchase plans at ARC’s Public Planroom website use the link: https://order.e-arc.com/arcEOC/PWELL_Main.asp?mem=23. Go to the Public Planroom for access to the documents without a login required. Payment for hardcopies shall be the responsibility of the bidder, and shall be made directly to ARC. The District does not provide hardcopies of bid documents or reimburse cost of printing, delivery, or any expenses related to the bidding process.

For information directly from the District, you may also log in to the District Website: http://www.4cd.edu/webapps/PurchasingViewBids/default.aspx. Project documents available include but are not limited to plans, specifications, addenda, bidders lists, bid results, etc., and can be viewed on this District webpage.

All questions related to this project must be in writing and are directed to:

Jovan Esprit, Contracts Manager
Contra Costa Community College District
500 Court St., Martinez, CA 94553
Email: jesprit@4cd.edu
Facsimile: 925-370-7512
Each bid shall be made on the Bid Form, which is included in the Bid Documents and when submitted, shall be accompanied by a Bid Bond or Certified Cashier’s Check in the amount of 10% of bid (made payable to the Contra Costa Community College District). The District reserves the right to forfeit Bid Bond submitted for failure of the successful bidder to secure Payment & Performance Bonds.

Important Information:
Pre-Bid Meeting and Job Walk, Date / Time: May 20, 2016, at 10:00AM — MANDATORY
Pre-Bid Meeting and Job Walk, Location: DVC Job Trainer

DIABLO VALLEY COLLEGE
321 Golf Club Road
Pleasant Hill, CA 94523

Last Date / Time for
Bidder’s Requests for Information: May 30, 2016 prior to 5:00PM
Last Day to Issue Addendum: June 6, 2016
Bids Due No Later Than, Date / Time: June 13, 2016, prior to 2:00 PM
Bids Must Be Received at: Contra Costa Community College District (Lobby)
500 Court St.
Martinez, CA 94553
Attn: Jovan Esprit – Contracts Manager (CCCCD)

Bids must be received by the District prior to the time and by the date noted above. Bids that are not received by the District prior to the time and by the date noted above will not be accepted, and will be returned to the Bidder unopened.

The successful bidder will be required to furnish a labor and material bond in an amount equal to one hundred percent (100%) of the contract price and a faithful performance bond in an amount equal to one hundred percent (100%) of the contract price, said bonds to be secured from a surety company acceptable to the Contra Costa Community College District and authorized to execute such surety in the State of California.

This project is a public works project and is subject to prevailing wage rate laws. A copy of the prevailing rates of wages is on file with the Contracts & Purchasing Office of the Contra Costa Community College District. Said rates of wages shall be included in the contract for the work by this reference.

Attention is directed to Section 4100 through 4113 of the Public Contract Code concerning Subcontractors, with emphasis on Section 4104, known as the “Subletting and Subcontracting Fair Practices Act, effective July 1, 2014.

Attention is directed to Labor Code Section 1725.5 regarding Department of Industrial Relations (DIR) contractor registration process including registration criteria and implementation of DIR registration requirements. Labor Code Section 1771.7 establishes contractor’s obligation to submit Certified Pay Roll (CPR) to the Department of Labor and Standards Enforcement (DLSE) and public works monitoring and enforcement. Labor Code Section 1773.3 requires the District to submit a PWC-100 to DIR for all public works contract awarded effective January 1, 2015.

Attention is directed to Agreement Form, Article 5, and GENERAL CONDITIONS, Article 8, paragraphs 8.4.1 and 8.4.2, regarding liquidated damages. Liquidated Damages shall be set for $500 Dollars for each calendar day the work is delayed. The Governing Board of the Contra Costa Community College District reserves the right to reject any and all bids and/or waive any informality or irregularity in any bid received. No bidder may withdraw their Bid for a period of ninety (90) days after the date set for opening thereof.

END OF SECTION 00100
COMMONS CONSTRUCTION
Construction is underway for the Commons Project, which has been made possible by Contra Costa County voters through Bond Measure A passed in 2006. Please look for posted signs for alternate routes around the construction zone. For construction updates and project information, visit www.dvc.edu/commons

321 Golf Club Road, Pleasant Hill, CA 94523
Phone: 925-685-1230 • www.dvc.edu
SECTION 00210
INFORMATION AVAILABLE TO BIDDERS

PART 1 - REPORT AND INFORMATION

1.1 Existence of reports, record drawings, and utility surveys: Contra Costa Community College District, its consultants, and prior contractors may have collected documents providing a general description of the site and conditions of the work. These documents may consist of record drawings, utility drawings, and information regarding underground utilities. These reports, documents and other information are not part of the Contract Documents and do not show new work to be constructed, rather, they show existing conditions that Contractor may have to address as part of its construction planning.

Available Documentation: The following existing documentation has been made available for downloading via the District’s web site:

   a) Campus Utility Maps
   b) Campus Topographic Maps

1.2 Contractor shall acknowledge and accept that the documents are not a part of the Contract Documents and are made available to bidders for reference only. The District and its representatives are not responsible for any and all discrepancies between the documents and the existing and actual as-built conditions, and do not guarantee the accuracy of the documents.

1.3 The District and Design Consultants assume no responsibility for the completeness or accuracy of the documents or the records compiled there from and the interpretations made from the documents. There is no express or implied guarantee that the conditions indicated in the documents are representative of those existing throughout the building and/or site Conditions differing substantially from those indicated may be encountered.

END OF SECTION 00210
SECTION 00300  
BID PROPOSAL FORM

PROJECT NUMBER / NAME: D-4005 Water Valve Replacement

CAMPUS / LOCATION: DIABLO VALLEY COLLEGE

DISTRICT: CONTRA COSTA COMMUNITY COLLEGE DISTRICT
500 Court St, Martinez, CA 94553

Herein Referred to as "District"

1. INTRODUCTION

   A. The Bidder proposes to perform the Work for the Contract Sum and within the proposed Contract Time, based upon an examination of the site and the Bid and Contract Documents.

   B. The Bidder certifies this Bid is submitted in good faith.

   C. The Bidder agrees that the Contract Sum and other proposed terms will be considered in evaluating Bids and may be negotiated and adjusted before awarding of Contract.

   D. A fully executed Statement of Bidder's Qualifications signed by an authorized officer of the Bidder submitting the Bid shall be attached to the Bid Form.

   E. A fully executed Non-Collusion Affidavit signed by an authorized officer of the Bidder submitting Bid shall be attached to the Bid Form.

   F. The District shall award the contract to the lowest responsive and responsible Bidder. The evaluation of the low bid shall be based on the total of Item 2.A Base Bid.

2. CONTRACT SUM

   A. BASE BID (No Alternates included.)

   For labor, materials, bonds, fixtures, equipment, tools, transportation, services, sales taxes and other costs necessary to complete the general construction in accordance with the Contract Documents, for a stipulated Contract Sum in the amount of:

   __________________________________________ Dollars ($______________________)  

   Contractor Authorized Signature: ____________________________________________________

3. ADDITIVE ALTERNATES: NONE
4. COMPLETION TIME

A. For establishing the Date of Substantial Completion the contract time for the Base Bid and Alternates shall be 60 calendar days after date of the Notice to Proceed. Final Completion shall be 30 calendar days after the date of Substantial Completion. This time may be subject to modification to facilitate the work as mutually agreed upon at a later date.

B. The Bidder certifies that the Bid is based on the Contract Time for completion as stated above and in the Contract Documents. Bidder further certifies that the Base Bid amount is sufficient to cover all labor, materials, central office and construction site overhead, profit, and all other costs related to the completion of the Project for the entire Project construction time for both the General Contractor and all Subcontractors, as stated above in paragraphs 2 and 3.

5. ADDENDA

A. The Bidder acknowledges receipt of the following Addenda, and certifies the Bid has provided for all modifications and considerations required therein.

None [ ]

Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________

B. List of Additional Addenda Attached: Yes [ ] No. [ ].

6. DESIGNATION OF SUBCONTRACTORS

A. The Bidder has set forth a complete list indicating the type of work, name, and business address of each Subcontractor who will perform work in excess of one-half of one percent of the Contract Sum.

B. Any portion of the work in excess of the specified amount having no designated Subcontractor shall be performed by the Bidder.

C. Substitution of listed Subcontractors will not be permitted unless approved in advance by the District.

D. Prior to signing the Contract, the District reserves the right to reject any listed Subcontractor.

<table>
<thead>
<tr>
<th>Type</th>
<th>Subcontractor's</th>
<th>Business License#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contra Costa Community College District</td>
<td>Diablo Valley College</td>
<td>D-4005 Water Valve Replacement</td>
</tr>
</tbody>
</table>
D-4005 Water Valve Replacement

Complete list of Subcontractors is attached: Yes [   ] No [   ]

E. Continuation list of Subcontractors is attached: Yes [   ] No [   ]

7. ACCEPTANCE AND AWARD

A. The District reserves the right to reject this Bid and to negotiate changes before or after execution of the Contract. This Bid shall remain open and shall not be withdrawn for a period of 90 days after Bid Opening date.

B. If written notice of acceptance of this Bid is mailed or delivered to the Bidder within 90 days after the date set for the receipt of this Bid, or other time before it is withdrawn, the Bidder will execute and deliver to the District a Contract prepared by District with the required Surety Bonds and Certificates of Insurance, within 10 days after personal delivery or deposit in the mail of the notification of acceptance.

C. Notice of acceptance or request for additional information may be addressed to the Bidder at the address provided.

8. BID SECURITY

A. The required 10 percent (10%) Bid Security for this Bid is attached in the form of:

   ( ) Bid Bond Issued By: ________________________________

   ( ) Certified or Cashier's Check No. ____________________________

   Issued by: ______________________________________

9. BIDDER'S BUSINESS INFORMATION

A. Individual [   ]:

   ________________________________

   Personal Name: ________________________________
Business Name: ________________________________

Address: ____________________________________

________________________________________ Zip Code: __________

Telephone: __________________________________

Fax Number: __________________________________

B. Partnership [ ]: ____________________________

Co-partners' Names: ____________________________

Business Name: ______________________________

Address: ____________________________________

________________________________________ Zip Code: __________

Telephone: __________________________________

Fax Number: __________________________________

C. Corporation [ ]: ____________________________

Firm Name: _________________________________

Address: ____________________________________

________________________________________ Zip Code: __________

Telephone: __________________________________

Fax Number: __________________________________

State of Incorporation: ________________________

President: _________________________________

Secretary: _________________________________

Treasurer: _________________________________

Manager: __________________________________
D. **Power of Attorney:** Name: ____________________________
   Title: ____________________________

E. **Contractor License No.** ____________ State of ____________

F. Bidder is submitting this proposal on behalf of a Joint Venture. Names, license numbers, and relevant information are given on a separate attachment:
   Yes [ ] No [ ].

G. Upon request, furnish appropriate documentation to substantiate and/or support the data given.

10. The undersigned hereby certifies under penalty of perjury under the laws of the State of California that all the information submitted by the Bidder in connection with this Bid and all the representations herein made are true and correct.

   Executed this day of __________________________

----------------------------------------------
Contractor’s License No. Expiration Date

----------------------------------------------
Firm Name

----------------------------------------------
Signature

----------------------------------------------
By
(Print or Type Name)

----------------------------------------------
Title

End of Section 00300
SECTION 00500
PAYMENT BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the Contra Costa Community College District (sometimes referred to hereinafter as “Obligee”) has awarded to _____________________________ (hereinafter designated as the “Principal” or “Contractor”), an agreement for the work described as follows: _____________________________ (hereinafter referred to as the “Public Work”); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code Section 9550;

NOW, THEREFORE, We, _____________________________, the undersigned Contractor, as Principal; and _____________________________, a corporation organized and existing under the laws of the State of ________________, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the Contra Costa Community College District and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code Section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____________________________ Dollars ($_____________), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code Section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work and labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys’ fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Sections 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code Section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or
pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code Sections 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this____________ day of ______________, 20____.

PRINCIPAL/CONTRACTOR:

____________________________________

By: __________________________________

SURETY:

____________________________________

By: __________________________________

Attorney-in-Fact
IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code Section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety’s name must also appear on the Treasury Department’s most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety) (Name and Address of agent or representative for service for service of process in California)

__________________________________________________________  ___________________________________________________________

__________________________________________________________  ___________________________________________________________

Telephone: ______________________________  Telephone: ______________________________

STATE OF CALIFORNIA  )
COUNTY OF  ) ss.

On ___________________________ before me, ______________________________________,
(insert name and title of the officer)
a Notary Public in and for said State, personally appeared
_______________________________, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument as the Attorney-in-Fact of the _____________________ (Surety) and acknowledged to me that he/she/they subscribed the name of the _____________________ (Surety) thereto and his own name as Attorney-in-Fact on the executed instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

____________________________________________ (SEAL)
Notary Public in and for said State

Commission expires: ______________________________

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.
CONTRACT PERFORMANCE BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, Contra Costa Community College District (sometimes referred to hereinafter as “Obligee”) has awarded to ________________________________ (hereinafter designated as the “Principal” or “Contractor”), an agreement for the work described as follows: ________________________________ (hereinafter referred to as the “Public Work”); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated ______________ ____________________, (hereinafter referred to as the “Contract”), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

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

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned
changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages; or, at Obligee’s sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the “balance of the Contract price” (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages. The term “balance of the Contract price,” as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Contractor and Surety shall remain responsible and liable for all patent and latent defects that arise out of or are related to the Contractor’s failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

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

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 reasonable attorneys’ fees to be fixed by the Court.
IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of
_____________, 20___.

PRINCIPAL/CONTRACTOR:

______________________________

By: ____________________________

SURETY:

______________________________

By: ____________________________

Attorney-in-Fact

The rate of premium on this bond is ______________________________ per thousand.

The total amount of premium charged: $__________________________ (This must be
filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California
Insurance Commissioner authorizing them to write surety insurance defined in California
Insurance Code Section 105, and if the work or project is financed, in whole or in part, with
federal, grant or loan funds, Surety’s name must also appear on the Treasury Department’s most
current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety) (Name and Address of agent or representative
for service for service of process in California)

______________________________

______________________________

Telephone: ____________________ Telephone: ____________________
STATE OF CALIFORNIA

COUNTY OF

On ___________________________ before me, ______________________________________
(insert name and title of the officer)

On ______________________, before me, _________________________, a Notary
Public in and for said State, personally appeared _______________________________, who
proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are
subscribed to the within instrument as the Attorney-in-Fact of the ____________________
(Surety) and acknowledged to me that he/she/they subscribed the name of the
_____________________ (Surety) thereto and his own name as Attorney-in-Fact on the
executed instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the
foregoing paragraph is true and correct.

WITNESS my hand and official seal.

______________________________
Notary Public in and for said State

Commission expires:____________________

NOTE: A copy of the power-of-attorney to local representatives of the bonding company
must be attached hereto.
SECTION 00510

NOTICE OF AWARD

DATE: _____________________

TO: _____________________________________________

ADDRESS: _______________________________________

PROJECT: ________________________________________

The Contract Sum of your contract is ____________________ Dollars, ($_________________).

You must comply with the following conditions within ten (10) calendar days of the date of this Notice of Award, that is, by ________________.

1. You must deliver to the District two fully executed counterparts of Section 00600, “Construction Agreement.”

2. You must deliver to the District the “Contract Performance Bond,” and “Payment Bond,” executed by you and your surety, which are included in Section 00500.

3. You must deliver to the District the Contractor’s CPM Schedule, prepared in Microsoft Project format, including both PDF and electronic file for the District’s review.

Failure to comply with these conditions within the time specified will entitle District to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited. Within ten (10) calendar days after you comply with these conditions, the District will return to you one fully signed counterpart of the Construction Agreement.

Contra Costa Community College District

By: _____________________________________________

Title: ____________________________________________

END OF DOCUMENT
This Agreement shall not be enforceable until ratified and approved by the Contra Costa Community College District’s Governing Board.

1. **SPECIAL TERMS.** These special terms are incorporated below by reference.

   (§1.1) **Parties:**
   - **(Public Agency)**
     CONTRA COSTA COMMUNITY COLLEGE DISTRICT
     500 Court St, Martinez, CA 94553
   - **(Contractor)**
     Address:

   (§1.2) **Effective Date:**
   See the Notice to Proceed (Document 00650)

   (§1.3) **The Project:**
   D-4005 Water Valve Replacement

   (§1.4) **Completion Time:**
   - **60 Calendar Days** from the Notice to Proceed to Substantial Completion, and **30 Calendar Days** from Substantial Completion to Final Completion (Remaining Work).

   (§1.5.1) **Liquidated Damages, Substantial Completion:**
   - $500 per Calendar Day beyond the Contract Substantial Completion Date.

   (§1.5.2) **Liquidated Damages, Remaining Work/Final Completion:**
   - $100 per Calendar Day Remaining Work is delayed beyond the Contract Final Completion Date.

   (§1.6) **Public Agency’s Agent:**
   CONTRA COSTA COMMUNITY COLLEGE DISTRICT (The District)

   (§1.7) **Contract Price:**

**SCOPE OF WORK:** (including but not limited to) Provide all labor and equipment to replace valves in approximately 23 separate locations on the Campus’ potable water and irrigation systems in addition to installing new water line as shown on the drawings. Excavation and abatement of asbestos-cement pipe is required. See the drawings and specifications for the detailed scope of work.

2. **WORK CONTRACT, CHANGES**

   (a) By their signatures below, effective on the above date, these parties promise and agree as set forth in this Agreement, incorporating by these references labor and materials contained in Section 2, Scope of Work.

   (b) Contractor shall, at Contractor's own cost and expense, and in a workmanlike manner, fully and faithfully perform and complete the work; and will furnish all materials, labor, services, equipment, and transportation necessary, convenient and proper in order fairly to perform the requirements of this contract, all strictly in accordance with the Scope of Work in Section 2 above, and the Public Agency’s plans, drawings and specifications, and with Supplementary General Conditions, if any.

   (c) The work can be changed only with Public Agency’s prior written order specifying such change and its cost agreed to by the parties; and the Public Agency shall never have to pay more than specified in Section 7 without such an order.
3. **TIME: NOTICE TO PROCEED**

Contractor shall start this work as directed in Section 1.4 Completion Time above or as directed by the Notice to Proceed, if any, and shall complete it as specified in Section 1.4, Completion Time.

4. **LIQUIDATED DAMAGES**

If the Contractor fails to complete this contract and this work within the time fixed therefore, allowance being made for contingencies as provided herein, he becomes liable to the Public Agency for all its loss and damage therefrom; and because, from the nature of the case, it is and will be impracticable and extremely difficult to ascertain and fix the Public Agency's actual damage from any delay in performance hereof, it is agreed that Contractor will pay as liquidated damages to the Public Agency the reasonable sum specified in Section 1, the result of the parties' reasonable endeavor to estimate fair average compensation therefore, for each calendar day's delay in finishing said work; and if the same be not paid, Public Agency may, in addition to its other remedies, deduct the same from any money due or to become due Contractor under this contract. If the Public Agency for any cause authorizes or contributes to a delay, suspension of work or extension of time, its duration shall be added to the time allowed for completion, but it shall not be deemed a waiver nor be used to defeat any right of the Agency to damages for non-completion or delay hereunder. Pursuant to Government Code Section 4215, the Contractor shall not be assessed liquidated damages for delay in completion of the work, when such delay was caused by the failure of the Public Agency or the owner of a utility to provide for removal or relocation of existing utility facilities.

5. **INTEGRATED DOCUMENTS**

The plans, drawings and specifications or special provisions of the Public Agency's call for bids, and Contractor's accepted bid for this work are hereby incorporated into this contract; and they are intended to cooperate, so that anything exhibited in the plans or drawings and not mentioned in the specifications or special provisions, or vice versa, is to be executed as if exhibited, mentioned and set forth in both, to the true intent and meaning thereof when taken all together; and differences of opinion concerning these shall be finally determined by the Public Agency.

6. **PAYMENT**

(a) For strict and literal fulfillment of these promises and conditions, and full compensation for all this work, the Public Agency shall pay the Contractor the sum specified in Section 1, except that in unit price contracts the payment shall be for finished quantities at unit bid prices.

(b) On or about the first day of each calendar month, the Contractor shall submit to the Public Agency a verified application for payment, supported by a statement showing all materials actually installed during the preceding month, the labor expended thereon, and the cost thereof; whereupon, after checking, the Public Agency shall issue to Contractor a certificate for the amount determined to be due, minus five (5%) percent thereof, but not until defective work and materials have been removed, replaced and made good. Payment of the approved amount will be made to the Contractor within 30 calendar days from the date the Public Agency approves in writing the Contractor’s application for payment.

7. **PAYMENTS WITHHELD**

(a) The Public Agency or its agent may withhold any payment, or because of later discovered evidence nullify all or any certificate for payment, to such extent and period of time only as may be necessary to protect the Public Agency from loss because of:

(1) Defective work not remedied, or work not completed, or

(2) Claims filed or reasonable evidence indicating probable filing, or
(3) Failure to properly pay subcontractors or for material or labor, or
(4) Reasonable doubt that the work can be completed for the balance then unpaid, or
(5) Damage to another contractor, or
(6) Damage to the Public Agency, other than damage due to delays.

(b) The Public Agency shall use reasonable diligence to discover and report to the Contractor, as the work progresses, the materials and labor which are not satisfactory to it, so as to avoid unnecessary trouble or cost to the Contractor in making good any defective work or parts.

(c) Thirty-five (35) calendar days after Public Agency files its notice of completion of the entire work, it shall issue a certificate to the Contractor and pay the balance of the contract price after deducting all amounts withheld under this contract, provided the Contractor shows that all claims for labor and materials have been paid, no claims have been presented to the Public Agency based on acts or omissions of the Contractor, and no liens or withhold notices have been filed against the work or site, and provided there are not reasonable indications of defective or missing work or of late-recorded notices of liens or claims against Contractor.

8. INSURANCE

Before the commencement of the Work, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California as admitted carriers, or a District approved equal, with a financial rating of at least A status as rated in the most recent edition of Best’s Insurance Reports or as amended by the Supplementary General Conditions, such insurance as will protect the Public Agency from claims set forth below, which may arise out of or result from the Contractor’s operations under the Contract and for which the Contractor may be legally liable, whether such operations are by the Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

(a) Claims for damages because of bodily injury, sickness, disease, or death of any person District would require indemnification and coverage for employee claim;

(b) Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;

(c) Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;

(d) Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;

(e) Claims involving contractual liability applicable to the Contractor’s obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and

(f) Claims involving Completed Operations, Independent Contractors’ coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)

(g) Claims involving sudden or accidental discharge of contaminants or pollutants.

**Additional Insured Endorsement Requirement:** The Contractor shall name, on any policy of insurance, the District, Architect, Inspector, the State of California, their officers, employees, agents and independent contractors as Additional Insured. Subcontractors shall name the Contractor, the District, Architect, Inspector, the State of California, their officers, employees, agents and independent contractors as Additional Insured. The Additional Insured Endorsement included on all such insurance policies shall state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the Additional Insured, have other insurance which is applicable to the loss, such other insurance shall be on an
excess or contingent basis. The insurance provided by the Contractor must be designated in the policy as primary to any insurance obtained by the Public Agency. The amount of the insurer’s liability shall not be reduced by the existence of such other insurance.

**Specific Insurance Requirement:** Contractor shall take out and maintain and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain:

(a) Comprehensive General Liability Insurance with an aggregate of not less than $2,000,000.00; Per occurrence, $1,000,000.00

(b) Automotive (any auto) where operated in amounts $1,000,000.00

(c) Workers’ Compensation Insurance: $1,000,000.00; Contractor is aware of and complies with Labor Code Section 3700 and the Worker’s Compensation Law.

9. **BONDS**

(Not Required for Public Projects below $25,000; Civil Code 9550; Public Contract Code 7103.)

**Bond Requirements:** Prior to commencing any portion of the Work, the Contractor shall furnish separate payment and performance bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate surety authorized and admitted to transact business in California as sureties.

To the extent, if any, that the Contract Price is increased in accordance with the Contract Documents, the Contractor shall, upon request of the Public Agency, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the Public Agency. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Price, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor will release the surety. If the Contractor fails to furnish the required bonds, the Public Agency may terminate the Contract for cause.

On signing this contract, Contractor shall deliver to Public Agency for approval good and sufficient bonds with sureties, in amount(s), specified in the specifications or special provisions, guaranteeing faithful performance of this contract and payment for all labor and materials hereunder.

10. **FAILURE TO PERFORM**

If the Contractor at any time refuses or neglects, without fault of the Public Agency or its agent(s), to supply sufficient materials or workers to complete this agreement and work as provided herein, for a period of ten days or more after written notice thereof by the Public Agency, the Public Agency may furnish same and deduct the reasonable expenses thereof from the contract price.

11. **LAWS APPLY: General**

Both parties recognize the applicability of various federal, state and local laws and regulations, especially Chapter 1 of Part 7 of the California Labor Code (beginning with Section 1720, and including Sections 1735, 1777.5, 1777.6, forbidding discrimination) and intend that this agreement complies therewith. The parties specifically stipulate that the relevant penalties and forfeitures provided in the Labor Code, especially in Sections 1775, 17776, and 1813, concerning prevailing wages and hours, shall apply to this agreement as though fully stipulated herein.

12. **REGISTRATION WITH DEPARTMENT OF INDUSTRIAL RELATIONS**

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

The requirement to list only registered contractors and subcontractors on bids becomes effective on March 1, 2015. The requirement to only use registered contractors and subcontractors on public works projects applies to all projects awarded on or after April 1, 2015.

13. **SUBCONTRACTORS**

Public Contract Code Sections 4100-4113 are incorporated herein.

14. **WAGE RATES**

(a) Pursuant to Labor Code Section 1773, the Director of the Department of Industrial Relations has ascertained the general prevailing rates of wages per diem, and for holiday and overtime work, in the locality in which this work is to be performed, for each craft, specified in the call for bids for this work and are on file with the Public Agency, and are hereby incorporated herein.

(b) This schedule of wages is based on a working day of eight (8) hours unless otherwise specified; and the daily rate is the hourly rate multiplied by the number of hours constituting the working day. When less than that number of hours are worked, the daily wage rate is proportionately reduced, but the hourly rate remains as stated.

(c) The Contractor, and all subcontractors, must pay at least these rates to all persons on this work, including all travel, subsistence, and fringe benefit payments provided for by applicable collective bargaining agreements. All skilled labor not listed above must be paid at least the wage scale established by collective bargaining agreement for such labor in the locality where such work is being performed. If it becomes necessary for the Contractor or any subcontractor to employ any person in a craft, classification or type of work (except executive, supervisory, administrative, clerical or other non-manual workers as such) for which no minimum wage rate is specified, the contractor shall immediately notify the Public Agency which shall promptly determine the prevailing wage rate therefor and furnish the Contractor with the minimum rate based thereon, which shall apply from the time of the initial employment of the person affected and during the continuance of such employment.

15. **HOURS OF LABOR**

Eight hours of labor in one calendar day constitutes a legal day's work, and no worker employed at any time on this work by the Contractor or by any subcontractor shall be required or permitted to work longer thereon except as provided in Labor Code Sections 1810-1815.

16. **APPRENTICES**

Properly indentured apprentices may be employed on this work in accordance with Labor Code Sections 1777.5 and 1777.6, forbidding discrimination.

17. **SUBMISSION OF CERTIFIED PAYROLL RECORDS**

Contractors and subcontractors on all public works projects will be required to submit certified payroll records (CPRs) to the Labor Commissioner unless excused from this requirement. This requirement will be phased in as follows:

(a) Applies immediately to public works projects that have already been under CMU monitoring, i.e. contractors on ongoing projects that have been submitting CPRs to the CMU will continue doing so.

(b) Will apply to any new projects awarded on or after April 1, 2015.
(c) May apply to other projects as determined by Labor Commissioner.
(d) Will apply to all public works projects, new or ongoing, on and after January 1, 2016.

18. PREFERENCE FOR MATERIALS

The Public Agency desires to promote the industries and economy of Contra Costa County, and the Contractor therefore promises to use the products, workers, laborers and mechanics of this County in every case where the price, fitness and quality are equal.

19. ASSIGNMENT

This agreement binds the heirs, successors, assigns, and representatives of the Contractor; but Contractor cannot assign it in whole or in part, nor any monies due or to become due under it, without the prior written consent of the Public Agency and the Contractor's surety or sureties, unless they have waived notice of assignment.

20. NO WAIVER BY PUBLIC AGENCY

Inspection of the work and/or materials, or approval of work and/or materials inspected, or statement by any officer, agent or employee of the Public Agency indicating the work or any part thereof complies with the requirements of this contract, or acceptance of the whole or any part of said work and/or materials, or payments therefore, or any combination of these acts, shall not relieve the Contractor of Contractor's obligation to fulfill this contract as prescribed; nor shall the Public Agency be thereby stopped from bringing any action for damages or enforcement arising from the failure to comply with any of the terms and conditions hereof.

21. HOLD HARMLESS AND INDEMNITY

(a) Contractor promises to and shall hold harmless and indemnify from the liabilities as defined in this section.
(b) The indemnities benefited and protected by this promise are the Public Agency and its elective and appointive boards, commissions, officers, agents and employees.
(c) The liabilities protected against are any liability or claim for damage of any kind allegedly suffered, incurred or threatened because of actions defined below, including personal injury, death, property damage, inverse condemnation, or any combination of these, regardless of whether or not such liability, claim or damage was unforeseeable at any time before the Public Agency approved the improvement plan or accepted the improvements as completed, and including the defense of any suit(s) or action(s) at law or equity concerning these.
(d) The actions causing liability are any act or omission (negligent or non-negligent) in connection with the matters covered by this contract and attributable to the contractor, subcontractor(s), or any officer(s), agent(s), or employee(s) of one or more of them.
(e) Non-conditions: The promise and agreement in this section is not conditioned or dependent on whether or not any indemnities has prepared, supplied, or approved any plan(s), drawing(s), specifications(s) or special provision(s) in connection with this work, has insurance or other indemnification covering any of these matters, or that the alleged damage resulted partly from any negligent or willful misconduct of any Indemnities.

22. EXCAVATION

Contractor shall comply with the provisions of Labor Code Section 6705, if applicable, by submitting to Public Agency a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during trench excavation.
23. **GOVERNMENT CODE SECTION 10532**

Contractor shall be subject to the examination and audit of the Auditor General for a period of three years after final payment under the contract.

24. **WARRANTY**

The Contractor warrants to the Public Agency that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contractor Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work shall conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor’s warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage.

25. **CONSEQUENTIAL DAMAGES**

The Contractor and Public Agency waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

(a) Damages incurred by the Public Agency for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

(b) Damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

(c) This mutual waiver is applicable, without limitation, to all consequential damages due to either party’s termination. Nothing contained in this subparagraph shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

26. **HAZARDOUS MATERIALS**

(a) If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos, lead or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Public Agency in writing.

(b) The Public Agency shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. The Public Agency shall furnish in writing to the Contractor the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written notification from the Public Agency and Contractor. The Contract Time shall be extended appropriately.

27. **SAFETY:**

(a) **Safety Programs.** The Contractor shall be solely responsible for initiating, maintaining and supervising all safety programs required by applicable law, ordinance, regulation or governmental orders in connection
with the performance of the Contract, or otherwise required by the type or nature of the Work. The Contractor's safety program shall include all actions and programs necessary for compliance with California or federally statutorily mandated workplace safety programs, including without limitation, compliance with the California Drug Free Workplace Act of 1990 (California Government Code §§8350 et seq.). Without limiting or relieving the Contractor of its obligations hereunder, the Contractor shall require that its Subcontractors similarly initiate and maintain all appropriate or required safety programs. Prior to commencement of Work, the Contractor shall meet with the campus Buildings and Grounds Manager, Project Manager, and Construction Manager to review Contractor's safety precautions and implementation of safety programs during the Work.

(b) **Safety Precautions.** The Contractor shall be solely responsible for initiating and maintaining reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to: (i) employees on the Work and other persons who may be affected thereby; (ii) the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and (iii) other property or items at the site of the Work, or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall take adequate precautions and measures to protect existing roads, sidewalks, curbs, pavement, utilities, adjoining property and improvements thereon (including without limitation, protection from settlement or loss of lateral support) and to avoid damage thereto. Without adjustment of the Contract Price or the Contract Time, the Contractor shall repair, replace or restore any damage or destruction of the foregoing items as a result of performance or installation of the Work.

(c) **Safety Signs, Barricades.** The Contractor shall erect and maintain, as required by existing conditions and conditions resulting from performance of the Contract, reasonable safeguards for safety and protection of property and persons, including, without limitation, posting danger signs and other warnings against hazards, promulgating safety regulations and notifying Districts and users of adjacent sites and utilities.

(d) **Safety Notices.** The Contractor shall give or post all notices required by applicable law and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

(e) **Safety Coordinator.** The Contractor shall designate a responsible member of the Contractor's organization at the Site whose duty shall be the prevention of accidents and the implementation and maintenance safety precautions and programs. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Project Inspector and the Architect.
28. SIGNATURES AND ACKNOWLEDGEMENT

Public Agency:
By: ______________________________________________________
Assistant Secretary, Governing Board
DAVID S. WETMORE, Director of Purchasing & Contracts

Note to Contractor: (1) Execute acknowledgement form below, and (2) if a corporation, affix Corporate Seal.

Contractor hereby also acknowledging awareness of and compliance with Labor Code S1861 concerning Worker’s Compensation Law.

Contractor:
By: ______________________________________________________ (CORPORATE SEAL)
(Designate Official Capacity – NAME)

__________________________
Print NAME and TITLE

__________________________
License Number

__________________________
Federal ID Number

NOTARY PUBLIC

STATE OF CALIFORNIA
) ss.
COUNTY OF CONTRA COSTA
)

On ________________, before me, ____________________________, Notary Public,

personally appeared ____________________________, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.

Witness my hand and official seal.

________________________________
Notary Public

[SEAL]
SECTION 00650

NOTICE TO PROCEED

DATE: ________________________________

TO: ________________________________

ADDRESS: ________________________________

PROJECT: ________________________________

You are notified that the Contract Time under the above contract will commence to run on __________ 2016. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Section 00600, Construction Agreement, the date of Substantial Completion is __________________________ 2016, and the date for Final Completion is ________________________________.

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

By: ________________________________

        Ray Pyle
        Chief Facilities Planner

END OF SECTION 00650
SECTION 00800
SUPPLEMENTARY GENERAL CONDITIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. See the drawings and specifications (as listed in Section 00010) for the detailed scope of work.

B. No structural modifications, modifications to fire alarms systems, or changes to Americans with Disabilities Act accessibility are authorized under the contract and work associated with this specification without prior approval by the District. All work shall be in accordance with Title 24 California Code of Regulations.

1.2 REFERENCES

A. The publications listed below form a part of this specification by reference.

1. Current California Occupational Safety and Health Act Regulations
2. Current California Occupational Safety and Health Construction Safety Orders
3. This work will be contracted using the District’s Short Form Construction Agreement; See Section 00600.

1.3 SUBMITTALS

A. Provide submittals in the format, and as described below:

1. Submittals shall be submitted to the District, electronically in PDF format, within seven (7) Calendar Days from the Notice to Proceed.
2. Submit three (3) original (not less than 8-1/2” x 11”, nor more than 30” x 42”) wet-signed, and one (1) color PDF file for submittals that require shop drawings.
3. Submittals that require local and State agency approval, shall conform to this Specification and the requirements of the local or State agency.
4. District will review and provide a response to submittals within seven (7) calendar days (excluding holidays). Submittals that include design documents prepared by a licensed California Engineer will be submitted for the District’s records. Any District review and response to the Contractor’s design documents by a licensed California Engineer will be for format and general compliance only. Contractor and Contractor’s licensed California Engineer are responsible for compliance with all applicable State of California codes, laws, and regulations applicable to the project.

B. Provide submittals for all equipment, if any, listed on the drawings, or required by the specifications.
C. The Schedule of Values shall be submitted to the District within seven (7) calendar days after the Notice of Award. The Schedule of Values shall be broken down by the following minimum categories:

1. Mobilization (maximum 5% of contract sum)
2. Utility Location
3. Demolition, to include abatement and disposal
4. Excavation
5. Water Valve Installation
6. Disinfection
7. Backfill and Compaction
8. Repaving or Replacement of Hardscape
9. Planting and Landscaping
10. Final Clean
11. O&M and Warranties
12. As-Built Drawings

The District will only pay for Work installed at the Site, unless otherwise approved by the District.

D. CPM construction schedule shall be submitted within seven (7) work days from the Contract Award date. District and Contractor shall meet and review the schedule. The Notice to Proceed will not be issued until the District accepts the schedule, or accepts it with conditional changes. Below are the minimum activity types that shall be included in the schedule:

1. Contractor Submittals.
2. Submittal Reviews by District (allow for seven (7) days).
3. Construction activities corresponding to the Schedule of Values
4. Schedule of Planned Utility Shutdowns
5. Substantial Completion Milestone
6. Project Closeout Activities.
7. Final Completion Milestone

E. Submittals are for review of conformance with the requirements of the Contract.

F. Staging and fencing area plan shall be submitted within seven (7) days from Contract award date. The plan shall include the following minimum items:

1. Staging Area
2. Location of safety barricades and alternate routes of travel around excavation areas and Staging Area (see section 3.1 A “Work Restrictions”).
3. Temporary Sanitary Facilities Locations
4. Path of Travel for Pedestrians during Construction

1.4 SUBSTITUTIONS.

A. One Product Specified. Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific material, product, thing or service, or any specific name, make, trade name, or catalog number, with or without the words “or equal,” such specification shall be deemed to be used for the purpose of facilitating description of the material, product, thing or service desired and shall be deemed to be followed by the words “or equal” unless the Contract Documents specify “no substitution allowed”, “no equal”, “no equivalent”, or other language with similar meaning, in which case no substitutions will be allowed. Pursuant to Paragraph 1.3.F.3, the Contractor may, unless otherwise stated, within three (3) work days after the bid opening, submit a substitution request for any material, product, thing or service, which shall be materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Documents.

1. Products Specified which are Commercially Unavailable. If the Contractor fails to make a request for substitutions for products, within three (3) work days after bid opening, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District’s discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or guaranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the contract sum should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the District, DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor’s pay request.

B. Substitution Request Form. Requests for substitutions of materials, products, things or services in place of a Specified Item must be submitted to the District in writing on the District’s Substitution Request Form (“Request Form”) within three (3) work days after bid opening, except as provided for in Paragraph 1.3.F.1.

1. The Substitution Request Form must be accompanied by evidence as to whether the proposed substitution:
   (a) Is equal in quality/service/ability to the Specified Item;
(b) Will entail no changes in detail, construction, and scheduling of related work;
(c) Will be acceptable in consideration of the required design and artistic effect;
(d) Will provide no cost disadvantage to the District;
(e) Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
(f) Will required no change of the construction schedule.

2. In completing the Substitution Request Form, the bidder shall state, with respect to each requested substitution, that the bidder will agree to provide the Specified Item in the event that the District denies the bidder’s request for such requested substitution. In the event the District denies the bidder’s requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District, and waives all rights to submit a claim.

C. After Bid Opening. After bids are opened, the apparent lowest bidder shall provide, within three (3) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Design Consultant and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

1. After the District’s receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder’s request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or guaranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the District, DSA or any other governmental agency having jurisdiction shall be on the bidder.

2. If the District accepts a proposed substitution, the Contractor agrees to pay for all District expenses, including but not limited to Division of the State Architect fees, engineering and design services, and all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

PART 2 - PRODUCTS

2.1 MATERIALS
A. Contractor Provided Materials: The Contractor provided materials shall include any associated equipment and appurtenances required for performing the contract properly and in accordance with the equipment manufacturer's literature.
B. All materials shall be new, unless otherwise authorized or specified in the scope of work of this specification.
PART 3 - EXECUTION AND RELATED REQUIREMENTS

3.1 GENERAL

A. Work Restrictions: Contractor shall maintain a safe path of travel for all pedestrians and vehicles during construction. Contractor is required to provide safety barricades, temporary fencing, and alternative routes of travel for pedestrians and vehicles at all times. Anytime the Contractor anticipates it will block and divert existing paths of travel for pedestrians or vehicles, it shall provide a hard copy plan along with proposed wayfinding signage for review by the District at least 15 days prior to such blockage and diversion. Said plan shall be reviewed and approved by the District prior to commencement of this work by the Contractor.

B. Contractor will be allowed to have access and use Campus utilities for temporary water and electricity, but Contractor shall be responsible to investigate prior to bid, and for all work necessary to connect to existing utilities for temporary use.

C. Contractor shall provide temporary sanitary facilities for use of all workers throughout the course of the contract duration. Contractor shall comply with the minimum requirements of the Contra Costa Health Department. Contractor is not permitted to use any Campus toilet facilities.

D. Protection required to prevent damage to adjacent areas, equipment, fixtures and finishes shall be provided. Damage to items while accomplishing the work shall be repaired or replaced with new items at no additional cost to the District.

E. Erosion Control: Contractor shall comply with State of California erosion control requirements and any other requirements specifically shown on the drawings or described in the specifications.

F. Staging Area: Contractor shall stage its equipment, vehicles and materials on College property in approved locations.

G. Scheduling and Sequence of Work: The work shall be prosecuted in such a manner as to cause the least interference with the normal functions of the campus activity. Prior to beginning any work, the Contractor shall meet with the District and the Contractor’s schedule shall be approved as noted in Article 1.3A above.

H. Interruption of Utilities Services: Interruptions shall be kept to a minimum, and shall be at such times and duration as approved ahead of time by the District. No interruption shall occur unless scheduled with the District, and approved in advance as to time and duration of such interruption. No utility interruptions that impact building operation during classes will be allowed unless otherwise approved by the District.

I. Material, equipment, tools and workmen shall be scheduled and delivered to the Site in a timely manner to avoid delay in the work. Materials provided shall be inspected by the Contractor to make certain they are in compliance with the specifications and are free from defects and damage.
J. Workmanship: Skilled personnel shall execute in a careful, neat, and proficient manner and in compliance with accepted trade practices for all work. All work shall be executed in accordance with Cal/OSHA standards and safety orders. And all work on this contract shall comply with all Local, State, and Federal Environmental Laws.

K. Incidental Work: Minor incidental materials and work not specifically mentioned herein, but necessary for the proper completion of the specified work, shall be provided without additional cost to the District.

L. Administrative Forms: District shall provide its standard forms for use by Contractor.

3.2 EXISTING CONDITIONS & DRAWINGS
A. See Section 00210, Information Available to Bidders for documents available for review by the Contractor and its subcontractors prior to and after bid.

3.3 FIELD VERIFICATION AND MEASUREMENTS
A. Contractor shall field verify existing conditions above ground and also below ground prior to excavation. Contractor shall review its plan of work with the District prior to commencing said activities.

3.4 WORK BY CALIFORNIA LICENSED ENGINEER & DSA APPROVAL
A. No work by a California licensed Engineer employed by the Contractor is anticipated for this Project.

B. Note that modifications to existing building structures, fire systems, or ADA changes, if any are discovered during the course of construction, will require DSA approval. Contractor will be granted a non-compensable time extension for the duration it takes to obtain DSA approval. A change order will be negotiated for added direct labor field construction costs, if any.

3.5 SITE WORK
A. Existing Work: Protect existing work which is to remain in place, be reused, or remain the property of the District. Repair items that are to remain and are damaged during performance of the work to their original condition, or replace with new.

B. Existing Utilities: Contractor is responsible for any repair of damage to existing utilities back to original condition or replace with new.

C. Dust and Debris Control: Prevent the spread of dust and debris generated by the Work, and avoid the creation of a nuisance or hazard in the surrounding area. Waste and debris resulting from the Work being performed shall be removed on a daily basis. Promptly remove, and legally dispose of all debris to an offsite location.

D. Hazmat Work: The Contractor shall notify the District immediately if unforeseen hazardous materials are discovered during the course of construction. Contractor shall remove said hazardous materials as required by law, and a change order will be issued for the cost to remove and legally dispose of said materials.
E. Limitation of heavy vehicles: Contractor is responsible for any repair of existing concrete, asphalt paving, and landscape damage during performance of work to the original condition.

F. Disposal of Equipment and Materials: Contractor is responsible for removal and legal disposal of all construction debris.

3.6 PROJECT CLOSEOUT REQUIREMENTS (After Substantial Completion & Before Final Completion)

A. Refer to the Drawings and Specifications, Table of Contents for requirements, and these Supplementary General Conditions.

B. Provide final clean-up of Site prior to Final Completion.

C. Warranty

1. The Contractor warrants to the District that material and equipment furnished under the Contract will be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor’s warranty and guaranty to District includes, but is not limited to the following representations:

a. In addition to any other warranties and guaranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the Certificate of Substantial Completion date issued by District and shall repair or replace any or all such work, together with any other work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of completion as defined in Public Contract Code Section 7107(c) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

b. In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

c. If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District’s requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

d. This Article does not in any way limit the guarantee on any items for which a longer warranty or guaranty is specified or on any items for which a
manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guaranty or warranty certificates upon completion of the project.

2. Format - All Warranties/Guaranties and shall include:
   a. Contractor, subcontractor, and equipment supplier shall provide Warranties and Guaranties on their original company letterhead with original signature.
   b. Contractor shall provide original Warranties and Guaranties. Photo copies, fax and e-mail copies are not acceptable.

3. Preparation
   a. Contractor shall obtain warranties and guaranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within fifteen (15) days after Certificate of Substantial Completion date of the applicable Work. Except for items put into use with District’s permission, Contractor shall leave date of beginning of time of warranty or guaranty blank until the date of completion is determined by District.
   b. Contractor’s Response to Construction Warranty and Guaranty Service Requirements: Following oral or written notification by the District, respond to construction warranty and guaranty service requirements within 24 hours, or earlier in case of emergency.

**WARRANTY/GUARANTY INFORMATION – [insert project number and name on actual tag]**

   a. Type of product/material__________________________________________.
   b. Model number__________________________________________________.
   c. Serial number__________________________________________________.
   d. Contract number______________________________________________.
   e. Warranty/Guaranty period _____ (months) from_______ to___________.
   f. Inspector's signature__________________________________________.
   g. Construction Contractor__________________________________________.
      Address________________________________________________________.
      Telephone number______________________________________________.
   h. Warranty or Guaranty contact______________________________________.
      Address________________________________________________________.
      Telephone number______________________________________________.
   i. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

3.7 TIME OF COMPLETION
   A. See Section 00300, Bid Proposal Form for specific requirements to complete the Work. Time requirements are also included in Section 00600, Construction Agreement.
   B. Substantial Completion: The date on which the Work or designated portion thereof, as certified by the District and Architect, is sufficiently complete, in accordance with the Contract Documents, so the District may occupy or utilize the Work or designated portion thereof for the use for which it is intended.
C. **Remaining Work after Substantial Completion**: If the Architect or District determines that the work required by the Contract is Substantially Complete during any inspection conducted pursuant to this Agreement, the Contractor shall be notified of that determination and the District shall determine if there is Remaining Work. A list of Remaining Work shall be issued only by the District or the Architect and only after the District has certified Substantial Completion. The District or Architect shall give the Contractor the necessary instructions for correction or completion of the Remaining Work, and the Contractor shall immediately comply with and execute such instructions within the Contract Time. Upon completion of the Remaining Work, another inspection shall be made that shall constitute the Final Inspection, provided the Remaining Work has been completed to the satisfaction of the District. If the remaining work has been completed to the satisfaction of the District, the District shall make the final acceptance and notify the Contractor in writing of this acceptance as of the date of Final Inspection.

D. **Final Completion**: The date when all Work for the total project has been completed in accordance with the terms of the Contract Documents and has been inspected following completion of Work identified in the Punch list Inspection and accepted by the Architect and the District. Final Completion is also sometimes referred to as Final Acceptance.

**END OF SECTION 00800**
# SUBSTITUTION REQUEST FORM

## Contractor Information
- **Contractor Name:**
- **Contract #:**

## District Information
- **DSA Application #:**
- **Campus:** Diablo Valley College
- **Project No., Name:** D-4005 Water Valve Replacement

## Certification
- **Contractor:**
- **Date:**

- **A.** Does the substitution affect dimensions shown on Drawings?
- **B.** Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?
- **C.** What effect does the substitution have on other trades?
- **D.** Will substitution cause change to Project Schedule, or to critical delivery dates? Add? Shorten?
- **E.** Differences between proposed substitution and specified item?
- **F.** What is the Cost Differential including all mark-ups?
- **G.** Are Manufacturer's guarantees for the proposed item the same as for item specified? Explain differences.
- **H.** The undersigned accepts full responsibility for delays caused by redesign of other items of the Work necessitated by substitution.
- **I.** The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

## A/E Response:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>SPECIFIED ITEM OR DRAWING</th>
<th>SPECIFICATION SECTION</th>
<th>PROPOSED SUBSTITUTION</th>
</tr>
</thead>
</table>

## District Representative Response:

<table>
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</table>

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# Under penalty of perjury under the Laws of California, I certify that the proposed substitution will be readily available, perform adequately the functions and achieve the results called for by the design concept, be similar in substance to that specified, and be suited to the same use as that specified in Contract Documents.

**Contractor:**

(Please print name of company)  Name and Title (print/type)  Contractor Authorized Representative  Date

---

**A/E Response:**

- O Accepted
- O Not Accepted
- O Accepted As Noted
- O Received Too Late

**District Representative Response:**

- O Accepted
- O Not Accepted
- O Accepted As Noted
- O Received Too Late

BY: Date:  BY: Date:
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all work necessary to successfully complete demolition to prepare site for
the phasing and new construction, including the following:

1. Clean line saw cutting of existing asphalt pavement, concrete sidewalks, concrete
curb/gutter, etc., as specified herein.

2. Protection from injury or defacement existing building elements to be preserved.

3. Removal of debris and deleterious materials such as rubbish.

4. Removal and stockpile of materials for landscaping use at approved location.

5. Disposal of unwanted or objectionable materials off site.

6. Disconnecting, capping or sealing, and abandoning site utilities in place.

7. Disconnecting, capping or sealing, and removing site utilities.

8. Removing above-grade site improvements within limits indicated.

1.2 REGULATORY REQUIREMENTS:

A. No burning shall be allowed.

B. Do not use explosives.

C. Comply with the following California Code of Regulations:

1. Title 8: CAL/OSHA, Chapter, Subchapter 4 – Construction Safety Orders.

2. Title 24: Part 2, California Building Code, Chapter 33, Protection of Pedestrian during
Construction or Demolition.

3. Bay Area Air Quality Management District.

1.3 DEFINITIONS


B. CAL-OSHA: California Occupational Safety and Health Administration.


1.4 SUBMITTALS

A. Follow Submittal procedure outlined in Division 1– General Requirements.

1.5 PROJECT CONDITIONS

A. In all circumstances ensure that demolition work does not adversely affect adjacent water courses groundwater and wildlife, or contribute to excess air and noise pollution.

B. Do not dispose, of waste or volatile materials such as mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

C. Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

D. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

E. Protect trees, plants and foliage on site and adjacent properties where indicated.

F. Except for materials indicated to be stockpiled or to remain, cleared materials are the Contractor’s property. Remove cleared materials from site and dispose of in lawful manner.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to structural backfill defined in Section 31 23 33 Utility Trenching and Backfill.
PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points during construction.

B. Protect existing site improvements to remain during construction.

C. Provide the following temporary facilities to facilitate the demolition operations, as necessary:
   1. Temp Traffic Controls
   2. Protection of Persons and Property
   3. Protection of Utilities
   4. Protection of Trees
   5. Noise and Dust Abatement
   6. Clear and restore area to their original condition
   7. Protect existing site improvements and adjacent structures from removal and damage.
   8. Protect and maintain benchmarks and survey control points during construction.

3.2 RESTORATION

A. Restore areas and existing works outside areas of demolition to match conditions to their original condition, as acceptable to the District.

B. Restore damaged improvements to their original condition, as acceptable to the District.

C. At the end of each day's work all open trench area shall be covered to ensure safe passage of public traffic.

3.3 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.

B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by District or others unless authorized in writing by the District and then only after arranging to provide temporary utility services according to requirements indicated.

D. Coordinate utility interruptions with utility company affected.

E. Do not proceed with utility interruptions without the permission of the District and utility
company affected. Notify the District and the utility company affected 14 working days prior to utility interruptions.

F. Excavate and remove underground utilities that are indicated to be removed.

G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

H. Adjustment of manhole frames and other castings Caltrans Standard Specifications Sec 15-2.05A.

3.4 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.

C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

3.5 SALVAGED IMPROVEMENTS

A. Salvaged Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the District. Avoid damaging materials designated for salvage.

3.6 DISPOSAL

A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the District’s property.

B. Remove: Unless items are otherwise to remain or be reinstalled, remove and dispose of items. Do not store removed items that is of value to the contractor on site.

C. Remove and Reinstall: Remove items; clean, service and otherwise prepare for service; reinstall in the same location (or in the location indicated by the District).
D. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the District. If necessary, the District will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

3.7 CONSTRUCTION WASTE MANAGEMENT

A. To the greatest extent possible, separate reusable and recyclable products from contaminated waste and debris in accordance with the General Contractor’s Waste Management Plan. Place recyclable and reusable products in designated containers and protect from moisture and contamination.

END OF SECTION
PART 1 - GENERAL

1.1 WORK INCLUDED

A. Work included in this section consists of installation of galvanic cathodic protection on the buried, replacement ductile iron valves and fittings associated with the water pipes at Diablo Valley College (DVC) in Pleasant Hill, CA.

1. Cathodic protection of all buried, ductile iron pipe, fittings, valves, risers and appurtenances associated with the referenced water pipelines.

2. Encasement of all ductile iron pipe, fittings, valves, risers and appurtenances associated with the referenced water pipelines in polyethylene.

3. Bonding of buried, non-welded ferrous metal pipe joints.

4. Trenching, drilling, and other excavation.

5. Installation of prepackaged magnesium anodes, cables, and test stations.


7. Provide shop drawings, reports, permits, and obtain Engineer’s approval where required.

8. Correction of all deficiencies.

9. Cleanup and restoration of surface.

10. Work shall include the provision of all materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are obviously necessary to complete the work.

1.2 REGULATORY REQUIREMENTS

A. All materials, workmanship and installation shall conform to all requirements of the legally constituted authority having jurisdiction. These authorities include, but are not limited to, the latest revision of the State of California, Department of Industrial Relations, Division of Industrial Safety Orders of the Industrial Accident Commission; and all other applicable State, County, or City codes and regulations. Nothing in the drawings or specifications is to be construed to permit work not conforming to any of these regulations and codes. Where larger size or better grade materials than those required by these regulations and codes are specified, the specifications and drawings shall have precedence.

1.3 REFERENCE SPECIFICATIONS

B. IEEE - Institute of Electrical and Electronic Engineers.


D. NACE - National Association of Corrosion Engineers.

E. OSHA - Occupational Safety and Health Administration.

1.4 QUALITY ASSURANCE

A. General
   1. All work shall be performed to the satisfaction of the Engineer.

B. Materials
   1. The contractor shall use only new, highest quality cathodic protection components, and standard products from a manufacturer regularly engaged in the production of such material or equipment. The Contractor shall not substitute for the specified materials unless approved by the Engineer.

C. Testing
   1. Cathodic protection components shall be subject to testing to ensure proper installation and operation. Electrical continuity of the pipelines, proper operation of anodes, test leads and all other cathodic protection components shall be tested by the Project Corrosion Consultant, in order to ensure proper installation and operation. The Contractor shall be responsible for correction of all deficiencies identified by the testing and all costs incurred for retesting prior to final acceptance.

D. Compaction
   1. Compaction of backfill for anodes and trenches shall match the existing conditions and shall be approved by the Engineer.

1.5 REQUIREMENTS

A. All buried metallic pipes, fittings and appurtenances associated with the water pipelines shall be encased in 8-mil polyethylene per AWWA C-105. All buried copper water risers shall be encased in 6-mil polyethylene sleeve in accordance with AWWA C-105. Do not dispose, of waste or volatile materials such as mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

B. Galvanic cathodic protection shall be installed on all buried metallic pipe, valves, fittings, risers and appurtenances.

C. All rubber gaskets, mechanical joints and flexible couplings shall be bonded along the entire
buried length of ductile iron pipe.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver cathodic protection materials to the Site in original, sealed containers.

B. Replace all anodes with damaged lead wire.

1.7 MATERIAL SUBMITTALS

A. Prior to commencing work, the Contractor shall submit for approval by the Engineers three (3) copies of following items in accordance with the submittal procedures. The submittal shall include manufacturer, catalog number, size, finish and any pertinent data necessary for proper identification and to determine conformance with drawings & specifications.

1. Anodes
2. Cable
3. Terminal Box, shunt, wire termination material & procedure
4. Traffic Valve Box
5. Exothermic weld equipment and supplies
6. Coating of cable-to-pipe connection
7. Cable warning tape
8. Cable identification tags
9. Conduit and fittings
10. Bitumastic coating

1.8 INTERFERENCE AND EXACT LOCATIONS

A. The Contractor shall coordinate and properly relate this work to the site and to the work of all trades. The general locations of the facilities are shown on the drawings. However, the Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, verify existing conditions in the field, determine the exact locations of existing pipelines and structures and advise the Engineer of any discrepancy that may prevent or hinder the specified work from being completed. The Contractor shall be solely responsible for location and marking underground structures so as to avoid damage during construction.
PART 2 - PRODUCTS

2.1 MAGNESIUM ANODES

A. Magnesium anodes shall be of the H-1 Alloy Grade C (low potential) with composition and dimensions as indicated below. Each anode shall be cast with a steel core and the core shall protrude from one end and shall be of sufficient length to permit attachment of a lead wire.

B. Each anode shall conform to the following chemical composition and dimensions:

<table>
<thead>
<tr>
<th>Chemical Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum 5.0 – 7.0%</td>
</tr>
<tr>
<td>Manganese 0.15% Min</td>
</tr>
<tr>
<td>Zinc 2.0 – 4.0%</td>
</tr>
<tr>
<td>Silicon 0.30% Max</td>
</tr>
<tr>
<td>Iron 0.003% Max.</td>
</tr>
<tr>
<td>Nickel 0.003% Max.</td>
</tr>
<tr>
<td>Copper 0.10% Max.</td>
</tr>
<tr>
<td>Total Other Impurities 0.3 % Max</td>
</tr>
<tr>
<td>Magnesium Balance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bare Anode Dimensions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Wt. Bare (lbs)</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

C. Anode Core Strap: Galvanized steel, with one end of anode recessed to provide access to the rod for connection of the lead wire.

D. Lead Wire: No. 10 AWG, Type THHN (Black) silver brazed to the rod, making a mechanically secure connection.

E. Soldered Connection and Core: Seal entirely with electrical potting compound.

F. Magnesium Anode Packaging: Prepackaged in a cloth bag containing low resistivity backfill consisting of 75% hydrated gypsum, 20% bentonite, and 5% sodium sulfate.
2.2 CABLE

A. All underground cables utilized for bonding cables shall be single conductor, stranded copper, Type CP, insulated for 600 volts with High Molecular Weight Polyethylene (HMWPE) in accordance with the requirements of ASTM D1248, Type 1, Class C, Category 5, Grades E-4 and E-5. Protect existing site improvements to remain during construction.

B. All cables for galvanic anodes and test stations shall be Type THHN, stranded copper, sized as shown on the plans, and shall conform to Federal Specifications JC-30B.

C. Test Leads and Anode Leads: Extend 18 inches minimum above grade after connection to test station terminal board.

2.3 TEST STATION COMPONENTS

A. Terminal boxes shall be locking type, constructed of high-impact, molded Lexan plastic. The test box shall be provided with sufficient hardware and binding post terminals for each cable as shown on the drawings. All test station hardware, including nuts, bolts and shorting straps shall be nickel plated brass.

1. Cable Terminations: If terminal posts with washers and nuts are utilized, all cables that terminate in the terminal boxes shall have ring type connectors that are sized appropriately for the terminal bolts. The ring connectors shall be either a soldered ring type connection or a heavy duty, compression type crimp connection.

2. If binding post terminals are utilized, ring connectors are not required.

3. Subject to Compliance with the Contract Documents the following Manufacturers are acceptable:
   a) Model: T-3 by Tinker & Rasor Company
   b) Or, approved equal

B. Traffic Valve Box: Brooks Type 1RT Traffic Box, or Christy G-5 Traffic Box, or approved equal.

C. Valve Box Covers: Cast iron, with legend "CP TEST" as indicated on Drawings.

D. Anode metering shunts shall be 0.01 ohm, 6 amp capacity, with 1% accuracy, from the same manufacturer as the terminal box.

2.4 CABLE-TO-PIPE CONNECTIONS

A. Accomplish all cable connections to the ductile iron pipe or fittings utilizing an exothermic welding process.
B. Weld Equipment Manufacturers: From one of the following manufacturers, or approved equal:
   1. Erico Products, "Cadweld."
      If binding post terminals are utilized, ring connectors are not required.

C. Traffic Valve Box: Brooks Type 1RT Traffic Box, or Christy G-5 Traffic Box, or approved equal.

D. Cable Connections to pipe and fittings: Manufacturer's standard exothermic weld kits, unless indicated otherwise on Drawings. Exothermic welds for the ductile iron fittings shall be made using the weld metal for cast iron pipe.

E. Use copper wire sleeves and individual components from one manufacturer when making welds.

F. Cable-to-Pipe Coating Material: Coating material for cable-to-pipe connections shall be Handy Caps as manufactured by Royston products or Propoxy 20 epoxy putty as manufactured by the Hercules Chemical Company or approved equal.

2.5 PROTECTION OF CABLE-TO-PIPE OR STRUCTURE CONNECTIONS

A. Epoxy used for sealing the cable to pipe connection shall be Durcon-164, manufactured by the Duriron Company; Scotchcast Resin No. 4, manufactured by 3-M Company; or Propoxy 20 epoxy putty as manufactured by the Hercules Chemical Company or equal.

B. Epoxy paste or Royston Handy Caps may, at the discretion of the Corrosion Engineer, be used as alternatives to liquid epoxy resin. Epoxy paste such as Aquamend as manufactured by Polymeric Systems, Inc., may be used. The Royston Handy Cap, which is a molded plastic cap filled with a corrosion resistant compound on a base of thick elastomeric tape, as manufactured by Royston Laboratories Division or equal may be used only with its associated Roybond 747 primer. The dimensions of the Handy Cap are as follows: 4 inch by 4 inch overall, 10 mils minimum sheet thickness, 125 mils minimum tape thickness. Roybond 747 manufactured by Royston Laboratories Division shall be used to prime the exposed metal surfaces and the 4 inch by 4 inch area to be covered by the Handy Cap. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

2.6 CABLE WARNING TAPE

A. All buried test station and anode cables shall have plastic warning tape installed a minimum of 12 inches above the top of the cables for the entire buried length of the cables. The warning tape shall be 4 inches wide and shall be yellow with black lettering with the legend "CAUTION, CATHODIC PROTECTION CABLES BURIED BELOW" in 3 inch high lettering printed at a minimum of seven foot intervals along the entire buried length of the cable.
2.7 CABLE IDENTIFICATION TAGS

A. All cables in the terminal boxes shall be identified. The identification tags shall be white plastic "zip-tie" type straps with a plastic tab of sufficient size to allow the pipeline station to be written on the tab with a permanent felt tip marker.

2.8 RIGID PVC CONDUIT AND FITTINGS

A. Rigid polyvinylchloride (PVC) conduit and fittings shall be Schedule 40, manufactured to NEMA TC-2 and WC-1094 specifications and shall be U.L. approved.

2.9 BITUMASTIC

A. Coating for all buried bolts, nuts and metallic washers of the ductile iron pipe and the copper insulating corporation stops shall be Bitumastic 300M coal tar mastic coating, as manufactured by Carboline or approved equal.

2.10 POLYETHYLENE SHEETS FOR PIPE ENCASEMENT

A. The polyethylene sheets used for encasement of the ductile iron pipe and fittings shall be minimum 8-mils thick in accordance with AWWA C-105.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. All materials, workmanship and installation shall conform to all requirements of the legally constituted authority having jurisdiction. These authorities include, but are not limited to, the latest revision of the State of California, Department of Industrial Relations, Division of Industrial Safety, Electrical Orders; The National Electric Code, General Construction Safety Orders of the Industrial Accident Commission; and all other applicable State, County, or City standards and regulations. Nothing in the drawings or specifications is to be construed to permit work not conforming to these regulations and codes. Where larger size or better grade materials than required by these regulations and codes are specified, the specifications and drawings shall have precedence.

3.2 STORAGE OF MATERIALS

A. All materials and equipment to be used in construction shall be stored in such a manner to be protected from detrimental effects from the elements. If warehouse storage cannot be provided, materials and equipment shall be stacked well above ground level and protected from the elements with plastic sheeting or other method as appropriate.
3.3 JOINT BONDING

A. At each anode installation site, bond all buried non-welded, rubber gasket joints, mechanical joints, and fusion-bonded epoxy coated flanges for continuity.

B. Install joint bonds with a wire loop extended above the bonded joint. The overall length of the conductor shall permit sufficient flexibility of each fitting across the joint without transferring any tensile stress to the bond cable.

C. Ensure proper connection of cables to fittings.

D. Coat each fitting where the coating is damaged with a patch kit, as supplied by the pipe coating manufacturer, in accordance with the manufacturer's written instructions.

3.4 EXOTHERMIC WELDS

A. At Install exothermic weld connections in accordance with the Drawings.

B. Remove coating materials from the surface over an area just sufficient to make the connection.

C. Clean steel surfaces to white metal by grinding or filing prior to welding the conductor. Resin impregnated grinding wheels are not permitted.

D. Do not bury connections to the structures or piping until the Engineer has inspected the connections and given permission to backfill. Connections made in violation of this provision will be rejected.

E. Test exothermic welds for adherence to the pipe and for electrical continuity between the pipe and wires.

F. Use a 22 ounce hammer for testing adherence by striking a blow using a moderate amount of force to the weld. Take care to avoid hitting the wires.

G. All defective welds shall be removed and replaced.

H. All exposed surfaces of copper and steel shall be covered with a minimum thickness of 1/4-inch of insulating material as shown on the drawings or as follows. The exposed metal and surrounding surface shall be cleaned of contaminants and coated with Royston Roybond 747 primer. After the primer has dried, the Royston Handy Cap shall be applied.

3.5 WIRES

A. Inspect bottom of finished trenches to ensure they are free from stones, roots, other materials which might injure the insulation of the conductors.

B. Lay wires in the ground straight, without kinks, with a minimum cover of 30 inches.
C. Run cable in continuous length, free of joints or splices, unless otherwise specified or indicated on Drawings. Use care during installation to avoid punctures, cuts and similar damage to the insulation. Replace entire cable run where any damage to insulation occurs.

D. Leave a minimum of 18 inches of slack for each conductor at each test station housing. Slack shall be that amount of wire which, when the cover is removed and the wire extended, protrudes beyond the opening of the box or enclosure.

E. No wire bend shall have a radius of less than eight times the diameter of that wire.

F. Strip insulation from the cable to make metal-to-metal connection to each binding post. All exposed surfaces of copper and steel shall be covered with a minimum thickness of 1/4-inch of insulating material as shown on the drawings or as follows. The exposed metal and surrounding surface shall be cleaned of contaminants and coated with Royston Roybond 747 primer. After the primer has dried, the Royston Handy Cap shall be applied.

3.6 SACRIFICIAL MAGNESIUM ANODES

A. Excavate a hole to a minimum of 3 inches larger than the package sacrificial anode diameter, at least 5 feet deep and a minimum of 4 to 5 feet from the fitting.

B. Excavate the lead wire trench to a minimum depth of 30 inches.

C. Remove plastic or paper bags from the anode before lowering into the hole. The cloth bag is to remain around the anode.

D. Exercise care to preclude damaging the cloth bag and lead wire insulation on the sacrificial anode. Do not lift or support anode by the lead wire.

E. Center the packaged anode in the hole and backfill with native soil free of rocks and other foreign objects.

F. Flood the anode hole with 5 gallons of fresh water when the backfill reaches one foot above the anode. Clean steel surfaces to white metal by grinding or filing prior to welding the conductor. Resin impregnated grinding wheels are not permitted.

3.7 ANODE TEST STATIONS

A. Install anode test stations where indicated on Drawings. Provide a concrete collar where anode test stations are to be installed in native soil. Set collar level flush with top of curb or finish grade in paved areas and two (2) inches above grade in landscaped and unimproved areas. Provide a minimum of 18 inches of slack for each cable in each test station. Sufficient slack shall be provided to allow removal of the terminal box from the test station without disconnecting any of the cables.
3.8 FIELD COATING OF BURIED FLANGE HARDWARE

A. All buried nuts and bolts shall be coated with bitumastic prior to polyethylene encasement. After flange hardware is installed use wire brush, power brush or an abrasive cleaning pad to remove all loose material, dirt and grime from substrate to a minimum cleanliness of SSPC SP2. Apply Bitumastic coating liberally with a medium bristle brush to the extent that all surfaces are completely covered with no bare spots visually evident. Coat exposed surfaces of bolts, washers and nuts, giving special attention to the bottom-side surfaces. Follow the manufacturer’s recommendations for drying times required before polyethylene encasement and backfill.

3.9 POLYETHYLENE ENCASEMENT OF PIPE AND FITTINGS

A. The ductile iron pipes and fittings shall be encased in minimum 8-mils thick polyethylene in accordance with AWWA C-105. The buried copper piping shall be encased in 6-mil thick polyethylene sleeving.

3.10 SYSTEM TESTING

A. After installation of sacrificial anode system, and prior to paving, conduct testing to verify proper operation of the cathodic protection system. Testing shall be conducted by the Project Corrosion Engineer. All test results shall be submitted to the City for approval. Any and all deficiencies shall be corrected by the Contractor at his cost and retested prior to final acceptance. All retesting shall be at the Contractor’s expense. All test results shall be submitted to the City Corrosion Engineer for approval.

END OF SECTION
SECTION 31 11 00 - CLEARING & GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all work necessary to successfully complete demolition, clearing & grubbing to prepare site for the phasing and new construction, including the following:

1. Protecting existing trees and vegetation to remain.
2. Trimming tree limbs and roots.
3. Removing trees as designated.
4. Clearing vegetation, debris, trash and other materials within limits indicated.
5. Grubbing of vegetation within limits indicated.
7. Removing above-grade site improvements within limits indicated.
8. Disconnecting, capping or sealing, and abandoning site utilities in place.
9. Disconnecting, capping or sealing, and removing site utilities.
10. Disposing of objectionable material off site.
11. Clean line saw cutting of existing asphalt pavement, concrete sidewalks, concrete curb/gutter, etc., as specified herein.
13. Protection from injury or defacement of trees and other vegetation and objects to be preserved.
   a. Removal of surface debris and deleterious materials such as rubbish.
   b. Removal and stockpile of materials for landscaping use at approved location.
   c. Disposal of unwanted materials off site.

1.2 RELATED DOCUMENTS

A. Caltrans Standard Specifications, Section 16, Clearing and Grubbing.

1.3 REGULATORY REQUIREMENTS

A. No burning shall be allowed.
B. Comply with the following California Code of Regulations:
   1. Title 8: CAL/OSHA, Chapter, Subchapter 4 – Construction Safety Orders
   2. Title 24: Part 2, California Building Code, Chapter 33, Protection of Pedestrian during Construction or Demolition.
   3. Bay Area Air Quality Management District

1.4 DEFINITIONS
   B. CAL-OSHA: California Occupational Safety and Health Administration.
   C. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2-inches in diameter; and free of weeds, roots, and other deleterious materials.
   D. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.5 MATERIAL DISTRICTSHIP
   A. Except for stripped topsoil or other materials indicated to remain District's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 SUBMITTALS
   A. Submittal procedure shall be as outlined in Division 1 – General Requirements.

1.7 QUALITY ASSURANCE
   A. Do not remove or prune trees without first securing a permit from the appropriate agency.
   B. Prune to the standards of the International Society of Arborists and to ANSI 300.

1.8 PROJECT CONDITIONS
   A. Except for materials indicated to be stockpiled or to remain the District's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in
lawful manner.

B. Salvage Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the District. Avoid damaging materials designated for salvage.

C. Unidentified Materials:
   1. If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the District.
   2. If necessary, the District will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to structural backfill defined in Section 31 23 33 Utility Trenching and Backfill.
   1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain during construction.
   1. Restore damaged improvements to their original condition, as acceptable to the Engineer and/or District. Prior to restoration the contractor shall notify Engineer and/or District of the damaged improvements.

3.2 TREE PROTECTION

A. Erect and maintain temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.

CLEARING & GRUBBING
B. Do not store construction materials, debris, or excavated material within drip line of remaining trees.

C. Do not permit vehicles or equipment within drip line of remaining trees.

D. Do not excavate within drip line of remaining trees, unless otherwise indicated.

E. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation edge as possible.
   1. Cover exposed roots with burlap and water regularly.
   2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
   3. Coat cut faces of roots more than 1-1/2-inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
   4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.

3.3 TREE PRUNING

A. Prune trees to balance the crown, and eliminate hazards. Perform main work to reduce sail effect through thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs and sucker growth. Prune limbs back to an appropriate lateral branch.

B. Make final cuts at the outer edge of the branch collar in accordance with the arborist’s recommendations.

C. Perform pruning work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

3.4 ROOT PRUNING

A. Do not cut tree roots greater than 3-inch in diameter and less than 12-inches below ground level without approval of the District.

B. Cut tree roots cleanly, as far from the trunk as possible, and not underneath any area where walkways are to be constructed. Root pruning shall be to a depth of 18-inches.

C. Tree root prune using a Vermeer root-cutting machine. Obtain the District’s approval before using alternate equipment or techniques.

D. Complete tree root pruning prior to any excavation adjacent to the tree.

E. Do not expose tree roots to drying out. Cover root ends with soil or burlap and keep moist
until the final backfill is completed.

3.5 TREE REMOVAL

A. Remove trees designated for removal prior to the construction of new improvements.

B. Perform tree removal work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

C. Remove or grind stumps to a minimum of 18-inches below finish subgrade. Remove surface roots to this depth within 24-inches of the tree trunk. Trees, plants and roots that are below proposed building footprint or slabs on grade shall be removed in its entirety.

3.6 RESTORATION

A. Restore damaged improvements to their original condition, as acceptable to the District.

B. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, as directed by the District.
   1. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
   2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the District. Clear and grub existing areas only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.

3.7 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.

B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by District or others unless authorized in writing by the District, and then only after arranging to provide temporary utility services according to requirements indicated.

D. Coordinate utility interruptions with utility company affected.

E. Do not proceed with utility interruptions without the permission of the District and utility company affected. Notify District and utility company affected 14 working days prior to utility interruptions.
F. Excavate and remove underground utilities that are indicated to be removed.

G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick. All abandoned piping shall be filled with a cementious material, such as controlled low strength material.

3.8 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

B. Remove trash, debris, logs, concrete, masonry and other waste materials.

C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.

D. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18-inches below subgrade. Trees, plants and roots that are below proposed building footprint or slabs on grade shall be removed in its entirety.

E. Use only hand methods for grubbing within drip line of remaining trees.

3.9 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Remove trash, debris, weeds, roots, and other waste materials.

D. Stockpile topsoil materials designated to remain on site at a location approved by the District at a location away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust. Refer to the SWPPP as required.

E. Do not stockpile topsoil within drip line of remaining trees.

3.10 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches and is not parallel or perpendicular of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

3.11 BACKFILL

A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 23 33.

3.12 DISPOSAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the District’s property.

3.13 TEMPORARY FACILITIES

A. Provide the following temporary facilities to facilitate the demolition operations, as necessary.
   1. Temp Traffic Controls
   2. Protection of Persons and Property
   3. Protection of Utilities
   4. Noise and Dust Abatement.
   5. Clear and restore area to their original condition.
   6. Protect survey markers and monuments, existing improvements, and adjacent structures from removal and damage.

3.14 CONSTRUCTION WASTE MANAGEMENT

A. To the greatest extent possible, separate reusable and recyclable products from contaminated waste and debris in accordance with the General Contractor’s Waste Management Plan. Place recyclable and reusable products in designated containers and protect from moisture and contamination.
PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes the requirements for earthwork operation, as shown on the Drawings and specified:
   1. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for parking areas, walks, paths, and any other site improvements called for on the Plans.
      a. Aggregate base.
      b. Lime stabilization.
      c. Dispose off-site waste, excess or unsatisfactory material.

1.2 RELATED DOCUMENTS

A. Caltrans Standard Specifications:
   1. Section 17, Watering.
   2. Section 19, Earthwork.
   4. Section 26, Aggregate Bases.

1.3 RELATED SECTIONS

A. Section 31 11 00 - Clearing and Grubbing

1.4 REGULATORY REQUIREMENTS

A. State of California, Department of Transportation, Standard Specifications 2010 - Section 19

B. Contra Costa County, Standard Specification and Details.

C. ASTM
   1. D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
   2. D1557-70 for testing in compaction.
   3. D 1586, Method for Penetration Tests and Split-Barrel Sampling of Soils.
4. D 2487, Classification of Soils for Engineering Purposes.


E. CAL/OSHA, Title 8.

1.5 DEFINITIONS

A. Borrow: Approved soil material imported from off-site for use as Structural Fill or Backfill.

B. Excavation: Removal of material encountered above subgrade elevations.
   1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans or authorized by the District’s Representative.
   2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization by the District’s Representative. Unauthorized excavation shall be without additional compensation.

C. Structural Backfill: Soil materials as approved by the District Representative and used to fill excavations resulting from removal of existing below grade facilities, including trees.

D. Structural Fill: Soil materials as specified herein and used to raise existing grades.

E. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material ¾-cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.

F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.

G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base or topsoil materials.

H. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project. The District’s Representative will determine if a soil material is unsuitable.
I. Utilities: onsite underground pipes, conduits, ducts and cables.

1.6 SUBMITTALS

A. Submittal procedure shall be as outlined in Division 1 – General Requirements.

B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.7 QUALITY ASSURANCE

A. Conform all work and materials to the recommendations or requirements the District’s Representative.

B. Conform all work to the appropriate portion(s) of Caltrans Standard Specifications, Section 17 and 19.

C. Percentage of compaction shall be at least 95 percent relative compaction for areas directly under pavement sections and 90 percent relative compaction elsewhere. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.

D. Excavate and backfill existing areas only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations. Backfill as necessary to achieve rough grade elevations as indicated per plan.

E. Perform excavation, filling, compaction and related earthwork under the observation of the District’s Representative. Materials placed without approval of the District’s Representative will be presumed to be defective and, at the discretion of the District’s Representative, shall be removed and replaced at no cost to the District. Notify the District’s Representative at least 24-hours prior to commencement of earthwork and at least 48 hours prior to testing.

F. The District’s Representative will perform observations required to enable him to form an opinion of the acceptability of the Project earthwork. Correct earthwork that, in the opinion of the District’s Representative, does not meet the requirements of these Technical Specifications.

G. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces and shall replace portions that in the opinion of the District’s Representative have been displaced or are otherwise unsatisfactory due to the Contractor’s operations.
H. Do not mix or place cement treated base when the temperature is below 36 degrees F or when the ground is frozen.

I. Finish surface of material to be stabilized prior to lime treatment shall be as specified in Section 24-1.04 of Caltrans Standard Specifications and as required by these Technical Specifications.

J. Finish surface of the stabilized material after lime treatment shall be as specified in Section 24-1.08 of Caltrans Standard Specifications and as required by these Technical Specifications.

K. Identify and protect existing utilities.

L. Finish soil grade tolerance at completion of grading:
   1. Paved areas: +0.05
   2. Other areas: ±0.10 feet.

1.8 PROJECT CONDITIONS

A. Promptly notify the District and the District’s Representative of surface or subsurface conditions differing from those disclosed in conformance with Division 1 General Requirements.

B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

C. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

D. Temporarily stockpile fill material in an orderly and safe manner and in a location as specified herein.

E. Provide dust and noise control in conformance with Division 1 General Requirements.

F. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from on-site excavations.
B. Obtain approval of on-site soil materials and borrow materials to be used for structural fill or structural backfill from the District's Representative.

C. On-Site Structural Fill and Structural Backfill: Soil or soil-rock mixture from on site excavations, free from organic matter or other deleterious substances. On-site structural fill and backfill shall not contain rocks or rock fragments over 3 inches in greatest dimension.

D. Imported Structural Fill and Structural Backfill: Conform to the requirements of on-site structural fill. Material shall also be a non-expansive and predominantly granular soil or soil-rock mixture with plasticity index of 8 or less, has a liquid limit less than 25, and an R-Value of 25 or greater.

2.2 AGGREGATE BASE

   1. Class 2, 1-1/2-inch Maximum: Section 26-1.02A.
   2. Class 2, 3/4-inch Maximum: Section 26-1.02A.
   3. Class 3: Section 26-1.02B.

2.3 LIME STABILIZATION

A. Lime Treatment Material: Conform to Section 24-1.02 and 24-1.03 of Caltrans Standard Specifications.

PART 3 - EXECUTION

3.1 GENERAL

A. Conform to Section 19, Earthwork, Caltrans Standard Specifications as modified by the Contract Documents.

B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

C. The use of explosives will not be permitted.

3.2 CONTROL OF WATER AND DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.

B. Dewater during backfilling operation so that groundwater is maintained a least two feet below...
level of compaction effort.

C. Obtain the District’s Representative’s approval for proposed control of water and dewatering methods.

D. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.

E. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.

F. Maintain dewatering system in place until dewatering is no longer required.

3.3 WET WEATHER CONDITIONS

A. Do not prepare subgrade, place or compact soil materials if above optimum moisture content.

B. If the District’s Representative allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the District’s Representative.

3.4 EXCAVATION

A. Excavate earth and rock to lines and grades shown on drawings as prepared by a licensed professional engineer and to the neat dimensions indicated on the Plans, required herein or as required to satisfactorily compact backfill.

B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.

C. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.

D. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.5 REMOVAL OF EXISTING FILLS AND UNSUITABLE MATERIAL

A. Over-excavate areas of existing fills and other unsuitable material encountered during mass grading as directed by the District’s Representative.

B. Conform with Division 1 General Requirements.
3.6 GRADING

A. Uniformly grade the Project to meet existing conditions.

B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.

C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.7 SUBGRADE PREPARATION

A. Prepare subgrades under paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill. At least 6 inches of select material shall be placed beneath exterior flatwork and extend at least two feet beyond the slab edges.

B. Prepare subgrades for paved areas, curbs and gutters by plowing or scarifying surface at least 9 inches in one lift below final subgrade elevations and 1-foot beyond edge of pavement unless specified otherwise by the District’s Representative. Uniformly moisture condition to obtain optimum moisture contents. Break clods and condition surface by harrowing or dry rolling. Remove boulders, hard ribs and solid rock. Prepare earth uniform for full depth and width of subgrade.

   1. Surface soil that has a moisture content of less than 22 percent (average, approximate plastic limit of the soil) should be excavated, moisture-conditioned to at least three percent above optimum moisture content, and compacted to between 88 and 93 percent relative compaction to reduce its expansion potential; maximum depth of required excavation for moisture conditioning is about two feet.

C. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

D. Obtain the District’s Representative’s approval of subgrades prior to placing pavement.

E. Subgrade preparation will not be required in areas where lime treatment is used.

3.8 PLACEMENT OF STRUCTURAL FILL

A. Obtain the District’s Representative’s approval of surface to receive structural fill prior to placement of structural fill material.

B. Place structural fill on prepared subgrade.

C. Spread structural fill material in uniform lifts not more than 8-inches in un-compacted thickness and compact.

D. Place structural fill material to suitable elevations above grade to provide for anticipated
settlement and shrinkage.

E. Overbuild fill slopes, as required by the District’s Representative, to obtain required compaction. Remove excess material to lines and grades indicated.

F. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.

3.9 TEMPORARY AND PERMANENT SLOPES

A. Temporary slopes less than 10 feet high should be inclined no steeper than 1.5:1 (horizontal to vertical).

B. Shallow, permanent, cut and fill slopes shall be constructed no steeper than 2:1 (horizontal to vertical).

3.10 AGGREGATE BASE

A. Watering, Spreading and Compacting: Section 26-1.035, 26-1.04 and 26-1.05 of Caltrans Standard Specifications.

3.11 LIME STABILIZATION

A. Performing the stabilization shall conform to Section 24-1.05, through 24-1.09 of Caltrans Standard Specifications and the following:

1. Add lime in the amount specified by the Engineer of Record.

2. Lime treat subgrade soils from back of curb to back of curb to a depth specified by the District’s Representative.

3. Mix in two mixing periods, both with the tines lowered to the same depth. Both mixing periods shall be monitored and verified by the District’s Representative. The second mixing shall occur at about 24 hours after the initial mixing.

4. Compact and grade the lime mixed subgrade immediately after the second mixing.

5. Compact the lime treated subgrade to 93 percent as determined by ASTM D1557.

6. After application of the curing seal, do not allow traffic on the lime treated material for a period of 7 days in lieu of the 3 days specified in Section 24-1.03 of Caltrans Standard Specifications.

7. Proof-roll the stabilized subgrade after compacting to confirm that a non-yielding surface has been achieved. Yielding areas, if any, shall be mitigated. Mitigation could consist of over-excavation, utilization of stabilization fabric, or chemical treatment. Each case shall be addressed individually in the field by the District’s Representative.
3.12 COMPACTION AND TESTING

A. Do not compact by ponding, flooding or jetting.

B. Compact soils at optimum water content. Aerate material if it is too wet. Add water to material if it is too dry. Thoroughly mix lifts before compaction to ensure uniform moisture distribution.

C. Perform compaction using rollers, pneumatic or vibratory compactors or other equipment and mechanical methods as specified herein.

D. Compaction requirements:
   1. Compact structural fills less than 5-feet thick to 90 percent compaction.
   2. Compact structural fill 5-feet thick or greater to 95 percent compaction.
   3. Compact the upper 6 inches of subgrade soils beneath pavements, curbs and gutters to 95 percent compaction. Extend compaction 2-feet beyond pavement edges unless specified otherwise by the District’s Representative.
   4. Compact the upper 6-inches of subgrade soils under walks, structures and areas to receive structural fill to 90 percent compaction.

3.13 DISPOSAL

A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the District.

END OF SECTION
SECTION 31 23 33 - UTILITY TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Excavation, bedding, and backfill of underground storm drain, sanitary sewer and water piping and associated structures.

B. The CONTRACTOR shall provide all materials, equipment, and labor necessary to perform and complete all utility earthwork as shown on the Drawings and as specified herein.

C. The work of this Section includes all utility earthwork required for construction of the project. Such earthwork shall include, but may not necessarily be limited to, the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work, which shall include, but not necessarily be limited to, the furnishing, placing, and removing of sheeting, shoring and bracing necessary to safely support the sides of all excavations; all pumping, ditching, draining and other required measures for the removal or exclusion of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; the disposal of excess excavated materials; borrow of materials to make up deficiencies for fills; and all other incidental earthwork.

D. Hazardous materials shall be handled in accordance with all regulatory agency requirements. Asbestos cement pipe (ACP) exists within the project area and replacement of existing ACP is anticipated but shall be abandoned in place unless otherwise noted in the plans. The contractor shall make every attempt to protect all asbestos containing items during the execution of this contract. However, there will be instances where ACP or asbestos containing material will need to be removed, handled, cut, disturbed, or disposed of and the contractor shall comply with all local, state and federal regulations regarding construction activities near asbestos containing materials.

1.2 SECTION EXCLUDES

A. Drainage fill material and placement around subdrains.

B. Power, telecommunications, and low voltage scope of work.

1.3 RELATED DOCUMENTS

A. ASTM:
   1. C 33, Specification for Concrete Aggregates.
7. D 2487, Classification of Soils for Engineering Purposes.


C. Caltrans Standard Specifications:
1. Section 19, Earthwork.
2. Section 26, Aggregate Bases.

D. CAL/OSHA, Title 8.

1.4 RELATED SECTIONS

A. Section 31 11 00, Clearing and Grubbing.

B. Section 33 11 66 Water Distribution System.

C. Section 33 31 00, Sanitary Sewer System.

1.5 DEFINITIONS

A. AC: Asphalt Concrete.


C. Bedding: Material from bottom of trench to bottom of pipe.

D. CDF: Controlled Density Fill.

E. DIP: Ductile Iron Pipe.

F. Initial Backfill: Material from bottom of pipe to 12-inches above top of pipe.
G. PCC: Portland Cement Concrete.

H. RCP: Reinforced Concrete Pipe.

I. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of ½ the outside diameter measured from the top or bottom of the pipe.

J. Subsequent Backfill: Material from 12-inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.

K. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.
   1. Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans or authorized by the Engineer of Record.
   2. Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions without authorization by the Engineer of Record. Unauthorized excavation shall be without additional compensation.

L. Utility Structures:
   1. Storm Drain Manholes, vaults, etc.
   2. Sanitary sewer manholes, vaults, etc.
   3. Water vaults, etc.

1.6 SUBMITTALS

A. Submittal procedure shall be as outlined in Division 1 – General Requirements

B. Product Data:
   1. Grading and quality characteristics showing compliance with requirements for the Work.
   2. Certify that material meets requirements of the Project.

C. Samples:
   1. If required by the Engineer of Record, provide 40-pound samples of all imported trench bedding and backfill material sealed in airtight containers, tagged with source locations and suppliers of each proposed material. Do not import materials to Project without written approval of the Engineer of Record.
   2. Provide materials from same source throughout work. Change of source requires approval of the Engineer of Record and the District’s Representative’s.

D. Material Test Reports: Provide, from a qualified testing agency, the following test results showing compliance with the project requirements:
   1. Classification according to ASTM D 2487 of each imported trench bedding and backfill
material.
2. Laboratory compaction curve in conformance with ASTM D 1557 for each imported trench bedding and backfill material

1.7 QUALITY ASSURANCE

A. Provide an independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Conform all work and materials to the recommendations or requirements to meet the approval of the Engineer of Record.

C. Conform all work to the appropriate portion(s) of the Caltrans Standard Specifications, Section 19.

D. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.

1.8 PROJECT CONDITIONS

A. Promptly notify the District’s Representative of surface or subsurface conditions differing from those disclosed in the Contract Documents. First notify the District’s Representative verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract will be allowed unless Contractor has notified the District’s Representative in writing of differing conditions prior to contractor starting work on affected items.

B. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

C. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.

D. Provide dust and noise control in conformance with Section 01 00 00, General Requirements.

PART 2 - PRODUCTS

2.1 PIPE BEDDING AND INITIAL BACKFILL
A. ASTM D 2321, Class IA, IB or II.
   1. Clean and free of clay, silt or organic matter.

B. Class 2 Aggregate Base: Conform to Section 26 of Caltrans Standard Specifications, \( \frac{3}{8} \)-inch maximum.


2.2 WARNING TAPE

A. See Section 33 11 66, Water Distribution System.

2.3 SUBSEQUENT BACKFILL

A. Conform to on-site or imported structural backfill in Section 31 23 00, Excavation and Fill.

2.4 CONTROLLED DENSITY FILL (CDF) (IN TRENCHES)

A. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than 3/8-inch top size. The 3/8-inch aggregate shall not comprise more than 30% of the total aggregate content.

B. Cement: Conform to the standards as set forth in ASTM C-150, Type II Cement.

C. Fly Ash: Conform to the standards as set forth in ASTM C-618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.

D. Air Entraining Agent: Conform to the standards as set forth in ASTM C-260.

E. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.

F. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.

G. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight.
requirements. Entrained air content may be as high as 20% for fluidity requirements.

H. Mix design shall meet the Engineer of Record’s approval.

2.5 CONCRETE STRUCTURE BEDDING AND BACKFILL

A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill, or other material approved by the Engineer of Record.

B. Poured-in-Place Structures:
1. Bedding: Bedding shall meet the approval of the Engineer of Record. In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.
2. Side Backfill: On-site or imported structural fill meeting the requirements given in Section 31 23 00.

2.6 FILTER FABRIC

A. Filter Fabric:
2. Mirifi 140N (Mirifi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

PART 3 - EXECUTION

3.1 TRENCHING AND EXCAVATION

A. Existing PCC or AC Areas: Cut PCC or AC to full depth at a minimum distance of 12-inches beyond the edge of the trench.

B. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.

C. Excavation Depth for Bedding: Minimum of 4-inches below bottom of pipe or as otherwise allowed or required Engineer of Record, except that bedding is not required for nominal pipe diameters of 2-inches or less.

D. Excavation Width at Springline of Pipe:
1. Up to a nominal pipe diameter of 24-inches: Minimum of twice the outside pipe diameter, or as otherwise allowed or required by the Engineer of Record.
2. Nominal pipe diameter of 30-inches through 36-inches: Minimum of the outside pipe diameter plus 2-feet, or as otherwise allowed or required by the Engineer of Record.
3. Nominal pipe diameter of 42-inches through 60-inches: Minimum of the outside pipe diameter plus 3-feet, or as otherwise allowed or required by the Engineer of Record.

E. Over-Excavations: Backfill trenches that have been excavated below bedding design subgrade, with approved bedding material.

F. Comply with the District’s Representative’s limitations on the amount of trench that is opened or partially opened at any one time. Do not leave trenches open overnight without the approval of the District’s Representative.

G. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.

H. Bottoms of trenches will be subject to testing. Correct deficiencies as directed by the Engineer of Record.

I. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

3.2 CONTROL OF WATER AND DEWATERING

A. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be necessary to control ground water and seepage to the satisfaction of the Engineer of Record and the District’s Representative until backfilling is completed.

B. Dewater during backfilling operation so that groundwater is maintained at least one foot below level of compaction effort.

C. Obtain the Engineer of Record’s approval for proposed control of water and dewatering methods.

D. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.

E. Maintain dewatering system in place until dewatering is no longer required.

3.3 BRACING AND SHORING

A. Conform to California and Federal OSHA requirements.

B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to
the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

C. Be solely responsible for all bracing and shoring and, if requested by the District’s Representative, submit details and calculations to the District’s Representative. The District’s Representative may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the District’s Representative.

D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

3.4 PIPE BEDDING

A. Obtain approval of bedding material from Engineer of Record.

B. Accurately shape bedding material to the line and grade called for on the Plans. Carefully place and compact bedding material to the elevation of the bottom of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction for sand and 95% relative compaction for fine gravel unless specified otherwise on the Plans or by the Engineer of Record. Compact by pneumatic tampers or other mechanical means approved by the Engineer of Record. Jetting or ponding of bedding material will not be permitted.

C. Upon completion of bedding operations, and prior to the installation of pipe, notify the Engineer of Record, who will inspect the bedding layer. Do not commence pipe laying until the Engineer of Record has approved the bedding.

3.5 WARNING TAPE

A. Install in accordance with Section 33 11 66.

3.6 BACKFILLING

A. Obtain approval of backfill material from Engineer of Record.

B. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Carefully place and compact initial backfill material to an elevation of 12-inches above the top of the pipe in layers not exceeding 8-
inches in loose thickness. Compact initial backfill material at optimum water content to 90% relative compaction for sand and 95% relative compaction for fine gravel unless specified otherwise on the Plans or by the Engineer of Record. Compact by pneumatic tampers or other mechanical means approved by the Engineer of Record. Jetting or ponding of initial backfill material will not be permitted.

C. Bring subsequent backfill to subgrade or finish grade as indicated. Carefully place and compact subsequent backfill material to the proper elevation in layers not exceeding 8-inches in loose thickness. Compact subsequent backfill material at optimum water content to 90% relative compaction, except in areas subject to vehicular traffic shall be compacted to at least 95% relative compaction, unless specified otherwise on the Plans or by the Engineer of Record. Compact by pneumatic tampers or other mechanical means approved by the Engineer of Record. Jetting or ponding of subsequent backfill material will not be permitted.

D. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures which may cause excessive pipe displacement or damage the pipe.

E. Utility backfill shall be inspected by the District Representative during placement. Cooperate with the District Representative and provide working space. Backfill not compacted in accordance with these specifications shall be re-compacted or removed as necessary and replaced to meet the specified requirements, to the satisfaction of the Engineer of Record and the District’s Representative prior to proceeding with the Project.

3.7 CLEANUP

A. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the District’s Representative.

END OF SECTION
SECTION 32 05 23 - PORTLAND CEMENT CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Materials for Portland cement concrete.
B. Aggregate and aggregate grading for Portland cement concrete.
C. Water for Portland cement concrete.
D. Admixtures for Portland cement concrete.
E. Proportioning for Portland cement concrete.
F. Mixing and transporting Portland cement concrete.
G. Formwork for cast in place Portland cement concrete.
H. Embedded materials for Portland cement concrete.
I. Steel reinforcement for Portland cement concrete.
J. Placing and finishing Portland cement concrete.
K. Curing Portland cement concrete.
L. Protecting Portland cement concrete.

1.2 RELATED SECTIONS

A. Section 31 11 00, Clearing and Grubbing

1.3 RELATED DOCUMENTS

A. ASTM:
   1. A 82, Cold Drawn Steel Wire for Concrete Reinforcement.
   2. A 185, Steel Welded Wire Fabric, Plain for Concrete Reinforcement.
   3. A 615, Deformed and Plain Billet Steel Bars, for Concrete Reinforcement.
7. C 618, Fly Ash and Raw or Calcined Natural Pozzolan for use as Natural Admixture in Portland Cement.

B. Caltrans Standard Specifications:
   1. Section 51: Concrete Structures.
   2. Section 73: Concrete Curbs and Sidewalks.

1.4 DEFINITIONS
A. ASTM: American Society for Testing Materials

1.5 SUBMITTALS
A. Submittal procedure shall be as outlined in Division 1 – General Requirements.

B. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the drawings. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.

1.6 QUALITY ASSURANCE
A. Concrete shall be subject to quality assurance in accordance with Section 90 of Caltrans Standard Specifications.
   1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slab on grade.

B. Certifications:
   1. Provide District’s Representative at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
      a. Materials contained comply with the requirements of the Contract Documents in all respects.
      b. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
      c. Statement of type and amount of any admixtures.
2. Provide District's Representative, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

C. Conform to the applicable provisions of Section 51, 73 and 90 of the Caltrans Standard Specification and these Technical Specifications.

1. Conform construction of Portland cement concrete surface improvements (including curbs, gutters, medians, valley gutters, walks, pads) to the requirements of Section 73 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.

2. Conform other construction of Portland cement concrete items to the requirements of Section 51 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.

1.7 DESIGNATION

A. General: Whenever the 28-day compressive strength is designated herein or on the Plans is a 3,600psi or greater, the concrete shall considered to be designated by compressive strength. The 28-day compressive strength shown herein or on the plans which are less than a 3,600psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-1.01 of the Caltrans Standard Specifications.

B. Unless noted otherwise herein or on the Plans, the minimum compressive strength for portland cement concrete at 28 days for this Project shall be 3,600 psi.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT

A. General: Type II (modified) cement conforming to section 90-2.01 of the Caltrans Standard Specifications.

B. Provide a coloring equivalent to ¼ pound of lampblack per cubic yard. Add to the concrete at the central mixing plant. Liquiblack concrete colorant, or approved equal, may be used in lieu of lampblack. One pint of Liquiblack shall be considered equal to one pound of lampblack.

2.2 AGGREGATE AND AGGREGATE GRADING

A. General: Conform to the requirements of Section 90-2.02, 2.02A and 2.02B of the Caltrans Standard Specifications.
B. Aggregate Size and Gradation: Conform to the requirements of Section 90-3 of the Caltrans Standard Specifications for 1-inch maximum combined aggregate.

2.3 WATER

A. General: Conform to the requirements of section 90-2.03 of the Caltrans Standard Specifications. For mixing and curing Portland cement concrete and for washing aggregates.

2.4 EXPANSION JOINT MATERIAL

A. Material for expansion joints in Portland cement concrete improvements shall be pre-molded expansion joint fillers conforming to the requirements of ASTM Designation D 1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless noted otherwise herein or on the Plans expansion joint thickness shall be as follows:
   1. Curbs, Curb Ramps, Sidewalks, Driveways and Gutter Depressions: \( \frac{1}{8} \)-inch.
   2. Gutter Lining, Ditch Lining and Channel Lining: \( \frac{1}{2} \)-inch.
   3. Structures: As indicated.

2.5 REINFORCEMENT AND DOWELS

A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.

B. Slip dowels, where noted or called for on the plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.

C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM Designation A 82 for the material and ASTM Designation A 185 for the mesh. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.

D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM Designation A 82.

E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.
2.6 COLOR AND PATTERN FOR DECORATIVE SURFACES

A. Colors for decorative surfacing shall be CHROMIX admixtures as manufactured by the L. M. Scofield Company, Schedule A-312.05 or approved equal. The specific color shall be as designated or called for on the Plans.

B. Patterns for decorative surfacing shall be standard "Bomanite" patterns as copyrighted by the Bomanite Corporation of Palo Alto, California or approved equal. The specific pattern shall be as designated or called for on the Plans.

2.7 ACCESSORY MATERIALS

A. Conform water stops and other items required to be embedded in portland cement concrete structures to the applicable requirements of Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans or detail drawings.

B. Curing Compounds:
   1. Regular Portland Cement Concrete: "Non-Pigmented Curing Compound - Chlorinated Rubber Base-Clear" conforming to the requirements contained in Section 90-7.01B, of the Caltrans Standard Specifications.
   2. Color Conditioned Decorative Portland Cement Concrete: LITHOCHROME colorwax as manufactured by the L. M. Scofield Company or approved equal.

2.8 FORMS

A. Conform to the requirements of Section 51-1.05 of the Caltrans Standard Specifications.

2.9 PRECAST CONCRETE STRUCTURES

A. Conform to the following Sections of Caltrans Standard Specifications:
   1. 51-1.02, Minor Structures.
   2. 70-1.02C, Flared End Sections.
   3. 70-1.02H, Precast Concrete Structures.

2.10 PORTLAND CEMENT CONCRETE PAVEMENT

A. General: See Section 02751.

PART 3 - EXECUTION
3.1 STRUCTURAL EXCAVATION

A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.

B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the maximum dry density.

C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site, if the material is approved by the Engineer of Record.

3.2 SOIL STERILANT

A. Furnish and apply to areas indicated in accordance with Section 31 23 00, Excavation and Fill.

3.3 BRACING AND SHORING

A. Conform to California and Federal OSHA requirements.

B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

C. Be solely responsible for all bracing and shoring and, if requested by the District's Representative, submit details and calculations to the District's Representative. The District's Representative may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the District's Representative.

D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.4 PLACING CONCRETE FORMS
A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

B. Thoroughly clean all forms prior to placement and coat forms with approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.

C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.

D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.5 PLACING STEEL REINFORCEMENT

A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:

1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.

2. Splice locations shall be made as indicated on the plans.

B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.

C. Place reinforcing to provide the following minimum concrete cover:

1. Surfaces exposed to water: 4-inches.
2. Surfaces poured against earth: 3-inches.
3. Formed surfaces exposed to earth or weather: 2-inches.
4. Slabs, walls, not exposed to weather or earth: 1-inch.

D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.6 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE
A. Transit mix concrete in accordance with the requirements of ASTM Designation C 94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added unless authorized otherwise by the District’s Representative.

B. Do not hand mix concrete for use in concrete structures

3.7 PLACING PORTLAND CEMENT CONCRETE

A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.

B. Do not place concrete until the subgrade and the forms have been approved.

C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.

D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the District’s Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

E. Concrete in certain locations may be pumped into place upon prior approval by the District’s Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.8 PLACING ACCESSORY MATERIALS

A. Place water stops and other items required to be embedded in of Portland cement concrete structures at locations shown or required in accordance with Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.

B. Curing Compounds:
   1. Regular Portland Cement Concrete: Apply "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" in accordance with Section 90-7.01B, 7.01D and 7.03 of the Caltrans Standard Specifications.
   2. Color Conditioned Decorative Portland Cement Concrete: Apply LITHOCHROME colorwax, or approved equal, in accordance with the manufacturer’s instructions.

3.9 EXPANSION JOINTS
A. Construct expansion joints incorporating pre-molded joint fillers at twenty (20) foot intervals in all concrete curbs, gutters, sidewalks, median/island paving, valley gutters, driveway approaches and at the ends of all returns. At each expansion joint install one-half inch by twelve inch (1/2” x 12”) smooth slip dowels in the positions shown or noted on the detail drawings.

B. Orient slip dowels at right angles to the expansion joint and hold firmly in place during the construction process by means of appropriate chairs.

3.10 WEAKENED PLANE JOINTS

A. Construct weakened plane joints in concrete curbs, gutters, sidewalks, median/island paving and valley gutters between expansion joints at ten (10) foot intervals throughout, or as otherwise indicated. Depth of joint score depth to be one-fourth (25%) the thickness of the concrete.

1. Grooved Joints: Form weakened plane joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat grooving of weakened plane joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form weakened plane joints with power saws equipped with shatterproof abrasive or diamond-rimed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade or otherwise damage surface and before concrete develops random contraction cracks.

3.11 FORM REMOVAL

A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.

B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.

C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.

D. Leave edge forms in place at least 24 hours after pouring.

3.12 CONSTRUCTION

A. Form, place and finish concrete curbs, walkways, island paving, valley gutters and driveway approaches in conformance with the applicable requirements of Section 73-1.04, 73-1.05, 72-1.05A and 73-1.06 of the Caltrans Standard Specifications as modified herein.

B. Provide a medium broom finish to all horizontal surfaces unless otherwise shown.
C. Construct new concrete curb, curb and gutter and valley gutters against existing asphalt concrete by removing a minimum of 12-inches of the asphalt concrete to allow placement of curb or gutter forms. Patch pavement with a 6-inch deep lift of asphalt concrete after gutter form is removed.

D. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.

3.13 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS

A. New curb, gutter, or sidewalk is to connect to existing improvements to remain by saw cutting to existing sound concrete at the nearest score line, expansion joint or control joint. Drill and insert ½-inch diameter by 12-inch long dowels at 24-inches on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.

B. A cold joint to the existing curb is not acceptable.

3.14 DECORATIVE AND NON-DECORATIVE SURFACING CONSTRUCTION

A. Decorative surfacing concrete walks or other installations shall be formed and placed as a concrete slab conforming to the details shown or noted on the Plans. Exposed aggregate concrete sidewalks shall be repaired in kind or better condition.

B. Add lampblack or equivalent to the non-decorative surface concrete at the central mixing plant.

3.15 ACCESSIBLE PATH OF TRAVEL CONSTRUCTION FINISH

A. Provide equivalent of medium salted finish at slopes less than 5% and slip-resistant finish at slopes 5% and greater along any accessible path of travel.

3.16 FIELD QUALITY CONTROL

A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.

B. No concrete shall be placed prior to approval of forms.

C. Concrete improvements constructed shall not contain areas that pond water and shall be smooth and ridge free.
D. Conform the finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements to the design grades and cross sections.

E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.05 and/or 73-1.06 of the Caltrans Standard Specifications.

3.17 RESTORATION OF EXISTING IMPROVEMENTS

A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.

B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION
SECTION 32 11 23 - AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 SECTION INCLUDES
   A. Aggregate base.
   B. Lime stabilization.

1.2 RELATED SECTIONS
   A. Section 32 12 16, Asphalt Paving.
   B. Section 32 05 23, Portland Cement Concrete

1.3 RELATED DOCUMENTS
   A. Caltrans Standard Specifications:
      1. Section 24, Lime Stabilization.
      2. Section 26, Aggregate Bases.
   B. ASTM:
      1. D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.4 DEFINITIONS

1.5 SUBMITTALS
   A. Submittal procedure shall be as outlined in Division 1 – General Requirements.
   B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.6 QUALITY ASSURANCE
A. Conform to the appropriate portions of these Specifications and Section 19 of Caltrans Standard Specifications.

B. Finish surface of the prepared subgrade to receive aggregate base, shall be as specified in Section 31 23 00.

C. Finish surface of material to be stabilized prior to lime treatment shall be as specified in Section 24-1.04 of Caltrans Standard Specifications.

D. Finish surface of the stabilized material after lime treatment shall be as specified in Section 24-1.08 of Caltrans Standard Specifications.

E. Do not project the finish surface of aggregate base above the design subgrade.

F. Finish surface of aggregate base shall be 0 to -0.05-feet.

G. Finish surface of cement treated base shall be as specified in Section 27 of Caltrans Standard Specifications.

H. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

PART 2 - PRODUCTS

2.1 FILL MATERIAL

A. If fill material is required to restore the previously constructed subgrade to its proper elevation, provide structural fill material specified in Section 31 23 00.

2.2 AGGREGATE BASE

   1. Class 2, 3/4-inch Maximum: Section 26-1.02A.

2.3 LIME STABILIZATION

A. Lime Treatment Material per the Engineer of Record's recommendation and field investigation if required.
3.1 SOIL STERILANT
   A. Furnish and apply to areas indicated in accordance with Section 31 23 00.

3.2 AGGREGATE BASE
   A. Watering, Spreading and Compacting: Section 26-1.035, 26-1.04 and 26-1.05 of Caltrans Standard Specifications.

3.3 LIME STABILIZATION
   A. Performing the stabilization shall conform with recommendation of the Engineer of Record.

END OF SECTION
SECTION 32 12 16 - ASPHALT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Prime coat.

B. Tack coat.

C. Asphalt concrete paving.

D. Asphalt concrete overlay.

E. Asphalt curbs.

F. Pavement grinding.

G. Adjusting manholes, valves, monument covers and other structures to grade.

1.2 RELATED SECTIONS

A. Section 32 11 32, Aggregate Base.

1.3 RELATED DOCUMENTS

A. ASTM:

B. Caltrans Standard Specifications.
   1. Section 39: Asphalt Concrete.
2. Section 88: Engineering Fabrics.
4. Section 93: Liquid Asphalts.
5. Section 94: Asphaltic Emulsions.

1.4 DEFINITIONS


1.5 QUALITY ASSURANCE

A. Testing Agency: District’s Representative will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.
   1. Testing agency will conduct and interpret tests and state in each report whether tested work complies with or deviates from specified requirements.

B. Additional testing, at Contractor’s expense, will be performed to determine compliance of corrected Work with specified requirements.

C. Thickness of Asphalt Concrete: In-place compacted thickness of asphalt courses will be determined according to ASTM D 3549.

D. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D 979.
   1. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
   2. In-place density of compacted pavement may be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
      a. One core sample may be taken for every 1000 sq. yd. or less of installed pavement, but in no case will fewer than 3 cores be taken.
      b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

1.6 SUBMITTALS

A. Submittal procedure shall be as outlined in Division 1 – General Requirements.

B. Job-Mix Designs: Certificates signed by manufacturers certifying that each asphalt concrete mix complies with requirements.

C. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.
1.7 PROJECT CONDITIONS

A. Environmental Limitations:
   1. Prime Coat: Minimum surface temperature of 60 deg F at application.
   2. Tack Coat: Minimum surface temperature of 60 deg F at application.
   3. Asphalt Concrete: Minimum atmospheric temperature of 50 deg F at application.
   4. Reinforcing Fabric: Air temperature is 50 deg F and rising and pavement temperature is 40 deg F and rising.

PART 2 - PRODUCTS

2.1 ASPHALT CONCRETE

A. Caltrans Standard Specifications Section 39, Type B.

B. Asphalt Materials:
   3. Tack Coat: Caltrans Standard Specification Section 94, SS1 or SS1h.


F. Sand: ASTM D 1073, Grade No. 2 or 3.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

C. Notify District's Representative in writing of any unsatisfactory conditions. Do not begin paving until these conditions have been satisfactorily corrected.

3.2 PAVEMENT GRINDING
A. Clean existing paving surface of loose or deleterious material immediately before pavement grinding.

B. Grind conforms as indicated.

3.3 SURFACE PREPARATION FOR AGGREGATE BASE MATERIALS

A. General: Immediately before placing asphalt materials remove loose and deleterious material from substrate surfaces and ensure that prepared subgrade is ready to receive paving according to the Caltrans Standard Specification Section 39-4.01.

B. Prime Coat: Apply uniformly over surface of compacted-aggregate base according to the Caltrans Standard Specification Section 39-4.02. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure for 24 hours minimum.
1. If prime coat is not entirely absorbed within 8 hours after application, spread excess prime coat with hand tools and broadcast sand over surface to blot excess asphalt. Use just enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

C. Tack Coat: Apply uniformly to all vertical surfaces against which asphalt concrete is to be placed, including existing surfaces of previously constructed asphalt or portland cement concrete paving and to surfaces abutting or projecting into new asphalt pavement, according to the Caltrans Standard Specification Section 39-4.02.
1. Allow tack coat to cure undisturbed before paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.4 SURFACE PREPARATION FOR PAVEMENT AT ASPHALT CONCRETE OVERLAYS

A. Pavement Irregularities: Level with asphalt concrete, Type B, No. 4 maximum.

B. Pavement Cracks:
1. Less than ¼-inch wide: Clean of all dirt by compressed air jet, spray and seal with RS-1 asphaltic emulsion.
2. Wider than ¼-inch: Clean of all dirt by compressed air jet, spray and seal with RS-1 asphaltic emulsion and skin patch.

C. Clean surface of all material, such as leaves, dirt, sand, gravel, water and vegetation prior to applying binder of paving asphalt to existing surface.

3.5 PAVEMENT REINFORCING FABRIC

A. Protect from exposure to ultraviolet rays until placed.
B. Reject rolls with broken or damaged cores, or factory wrinkled fabric that prevents wrinkle free placement.

C. Place with binder of paving asphalt in accordance with Section 39-4.03 of Caltrans Standard Specifications.

3.6 ASPHALT CONCRETE SPREADING AND COMPACTING EQUIPMENT

A. Spreading Equipment: Caltrans Standard Specification Section 39-5.01.


3.7 ASPHALT CONCRETE PLACEMENT

A. Place, spread and compact asphalt concrete to required grade, cross section, and thickness according to the Caltrans Standard Specification Sections 39-6.01, 39-6.02 and 39-6.03.

B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.8 JOINTS

A. Construct joints to ensure continuous bond between adjoining paving sections according to the Caltrans Standard Specification Sections 39-6.01 and 39-6.02.
   1. Construct joints free of depressions with same texture and smoothness as other sections of asphalt course.
   2. Clean contact surfaces and apply tack coat.
   3. Offset longitudinal joints in successive courses a minimum of 6 inches.
   4. Offset transverse joints in successive courses a minimum of 24 inches.
   5. Compact joints as soon as asphalt concrete will bear roller weight without excessive displacement.

3.9 COMPACtion

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact according to the Caltrans Standard Specification Sections 39-6.01 and 39-6.03.

B. Compaction Requirements: Average Density to be 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
C. Finish Rolling: Finish roll paved surfaces to remove roller marks while asphalt is still warm.

D. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.

E. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh asphalt. Compact by rolling to specified density and surface smoothness.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.10 ASPHALT CURBS

A. Construction: Place over compacted surfaces according to Caltrans Standard Specification Section 39-7.01 as specified for dikes. Apply a light tack coat prior to construction, unless pavement surface is still tacky and free of dust.

B. Shape: Place asphalt concrete to curb cross section indicated.

3.11 ADJUSTING MANHOLES, VALVES, MONUMENT COVERS AND OTHER STRUCTURES TO GRADE

A. Remove pavement, using vertical cuts, as needed to remove frame and provide for concrete collar. Do not damage adjacent pavement.
   1. Circular Covers: Cut circle with radius 6 inches larger than cover and concentric with cover.
   2. Rectangular Covers: Cut rectangle 6 inches larger than cover on all sides.

B. Install grade rings or blocking as needed to raise cover to finish grade.

C. Pour concrete collar:
   1. Bottom of Collar: Top of existing collar or 6 inches below top of proposed collar, whichever is at a higher elevation.
   2. Top of Collar: Bottom of existing asphalt pavement.
   3. Apply tack coat to all exposed surfaces.
   4. Fill excavation with asphalt concrete and, while still hot, compact flush with adjacent surface.

3.12 INSTALLATION TOLERANCES

A. Asphalt Pavement:
   1. Course thickness and surface smoothness within the tolerances specified in Caltrans Standard Specification Sections 39-6.01, 39-6.02 and 39-6.03.
2. Total Thickness: Not less than indicated.

B. Trench Patch:
   1. Compacted surface: Within 0.01 foot of adjacent pavement.
   2. Do not create ponding.

C. Adjust Covers:
   1. Compacted surface: Up to 0.01 foot higher, and no lower, than adjacent pavement.
   2. Do not create ponding.

END OF SECTION
SECTION 33 11 66 - WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Site water distribution system for irrigation water, domestic water and fire protection service up to 5 feet of any on-site building being served.

B. Irrigation water, domestic water and fire protection water transmission or distribution system within a roadway or street right-of-way.

C. Protective coating or wrap for metallic pipe, fittings, restraining devices, and appurtenances

1.2 RELATED SECTIONS

A. Section 31 23 33, Utility Trenching and Backfilling.

B. Section 16 00 00, Cathodic Protection

1.3 RELATED DOCUMENTS

A. ASTM:
   2. B 88: Specifications for Seamless Copper Water Tube.
   3. D 1785: Specifications for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

B. AWWA:
   3. C110: Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water.
   9. C200: Steel Water Pipe-6 In. (150 mm) and larger.
12. C207: Steel Pipe Flanges for Waterworks Service-Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm).
19. C219: Bolted, Sleeve-type Couplings for Plain-End Pipe.
24. C507: Ball Valves 6 In. Through 8 In. (150 mm Through 1,200 mm).
25. C508: Swing-check Valves for Waterworks Service, 2 In. (50mm) Through 24 In. (600 mm) NPS.
27. C510: Double Check Valve Backflow-Prevention Assembly.
28. C511: Reduced-Pressure Principle Backflow-Prevention Assembly.
33. C606: Grooved and Shouldered Joints.
34. C651: Disinfecting Water Mains.
36. C900: Polyvinyl Chloride (PVC) Pressure Pipe and Fittings, 4 In. Through 12 In. (100mm Through 300mm) for Water Distribution.
37. C901: Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13mm) Through 3 In. (76mm) for Water Service.
38. C905: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm) for Water Transmission and Distribution.
39. C906: Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In (1,575 mm), for Water Distribution and Transmission.
44. M41: Ductile-Iron Pipe and Fittings.
1.4 DEFINITIONS

A. AASHTO: American Association of State Highway and Transportation Officials.
C. AWWA: American Waterworks Association
D. CCCFPD: Contra Costa County Fire Protection District
E. CCWD: Contra Costa Water District
F. DI: Ductile iron.
G. DIP: Ductile iron pipe.
H. FM: Factory Mutual.
J. NSF: National Sanitation Foundation.
L. PE: Polyethylene.
M. PVC: Polyvinyl Chloride.
N. UL: Underwriters Laboratory.

1.5 SYSTEM PERFORMANCE REQUIREMENTS

A. Minimum Internal Pressures
   2. Test Pressure: 200-psi.

B. External Load: Earth load indicated by depth of cover plus AASHTO H20 live load unless indicated otherwise.

1.6 SUBMITTALS

A. Submittal procedure shall be as outlined in Division 1 – General Requirements
B. Product Data: For the following:
   1. Piping materials and fittings.
   2. Pipe couplings.
   3. Flexible pipe fittings.
   4. Restrained pipe fittings.
   5. High deflection fittings/ball joints.
   7. Flexible expansion joints.
   8. Gate valves.
  10. Check valves.
  11. Air and vacuum relief valves.
  13. Pressure reducing valves.
  14. Pressure sustaining valves.
  15. Ball valves.
  16. Fire hydrants.
  17. Post indicator valves.
  18. Fire department connections.
  20. Precast valve boxes and box covers.

C. Shop drawings: Include plans, elevations, details and attachments.
   1. Precast and cast in-place vaults and covers.
   2. Wiring diagrams for alarm devices.

D. Field test reports: Indicate and interpret test results for compliance with the Project requirements.

1.7 QUALITY ASSURANCE

A. Comply with requirements of utility supplying water. When connecting to the water mains within the Public Right of Way or water mains owned and operated by Public Agencies, do not operate existing valves or tap existing piping without written permission and/or presence of utility company representative.

B. Comply with the following requirements and standards:

C. Provide listing/approval stamp, label, or other marking on piping and specialties made to a
specified standard.

1.8 MATERIAL DELIVERY, STORAGE AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
   1. Ensure that valves are dry and internally protected against rust and corrosion.
   2. Protect valves against damage to threaded ends and flange faces.

B. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage and handling to prevent pipe end damage and to prevent entrance of dirt, debris and moisture.

C. Handling: Use slings to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. During Storage: Use precautions for valves, including fire hydrants according to the following.
   1. Do not remove end protectors, unless necessary for inspection, then reinstall for storage.
   2. Protection from Weather: Store indoors and maintain temperature higher than ambient dew-point temperature. Store indoors and maintain temperature higher than ambient dew point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

E. Do not store plastic pipe and fittings in direct sunlight.

F. Protect pipe, fittings, flanges, seals and specialties from moisture, dirt and damage.

G. Protect linings and coatings from damage.

H. Handle precast boxes, vaults and other precast structures according to manufacturer’s written instructions.

I. Protect imported bedding and backfill material from contamination by other materials.

1.9 COORDINATION

A. Coordinate connection to existing water mains with water utility supplying water.

B. Coordinate piping materials, sizes, entry locations, and pressure requirements with building domestic water distribution piping and fire protection piping.

1.10 HAZARDOUS MATERIAL – ASBESTOS CONCRETE PIPE AND ASBESTOS CONTAINING MATERIAL
A. Asbestos cement pipe (ACP) exists within the project area and replacement of existing ACP is anticipated but shall be abandoned in place unless otherwise noted in the plans. The contractor shall make every attempt to protect all asbestos containing items during the execution of this contract. However, there will be instances where ACP or asbestos containing material will need to be removed, handled, cut, disturbed, or disposed of and the contractor shall comply with all local, state and federal regulations regarding construction activities near asbestos containing materials.

PART 2 - PRODUCTS

2.1 LARGE SIZE SERVICE AND DISTRIBUTION PIPES

A. PVC Pipe: Sizes 4-inch through 48-inch.
   1. Pipe:
      a. 4-inch through 12-inch: AWWA C900.
      b. 14-inch through 48-inch: AWWA C905.
   2. Fittings: DI
   3. Unrestrained Joints:
   4. Restrained Joints:
      a. Push-On Bell and Spigot Joint: Harness assembly as manufactured by Ebaa Iron (Eastland, Tx) (Tel. 800-433-1716) or approved equal.
      b. Plain End PVC to DI Mechanical Joint: Ebaa Iron (Eastland, Tx) (Tel. 800-433-1716) or approved equal.
   5. Steel or Ductile Iron Couplings:
      a. Plain End Pipe to Plain End Pipe: Ductile iron or steel bolted couplings, manufacturer's shop coating with low alloy steel bolts and nuts. Steel couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal.
      b. Plain End Pipe to DI or Steel Flanged Pipe: Ductile iron or steel bolted flanged coupling adapters, manufacturer's shop coating with low alloy steel bolts and nuts. Steel flanged couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal.
   6. PVC Couplings
      a. Unrestrained Plain End to Plain End Pipe: AWWA C900, as manufactured by CertainTeed (Valley Forge, PA) (Tel. 610 341-6820) or approved equal.
      b. Restrained Plain End to Plain End Pipe: AWWA C900, “Certa-Lock” as manufactured by CertainTeed (Valley Forge, PA) (Tel. 610 341-6820) or approved equal.

2.2 CORROSION PROTECTION
A. Furnish and apply to areas indicated in accordance with Section 16 00 00 Cathodic Protection.
   1. All ductile iron fittings shall be protected against corrosion with the installation of corrosion protection wrapping.
   2. POLY-WRAP AND POLYETHYLENE ADHESIVE TAPE
      a. Poly-wrap shall be continuous tubing formed from 8-mil (0.2-mm) thick virgin polyethylene, in accordance with AWWA C105.
      b. Adhesive tape shall be a general-purpose polyethylene adhesive tape, 2-inches (50-mm) wide and at least 8 mil (0.2mm) thick.

2.3 HIGH DEFLECTION FITTINGS/BALL JOINTS

A. Plain End Pipe: Xtra Flex Restrained Joint High Deflection Fittings, 4-inch through 24-inch, U. S. Pipe, (Birmingham, AL) (Tel. 205-254-7442) or approved equal.

B. Mechanical or Flanged Joint: Flex 900, 4-inch through 12-inch, Ebaa Iron Sales, (Eastland, TX) (Tel. 800-433-1716) or approved equal.

2.4 EXPANSION JOINTS

A. TR Flex Joints: TR Flex Telescoping Sleeve, 4-inch through 64 inch, U. S. Pipe, (Birmingham, AL) (Tel. 205-254-7442).

B. Mechanical or Flanged Joint: Ex-Tend 200, 4-inch through 36-inch, EBAA Iron Sales, (Eastland, TX) (Tel. 800-433-1716) or approved equal.

2.5 FLEXIBLE EXPANSION JOINTS

A. Plain End to Plain End Pipe: "Xtra Flex," sizes 4-inch through 24-inch, U. S. Pipe, (Birmingham AL) (Tel. 205-254-7442) or approved equal.

B. Flanged or mechanical Joint: "Flex-Tend," sizes 3-inch through 48-inch, Ebaa Iron (Eastland TX) (Tel. 800-433-1716) or approved equal.

C. Flanged Joint: Starflex, Series 500, Star Pipe Products, (Tel. 800-999-3009) or approved equal.

2.6 SERVICE LINE VALVES AND FITTINGS

A. General: AWWA C-800

B. Includes service lines, ½ inch through 2 inch, from main to meter valve, including corporation stops and curb stops.

2.7 GATE VALVES

WATER DISTRIBUTION SYSTEM
A. Provide on lines 10-inch and smaller.

B. Valves, 3-Inch through 20-Inch: AWWA C509, resilient-seated, non-rising stem, gray or ductile-iron body and bonnet, with bronze or gray or ductile-iron gate, bronze stem and square stem operating nut unless noted otherwise. All bolts, nuts and washers, except operating nut, shall be stainless steel. Stem operating nut to be 2-inches square and open counter-clockwise. Stem extensions shall be installed to bring the stem operating nut to within 2-feet of finish grade where the depth from finish grade to the stem operating nut exceeds 4-feet. Equip valves in pump stations and other interior or vault installations with hand-wheels. Provide protective epoxy interior and exterior coating according to AWWA C550 and manufacturer's recommendations.

C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Mueller Company (Decatur, IL) (Tel. 800-423-1323).
   3. Clow

D. Valve Box and Cover: 9-inch minimum diameter PCC box with extensions of length required for depth of bury of valve, and cast iron or ductile iron cover with lettering “WATER”. Both the box and the cover shall be rated for AASHTO H20 loading.

2.8 AIR RELEASE, AIR/VACUUM AND COMBINATION AIR VALVES

A. AWWA C512, specific type of valve, size, details and valve box as indicated.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Apco Valves, Valve and Primer Corporation (Schaumburg, IL) (Tel. 708-529-9000).
   2. Crispin.

2.9 BLOW-OFF VALVES

A. Blow-off valve assemblies, details and boxes as indicated.

2.10 SWING CHECK VALVES

A. Valves 2-Inch through 24-Inch: AWWA C508, details as indicated.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
1. Mueller Company (Decatur, IL) (Tel.800-423-1323).

2.11 PRESSURE-REGULATING VALVES
A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250-psi working-pressure, bronze pressure-reducing pilot valve and tubing, and means for discharge pressure adjustment. Details as indicated.
B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
   2. Bermad (Porterville, CA) (Tel. 209-781-6630).
   3. Ames Company (Woodland, CA) (Tel. 916-666-2493).

2.12 FLOW-REGULATING VALVES
A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250-psi working-pressure, bronze pressure-reducing pilot valve and tubing, and means for flow adjustment. Details as indicated.
B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
   2. Bermad (Porterville, CA) (Tel. 209-781-6630).
   3. Ames Company (Woodland, CA) (Tel. 916-666-2493).

2.13 SERVICE CONNECTIONS AND WATER METERS
A. Service connections and water meter details and boxes per current Contra Costa Water District standard details.

2.14 FIRE HYDRANTS
A. Wet Barrel: AWWA C503, details as indicated.
B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Clow (800 Series) Model 860
   2. Clow (Ranger) Model 960
3. Jones Model J-3760

C. Available Paint Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
   1. Kelly Moore – Kel Guard Enamel “Sunburst/Safety Yellow” No 1700-63
   2. Sherman Williams – Metalex “Safety Yellow” No.B42Y37

D. Fire department connections per Contra Costa County Fire Protection District standards.

2.15 REDUCED PRESSURE ASSEMBLY BACKFLOW PREVENTER – IRRIGATION AND DOMESTIC

A. Provide as indicated and as required by State or local agency.

B. General: AWWA C511, with OS gate valve on inlet and outlet, and strainer on inlet. Include test cocks and pressure-differential relief valve with ASME A112.1.2 air gap fitting located between 2 positive-seating check valves for continuous-pressure application.

C. Body:
   1. 2-Inch and Smaller: Bronze with threaded ends.
   2. 2-1/2-Inch and Larger: Bronze, cast iron steel, or stainless steel with flanged ends.

D. Interior Lining: AWWA C550, epoxy coating for cast iron or steel bodies.

E. Interior Components: Corrosion-resistant materials.

F. Manufacturer shall be approved by Contra Costa Water District, Materials List Attached.

2.16 DOULBE DETECTOR CHECK BACKFLOW PREVENTER – FIRE

A. FM approved or UL listed, with OS&Y gate valve on inlet and outlet, and strainer on inlet. Include two positive-seating check valves and test cocks, and bypass with displacement-type water meter, valves, and double-check backflow preventer, for continuous pressure application.

B. Manufacturer shall be approved by Contra Costa Water District. Materials List Attached.

2.17 POST INDICATOR VALVE

A. General: UL 789, FM approved, vertical-type, cast-iron body with operating wrench extension rod, and adjustable cast-iron barrel of length required for depth of bury of valve.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the
following:
1. Mueller Co. (Decatur, IL) (Tel. 800-423-1323).
2. Clow Corporation (Oskaloosa, IA).

2.18 FIRE DEPARTMENT CONNECTION

A. Exposed, Freestanding Fire Department Connection: UL 405, cast brass body with threaded inlets according to NFPA 1963 and matching local fire department hose threads and threaded bottom outlet. Include lugged caps, gaskets and chains; lugged swivel connections and drop clapper for each hose-connection inlet; 18-inch high brass sleeve; and round escutcheon plate. Two 2-1/2-inch NPS inlets and 4-inch NPS outlet.

B. Fire department connections per Contra Costa County Fire Protection District standards.

2.19 UNDERGROUND VAULTS/PITS

A. General: Portland cement concrete, precast or cast-in-place as indicated.

B. Portland Cement Concrete and Reinforcing Steel: Section 32 05 23.

C. Access Openings: As indicated.

D. External Load: Earth load plus AASHTO H20 live load if located in traffic area.

2.20 TRACER WIRE

A. General: Minimum #12 AWG stranded copper wire with blue THW, THWN, or THHN rated insulation.

2.21 WARNING TAPE

A. General: Non-detectable 3-inch warning tape made of solid blue film with continuously printed black-letter message reading "CAUTION—WATER LINE BURIED BELOW."

2.22 PCC THRUST BLOCKS

A. Portland Cement Concrete and Reinforcing Steel: Section 32 05 23.

PART 3 - EXECUTION

3.1 PIPE INSTALLATION
A. General: Install pipe, fittings, and appurtenances utilizing best practices, manufacturer’s instructions, and in accordance with the following:
   1. PVC pipe: AWWA M23 and AWWA C605.

B. Pipe Depth and Trench Configuration: Conform to elevations, profiles and typical trench section(s) indicated.

C. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33.

D. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with manufacturer’s recommendations.

E. Laying: Before lowering pipe into the trench, remove all stakes, debris, loose rock and other hard materials from the bottom of the trench. Lay accurately in conformance with lines and grades indicated. Lay pipe on a bed of bedding material specified and prepared by handwork, dug true to grade. Furnish firm bearing for pipe throughout it’s entire length with bell holes provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Adjust pipe to line and grade by scraping away or filling and tamping material under the body of the pipe for the entire pipe length and not by blocking or wedging. After final positioning, hold pipe in place in trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place.

F. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. If necessary, use shorter than the standard lengths of pipe to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.

G. Closure: Close open ends of pipes and appurtenance openings at the end of each days work or when work is not in progress.

3.2 CONNECTING TO EXISTING MAINS

A. Pressure Tap Connections: Perform in accordance with the requirements of the owner of the system being tapped. Maintain a positive pressure flow from the main being tapped to the tapping devise to flush plastic chips, metal ribbons, etc. into the tapping devise and not into the pipe being tapped.

B. Connection to existing metallic water pipe:
   1. Remove minimum 2 foot section of the existing metallic pipe.
   2. Install metallic flange on end of the existing metallic pipe in ground.
   3. Install flange adapter to the end of water pipe.
   4. Position flanges to attach metallic and water pipes.
   5. Install and tighten flange bolts per manufacturer’s recommendations.
   6. Do not use flanges to draw the two sections of pipe together.
7. Install corrosion protection in accordance with Section 16 00 00 Cathodic Protection.

C. Other Connections: As indicated and in accordance with the requirements of the owner of the line being connected to.

3.3 ANCHORAGE INSTALLATION

A. Mechanically Restrained Joints: Install where indicated for lengths indicated in accordance with manufacturer’s instructions.

B. PCC Thrust Blocks: Install where required and as indicated. Bearing area indicated is to be against undisturbed earth. Allow a minimum of 24-hours curing time before introducing water into the pipeline and allow a minimum of 7-days curing time before pressure testing.

3.4 HIGH DEFLECTION FITTINGS/BALL JOINTS, EXPANSION JOINTS, AND FLEXIBLE EXPANSION JOINTS

A. Install as indicated and in accordance with the manufacturers recommendations.

3.5 VALVE INSTALLATION

A. Install all valves in accordance with the manufacturer’s instructions and the following:
   1. General:
      a. Gate Valves: Appendix A of AWWA C509.
   2. Joints:
      b. Valves on Steel Pipe: As indicated for buried locations. Flanged-end valves for installation in vaults/pits.

3.6 SERVICE CONNECTIONS INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system.

3.7 WATER METER INSTALLATION

A. Installed by Contra Costa Water District. Contractor shall coordinate installation.

3.8 FIRE HYDRANT INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system and
the fire department.

3.9 REDUCED-PRESSURE PRINCIPLE ASSEMBLY BACKFLOW PREVENTER INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system and the local health department requirements.

3.10 DOUBLE CHECK DETECTOR ASSEMBLY INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.11 POST INDICATOR VALVE INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.12 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.13 UNDERGROUND VAULT/PIT INSTALLATION

A. Install as indicated.

B. Excavation and Backfill: Section 31 23 33.

3.14 TRACER WIRE INSTALLATION

A. Place and secure to top of pipe and fittings at about 3-foot intervals with 6” length of 1” wide filament tape, Scotch brand No. 898 or equal.

B. Form a mechanically and electrically continuous line throughout the pipeline, extending to the nearest valve or other pipeline appurtenance designated by the owner of the system or the Owner's Representative. Extend the wire up the outside of the valve box/riser and cut a hole that is 8-inches from the top, extend a 12-inch wire lead to the inside of the box. At other pipeline appurtenances, designated by the owner of the system or the Owner's Representative, terminate the 12-inch wire lead inside the enclosure.

C. Splice wire with a splicing device consisting of and electro-tin plated seamless copper sleeve conductor. Install as recommended by the manufacturer. Wrap splices and damaged
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Diablo Valley College
Water Valve Replacement Project

insulation with electrician's tape.

3.15 WARNING TAPE INSTALLATION

A. Install tape approximately 1-foot above and along the centerline of the pipe.

B. Where tape is not continuous, lap tape ends a minimum of 2-feet.

3.16 PLASTIC PROTECTIVE WRAPPING FOR DUCTILE IRON PIPING

A. Cover underground ductile iron piping, including connecting galvanized steel spools, fittings, and like items with a loose, polyethylene plastic-film wrap to provide a continuous barrier between the pipe and the surrounding backfill.
   1. Wrap in accordance with AWWA-C105.
   2. Wrapping isolates the pipe surfaces from contact with corrosive environments, and is not intended to provide complete sealing or to prevent ground water intrusion.

B. Cut poly-wrap tube to a length approximately 2-feet (600-mm) longer than the length of the pipe section.
   1. Slip the poly-wrap around the pipe, centering it to provide a 1-foot (300-mm) overlap of each adjacent pipe section and bunching it accordion fashion until it clears the pipe ends.
   2. Lower the pipe into the trench and make-up the pipe joint with the preceding section of pipe. Make a shallow bell hole at joints to facilitate installation of the poly-wrap.

C. After completing the joint, make the overlap.
   1. Pull the bunched-up poly-wrap from the preceding length of pipe, slip it over the end of the new length of pipe, and secure it in place with two circumferential turns of tape plus enough overlap to assure firm adhesion.
   2. Slip the end of the poly-wrap from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe.
   3. Tape it in place using three circumferential turns of tape. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold as necessary with adhesive tape at approximately 3-foot (900-mm) centers.

D. Repair any rips, punctures, or other damage to the poly-wrap with short length of poly-wrap tube cut open, wrapped around the pipe, and secured with tape.

E. Wrap the next section of pipe in the same manner.

F. Cover bends, reducers, and offsets with poly-wrap in the same manner as the pipe.

G. Wrap valves and other odd-shaped pieces, that cannot practically be wrapped in a tube, with a flat sheet obtained by splitting open a length of poly-wrap tube.
   1. Pass the flat sheet under the valve and bring it up around the body of the stem.
2. Make the seams by bringing the edges together, folding over twice, and taping down. Slack width and overlaps at joints shall be handled as described above.
3. Tape poly-wrap securely in place at valve stem and other penetrations.

H. Where poly-wrapped pipe joins a pipe that is not poly-wrapped, extend the poly-wrap tube to cover the unwrapped pipe a distance of 2 feet (600-mm), unless shown otherwise on the drawings. Secure the end with at least three circumferential turns of tape.

3.17 HYDROSTATIC PRESSURE AND LEAKAGE TEST

A. General:
1. Provide all necessary materials and equipment, including water.
2. Backfill all trenches sufficient to hold pipe firmly in position.
3. Allow time for thrust blocks to cure prior to testing.
4. Flush all pipes prior to testing to remove all foreign material.
5. Perform pressure and leakage test concurrently.
6. Test pressure: See Subsection titled “System Performance Requirements.”
7. Apply test pressure by means of a pump connected to the pipe.
8. Base test pressure on the elevation of the lowest point in the line.
9. Fill each closed valve section or bulk-headed section slowly. Expel air from section being tested by means of permanent air vents installed at high points or by means of temporary corporation cocks installed at such points. Remove and plug the temporary corporation cocks at the conclusion of the test.
10. Allow water to stand in the pipe for 24 hours before test pressure is applied.
11. Allow the system to stabilize at the test pressure before conducting the leakage test.
12. Do not operate valves in either the opening or closing direction at differential pressures above the valves rated pressure.
13. Maintain test pressure as specified for type of pipe being tested.
14. Pressure Test: Examine any exposed pipe, fittings, valves, hydrants and joints during the test, if no leaks are observed the section of line has passed the pressure test. If leaks are observed, repair any damaged or defective pipe, fittings, valves, or hydrants, and repeat the pressure test.
15. Leakage Test: Perform as specified hereafter for the type of pipe being installed.

B. DIP Leakage Test: Perform in accordance with AWWA C600. Selected requirements of AWWA C600 are repeated as follows:
1. Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
2. No piping will be accepted if the leakage is greater than that determined by the following formula:

\[
L = \frac{(S \times D \times P^{1/2})}{133,200}
\]

\(L\) = Allowable leakage, gallons per hour.
\(S\) = Length of pipe tested, feet.
C. PE Pipe Leakage Test: [The following leakage test for PE water pipe was taken from the Phillips Petroleum Company (Richardson, TX) (Tel. 800 527 0662) catalog for "Driscopipe."]

1. Apply the test pressure and allow the pipe to stand, without makeup pressure, for sufficient time to allow for diametric expansion or pipe stretching to stabilize, approximately two to three hours.

2. After the above stabilization has occurred, return the section being tested to the test pressure. Hold the test pressure for one to three hours. If the pressure in the test section drops, and it is determined the drop may be the result of expansion resulting from increasing temperature, a limited amount of additional water may be added to bring the pressure back to the test pressure. Allowable amounts of make-up water, to compensate for expansion due to increasing temperature, are as shown in the following table. Make-up water is only allowed during this final test period and not during the initial stabilization described in the previous paragraph. If the additional water added is less than the allowable shown in the table and there are no visual leaks or significant pressure drops, the tested section passes the test.

<table>
<thead>
<tr>
<th>Nominal Pipe Size (in.)</th>
<th>Allowance for Expansion (U.S. Gals./100 Feet of Pipe)</th>
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<tr>
<td></td>
<td>1-Hour Test</td>
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<tr>
<td>3</td>
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</tbody>
</table>

D. PVC Pipe Leakage Test: Perform in accordance with AWWA M23. Selected requirements of
AWWA M23 are repeated as follows:
1. Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
2. No piping will be accepted if the leakage is greater than that determined by the following formula:

\[ L = \frac{(N \times D \times P^{1/2})}{7,400} \]

- \( L \) = Allowable leakage, gallons per hour.
- \( N \) = Number of joints in the length of the pipeline tested.
- \( D \) = Nominal diameter of pipe, inches.
- \( P \) = Average test pressure during the leakage test, pounds per square inch (gauge).

E. Cement Mortar Lined and Coated Steel Pipe Leakage Test: Perform in accordance with AWWA M11. Selected requirements of AWWA M11 are repeated as follows:
1. Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
2. There shall be no significant leakage for pipe with welded joints or mechanical couplings.
3. For pipe joined with O-ring rubber gaskets, a leakage of 25 gallons per inch of diameter per mile per 24-hours is allowed.

F. Contractor to provide a completed Materials and Test Certificate for Underground Piping to conform to the requirements of NFPA 24 - Figure 10.10.1
1. ALL TESTS TO CONFORM TO THE REQUIREMENTS OF SECTION 4-335, PART 1, TITLE 24 AND APPROVED T & I SHEET.
2. TEST MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335 OF PART 1, TITLE 24 AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.

3.18 DISINFECTION

A. All New Pipelines shall be disinfected in accordance with one of the three methods specified in AWWA C651 and the following:
1. Disinfect after pressure and leakage test have been performed and accepted.
2. The method used shall be at the Contractor’s option, unless specified by the owner of the water system.
3. Engage the services of a commercial testing laboratory, approved by the owner of the water system, to perform the bacteriological tests specified in Section 5.1 of AWWA C651. Direct the testing laboratory to send the original report of the bacteriological testing to the owner of the water system. Should the laboratory report show that any sample taken was not acceptable, repeat the sterilization process shall until a satisfactory sterilization is accomplished.
4. Lawfully dispose of the chlorinated water.