Mendocino City Community Services District
10500 Kelly Street ▪ PO Box 1029 ▪ Mendocino, CA 95460
Phone: 707.937-5790 Fax: 707.937.3837 http://www.mccsd.org

Recycled Water Expansion Project

Addendum No. 1

November 12, 2026

The following is Addendum No. 1 to the Mendocino City Community Services District – Recycled Water Expansion Project.

IF YOU SUBMIT A PROPOSAL, ACKNOWLEDGMENT OF THIS ADDENDUM MUST BE SHOWN ON THE BID PROPOSAL FORM, OR IT MAY BE DEEMED AS NON-RESPONSIVE.

This Addendum is hereby made part of the Contract Documents to the same extent that it were originally included therein.

Questions and Answers (listed in order received):

None

Revised Contract Provisions:

1. The Bid Proposal forms are reissued with revised quantities for Item A-10 “8-Inch Gate Valve” and for Item A-11 “Permanent Blowoff.”

Revised Technical Specifications:

1. Specification Section 01 22 00 revised to include description of payment for utility locator.
2. Specification Section 33 11 00 revised to add a utility locator.

Revised Drawings:

None

All other terms and conditions remain in full force and effect.



Ryan Rhoades
Superintendent

BID PROPOSAL

Recycled Water Expansion Project

Bidder's Name: _____

TO MENDOCINO CITY COMMUNITY SERVICES DISTRICT (the "DISTRICT" or "OWNER"):

In accordance with District's Notice Inviting Bids, the undersigned Bidder hereby proposes to furnish all materials, equipment, tools, labor, and incidentals required for the above stated project as set forth in the Contract Documents, and to perform all work in the manner and time prescribed.

Bidder declares that this proposal is based upon careful examination of the work site, Project Plans, and other Contract Documents, including the Notice Inviting Bids, this Proposal, the Contract, Special Provisions or Conditions, Technical Provisions, General Conditions, Appendices, and Standard Plans & Specifications. If this proposal is accepted for award, Bidder agrees to enter into a contract with the District at the unit and/or lump sum prices set forth in the following Bid Schedule. Bidder understands that failure to enter into a contract in the manner and time prescribed will result in forfeiture to the District of the Bid Security accompanying this proposal.

Bidder understands that a bid is required for the entire work, that the estimated quantities set forth in the Bid Schedules are solely for the purpose of comparing bids, and that final compensation under the contract will be based upon the actual quantities of work satisfactorily completed. It is agreed that the unit and/or lump sum prices bid include all appurtenant expenses, federal, state and local taxes, royalties, and fees. In the case of discrepancies in the amounts bid, unit prices shall govern over extended amounts.

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

Bidder certifies to be properly licensed by the State of California as a contractor to perform work of this specialty. The undersigned agrees to furnish the District satisfactory proof of ability to perform the work, as well as records of performance of similar jobs completed recently, if and when requested to do so by the Project Manager.

Bidder agrees that the applicable insurance and bonding requirements can and will be fulfilled.

Bidder declares that the only persons or parties interested in this proposal as principals are those named herein; that no officer, agent, or employee of the District is personally interested, directly or indirectly, in this proposal; that this proposal is made without connection to any other individual, firm, or corporation making a bid for the same work; and that this proposal is in all respects fair and without collusion or fraud.

Bidder certifies that in all previous contracts or subcontracts, all reports which may have been due under the requirements of any District, State, or Federal equal employment opportunity orders have been satisfactorily filed, and that no such reports are currently outstanding.

Bidder certifies to have verified that it and all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Bidder shall provide proof of registration for both itself and all subcontractors to the District.

Bidder agrees that it and all subcontractors used on the public work project shall furnish payroll records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.

Bidder certifies that it and all subcontractors used on this public work project are in compliance with California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulations (Cal. Code Regs., title 13, section 2449), and Bidder shall provide a valid Certificate of Reported Compliance for Bidder's own fleet and for any subcontractors' fleet, unless exempt from the regulations.

Bidder shall guarantee all work for a period of one year from project acceptance.

Bidder has carefully checked all of the figures in the Bid Schedule and understands that the District shall not be responsible for any errors or omissions on Bidder's part in making up this bid. Bidder agrees that this bid may not be withdrawn for a period of sixty (60) calendar days from the date of the bid opening and that the District reserves the right to reject any or all bids, waive any informality in bids received, and may at its option make the award that in the judgment of the District is to the best interest of the District.

The following documents have been completed and executed, and are made a part of this Contract by reference:

- ❑ DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION
- ❑ DEBARMENT CERTIFICATION
- ❑ OFF ROAD REGULATIONS ASSURANCES
- ❑ BID SCHEDULE
- ❑ ADDENDA ACKNOWLEDGEMENT
- ❑ NON-COLLUSION AFFIDAVIT
- ❑ DESIGNATION OF SUBCONTRACTORS
- ❑ CONTRACTOR LICENSE INFORMATION
- ❑ BIDDER RESPONSIBILITY STATEMENT
- ❑ BIDDER'S SIGNATURE PAGE
- ❑ BIDDER'S BOND

DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION

Recycled Water Expansion Project

The District has the obligation to report this contract to the Department of Industrial Relations ("DIR") and provide various information including that specified below. For the purposes of this document, you are referred to as "Contractor." In addition to filling out this form for the District, you have the obligation to submit certified payroll records directly to DIR.

Contractor Name:			
Contractor Mailing Address:			
Contractor E-mail Address:			
Contractor Telephone:			
Contractor License Number:			
DIR Registration Number:			
Classification(s) or type(s) of workers that will be employed by the contractor for this project:			
Subcontractors:	License Number:	DIR Number:	Worker Classifications:

I certify that the information set forth above is correct and that I am authorized to provide this information on behalf of the contractor named in the first line above.

_____ _____

(Signature) Date

_____

(Printed Name)

DEBARMENT CERTIFICATION

Recycled Water Expansion Project

By submitting its bid, Bidder certifies, in accordance with California Public Contract Code section 6109, that neither the Bidder nor any subcontractor included on the list of proposed subcontractors submitted with the bid is ineligible to perform work on public works projects pursuant to California Labor Code sections 1777.1 or 1777.7. In accordance with California Public Contract Code section 6109, contractors and subcontractors who are ineligible to perform work on public works projects pursuant to California Labor Code sections 1777.1 or 1777.7 may neither bid on, be awarded, or perform as a subcontractor on public works projects.

CONTRACTOR OFF-ROAD REGULATION ASSURANCES

The District requires that all work done on its property or otherwise on behalf of the District is performed in accordance with the State's environmental health and safety laws, codes and regulations. To this end, please check the appropriate boxes and provide information as required below related to compliance with California Air Resources Board (CARB) Off-Road Diesel-Fueled Fleets Regulations. The District will not approve this Contract until this form has been completed. This form must be updated annually or anytime changes occur. Contractor agrees to provide the District with any documents referenced below within one business day of the request. Information on these Regulations is available here: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation

Contractor Name: _____

In the performance of this Contract, does Contractor propose to use vehicles subject to 13 CCR 2449, the In-Use Off-Road Diesel-Fueled Fleets Regulation?

YES ☐ **NO** ☐

If the answer in above is **NO**, Contractor does not need to check any boxes for items 1, 2, and 3 below and no further information is required.

If the answer above is **YES:**

A. Contractor must check YES or N/A, as applicable, for items 1, 2, and 3 below.

B. If no exemption from these Regulation requirements applies, Contractor must provide to the Agency: (1) a valid Certificate of Reported Compliance for its fleet, and (2) valid Certificates of Reported Compliance for fleets of any subcontractors.

C. If an exemption from these Regulation requirements does apply, Contractor must provide the Agency with detailed documentation identifying the exemption and supporting the applicability of the exemption.

D. If Contractor asserts that the emergency operations exemption applies, Contractor must provide: (1) a description of the emergency, (2) the address or description of the specific location where Contractor performed work to address the emergency, (3) the dates on which the emergency work was performed, and (4) an attestation by the Contractor that the vehicles operated on the project were only used to carry out emergency work.

Please respond YES or N/A for each item below.	**YES**	**N/A**	
1. Contractor has provided the Agency with a copy of a valid Certificate of Reported Compliance for Contractor's own fleet.	☐	☐	(check N/A if exemption applies)
2. Contractor has provided the Agency with a copy of a valid Certificate of Reported Compliance for any subcontractors' fleet.	☐	☐	(check N/A if exemption applies or there are no subcontractors)
3. Contractor has provided the Agency with documentation supporting a claimed exemption to the Off-Road Regulation.	☐	☐	(check N/A if no exemption applies)

SCHEDULE OF BID PRICES
Recycled Water Project

Basis of Bid

A. For the determination of the apparent low Bidder, the total amount for each Bid shall be the sum of the Base Bid Schedules A through G. The low Bidder shall be that which results in the lowest total amount for all the Work in Base Bid Schedules A through G.
B. Owner may award some or all Base Bid Schedules A through G.
C. Owner may award Alternate Bid Schedule H.

Base Bid – Schedule A: Recycled Water Expansion

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
A-1	Mobilization and Demobilization (5% of Construction Subtotal)	LS	1		
A-2	Water Pollution Control (1% of Construction Subtotal)	LS	1		
A-3	Temporary Traffic Control (3% of Construction Subtotal)	LS	1		
A-4	Trench Sheeting, Shoring and Bracing (Recycled Water, 3% of RW Pipe)	LS	1		
A-5	8-Inch Open-Trench RW Main, AC Pavement Surface Restoration	LF	3,330		
A-6	2-Inch Open-Trench RW Service, AC Pavement Surface Restoration	LF	140		
A-7	1-Inch Open-Trench RW Service, AC Pavement Surface Restoration	LF	100		
A-8	2-Inch Meter and Backflow Assembly	EA	5		
A-9	1-Inch Meter and Backflow Assembly	EA	2		
A-10	8-Inch Gate Valve	EA	8		
A-11	Permanent Blowoff	EA	3		
A-12	1-Inch Air Release/Vacuum Valve	EA	2		
A-13	Fire Hydrant (elbow, thrust block, riser pipe, break-off CV/flange, hydrant)	EA	5		

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
A-14	Ford House Public Restrooms Plumbing Retrofit	LS	1		
A-15	Utility Conflict Resolution	FA	10	$6,000.00	$60,000.00
TOTAL BASE BID SCHEDULE A AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule B: MCCSD Property Irrigation System

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
B-1	MCCSD Property Irrigation System	LS	1		
B-2	MCCSD Property Irrigation Controller	LS	1		
B-3	MCCSD Property PG&E Service	LS	1		
TOTAL BASE BID SCHEDULE B AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule C: Hillcrest Cemetery Irrigation System

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
C-1	Hillcrest Irrigation System	LS	1		
TOTAL BASE BID SCHEDULE C AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule D: Heider Field Irrigation System

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
D-1	Heider Field Irrigation System	LS	1		
D-2	Heider Field Irrigation Controller	LS	1		
D-3	Heider Field PG&E Service	LS	1		
TOTAL BASE BID SCHEDULE D AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule E: Evergreen Cemetery Irrigation System

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
E-1	Evergreen Cemetery Irrigation System	LS	1		
TOTAL BASE BID SCHEDULE E AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule F: Evergreen Street Sewer Main Replacement

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
F-1	Trench Sheeting, Shoring and Bracing	LS	1		
F-2	Open-Trench 6-inch Sewer Main	LF	285		
F-3	48-Inch Sewer Manhole	EA	2		
F-4	Connect Sewer Lateral	EA	7		
F-5	Provide 2-Way Cleanout	EA	5		
TOTAL BASE BID SCHEDULE F AMOUNT $_____ (in words)					$_____ (in figures)

Base Bid – Schedule G: Main Street Sewer Lift Station Improvements

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
G-1	Main Street Sewer Lift Station Improvements	LS	1		
TOTAL BASE BID SCHEDULE G AMOUNT $_____ (in words)					$_____ (in figures)

BASE BID SUMMARY

TOTAL BASE BID SCHEDULE A AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE B AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE C AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE D AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE E AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE F AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID SCHEDULE G AMOUNT $_____ (in words)	 $_____ (in figures)
TOTAL BASE BID AMOUNT **$_____** **(in words)**	 **$_____** **(in figures)**

Additive Bid – Schedule H: Main Street Recycled Water Extension

Item	Description	Units	Estimated Quantity	Bid Price per Unit	Amount
H-1	8-Inch Open-Trench RW Main Extension, AC Pavement Surface Restoration	LF	150		
TOTAL ALTERNATE BID SCHEDULE H AMOUNT $_____ (in words)					$_____ (in figures)

CONDITIONS FOR SCHEDULE OF BID PRICES

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

It is understood and agreed that the quantities of work under each item are approximate only, being given for a basis of comparison of proposals, and the right is reserved to the District to increase or decrease the amount of work under any item as may be required, in accordance with provisions set forth in the specifications for this project.

It is further understood and agreed that the total amount of money set forth for each item of work or as the total amount bid for the project does not constitute an agreement to pay a lump sum for the work unless it specifically so states.

Bidder acknowledges receipt of the following addenda:

_____.

Bidder has reflected any changes in the addenda in this Proposal.

NON-COLLUSION AFFIDAVIT (Public Contract Code sec. 7106)

Recycled Water Expansion Project

To be Executed by Bidder and Submitted with Bid

State of California
County of _____

The undersigned declares:

I am the _____[title] of _____ [bidding entity] , the party making the foregoing bid.

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

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

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

_____
Signature

_____
Name

_____
Title and Company

DESIGNATION OF SUBCONTRACTORS

Recycled Water Expansion Project

The undersigned is required to fill in the following blanks in accordance with the provisions of California Public Contract Code section 4104.

Sub-Contractor Name	License Number	DIR Registration Number	Location of the Place of Business	Specific Description of Subcontract Work	$ Amount of the Sub-Contractor Work

Subcontractors listed herein must be properly licensed under the laws of the State of California for the type of work which they are to perform. Do not list alternate subcontractors for the same work. The undersigned agrees to furnish proof that all contractors and subcontractors performing any work related to this improvement are complying with all the requirements of Social Security Legislation, both State and Federal, and also agrees to conform with the provisions of sections 4100 to 4113, inclusive, of the Public Contract Code, as amended, concerning subcontractors and subcontracts.

CONTRACTOR LICENSE INFORMATION

Recycled Water Expansion Project

The bidder acknowledges that the appropriate license is required for performance of this Work.

The bidder holds the following California Contractors License(s):

1. License No. _____, Class _____, Expiration Date _____
2. License No. _____, Class _____, Expiration Date _____
3. License No. _____, Class _____, Expiration Date _____
4. License No. _____, Class _____, Expiration Date _____
5. License No. _____, Class _____, Expiration Date _____

Bidder's Taxpayer Identification No.

_____

BIDDER'S RESPONSIBILITY STATEMENT

Recycled Water Expansion Project

1. SCOPE OF THIS STATEMENT

To allow the District to evaluate the Bidder's responsibility, the Bidder shall provide the following information as a part of its Bid. The District shall consider the information contained in this Statement as personal and proprietary to the Bidder, and the District shall use the information for the sole purpose of determining the Bidder's responsibility. Unless otherwise compelled by a court order, the District shall not consider this Statement to be a public record; provided, however, that the Bidder shall indemnify, defend, and hold the District harmless from any claim or litigation related to the District's classification of this document as exempt from disclosure under the Public Records Act. If additional pages are required to respond to any of the questions set forth in this Statement, the Bidder shall describe and list the additional pages in Section 7, below.

2. EXPERIENCE

a. How many years has the Bidder been performing work as a contractor under the present business name?

_____ years.

b. Prospective bidders shall demonstrate a minimum of 5 years of experience in constructing projects of a similar size and nature.

c. If any of the experience listed in this document refers to work performed under a different name, list the different business names, and describe the relationship to the present business name on a separate page (list the additional pages in Section 7 below).

3. COMPLETED WORK / REFERENCES

Provide the requested information set forth below for at least two (2) most recent projects of similar size and scope completed during the past three (3) years.

a. Project Name: _____

Project Description: _____

_____

Contract Amount: _____

Date Completed: _____

Contact Person: _____

Contact Person's Phone: _____

b. Project Name: _____

Project Description: _____

_____

Contract Amount: _____

Date Completed: _____

Contact Person: _____

Contact Person's Phone: _____

4. CLAIMS HISTORY

a. Has any claim (whether mediated, arbitrated, or litigated) been made against your company in the past five years? _____

b. Has your company made any claim (whether mediated, arbitrated, or litigated) against any Public Agency or claim in the past five years? _____

c. If you answered "yes" to subsections 4.a. or 4.b. above, describe the claim(s) using the format below: (use additional sheets if necessary).

Project Name: _____

Claim Amount: _____

Other Party Contact: _____

Name and Phone: _____
Describe the claim(s) on a separate sheet (see Section 8, below).

5. CONTRACT TERMINATION

Has your company ever been terminated by a public agency or client, or rejected from bidding on a public works project in the last five (5) years? _____. If yes, provide an explanation below:

Project Name: _____

Agency/Client Contact
Name and Phone: _____

Date of Termination/Rejection: _____

Explanation: _____

_____

_____

If more than one (1), describe on additional sheet (see Section 7 below).

6. COMPLETION BY SURETY

Has your company every failed to satisfactorily complete a construction contract, or has a surety ever completed any portion of a construction contract of your company within the last five (5) years? _____. If yes, provide an explanation below:

Project Name: _____

Surety Contact
Name and Phone: _____

Date of Surety Took Over: _____

Explanation: _____

_____

_____

If more than one (1), describe on additional sheet (see Section 7, below).

7. ADDITIONAL PAGES

The Bidder declares that the pages listed in this Subsection were added and included with these Bid Documents to accurately respond to the Bidding Requirements.

_____ (List Pages)

8. PENALTY OF PERJURY

Bidder hereby declares and certifies under penalty of perjury that the information contained herein is true, correct, and complete.

IN WITNESS WHEREOF, the undersigned represent and warrant that they have the right, power, legal capacity and authority to sign this document on behalf of the Bidder, and have caused this document to be executed by setting hereto their names, titles, and signatures.

BIDDER: _____
Signature(s)

DATE: _____

_____
(Name and Title of Signatories)

_____
(Legal Name of Bidder)

_____
(Address)

_____
(Phone Number)

BIDDER'S SIGNATURE PAGE

Recycled Water Expansion Project

The undersigned hereby declares that the cost of all necessary items for completion of this project are included in the unit prices quoted, all incidentals have been taken into consideration even though said incidentals are not specifically listed in the specifications or shown on the plans. The undersigned is likewise aware of the fact that distances, quantities, and other estimated figures appearing on the plans or mentioned in the specifications or on the Proposal are only approximate and declares that the unit prices shown above for the various items of work are based on distances and quantities calculated as the result of actual measures performed at the site project.

Respectfully Submitted, Date: _____

Firm Name: _____

Signature: _____

Address: _____

_____

Business Phone: _____

Contractor's License No. _____ Class _____ Expiration Date: _____

Bidder is a* _____ If a partnership, names of partners. If a corporation, names of President or Vice President, and the Secretary or Asst. Secretary.

Name **Address**

_____ _____

_____ _____

_____ _____

I (we) hereby state and declare, under the penalty of perjury under the laws of California, that the representatives made herein are true and correct.

Executed _____ at _____ California.
Date Location

* By: _____ * By: _____

Title: _____ Title: _____

*Please state whether the bidder is an individual, a partnership, a corporation, or an individual doing business under a fictitious name. If the bidder is a corporation, affix corporate seal.

NOTE: Contractor signatures must be notarized. Attach appropriate notary acknowledgements.

BIDDER'S BOND

Recycled Water Expansion Project

KNOW ALL BY THESE PRESENTS: That

_____

As Principal (herein called "Principal") and

_____

As Surety (herein called "Surety")

are held and firmly bound unto the Mendocino City Community Services District, a California Special District (herein called "Obligee"), in just and full sum of _____ **($)** lawful money of the United States of America, (said sum being equal to 10% of the estimated total amount of the bid) of Principal for the herein described work of improvement, for the payment of which, well and truly to be made, we hereby bind ourselves and our, and each of our, heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That

WHEREAS, Principal who is bidding, or is about to bid, for the following described work of improvement, all in accordance with the Notice Inviting Bids, Proposal, Plans, Specifications, and Standard Contractual Requirements of Obligee therefore.

NOW, THEREFORE, if Obligee shall make an award to Principal for said work of improvement according to the terms of such bid, and Principal shall duly execute, or cause to be executed, and delivered to Obligee the Contract, bonds, and evidence of insurance coverage as, and within the time required by the Standard Contractual Requirements, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

No extension of time granted to the Principal and no change or alteration in any of the terms of the bid or the bid requirements, whether made after notice or note, shall release or otherwise affect the obligations of the Surety hereunder, and the Surety waives notice of any such extension, change, or alteration. The Surety, by the execution of this bond, represents and warrants that this bond has also been duly executed by the Principal with proper authority, and the Surety hereby waives any defense which it might have by reason of any failure of the Principal to execute this bond.

In the event suit is brought upon this bond by the Obligee and judgment is recovered by the Obligee, court costs, including reasonable attorney's fees, shall be an additional obligation of this bond for which Principal and Surety shall be liable.

Signed and Sealed this _____ day of _____ 20 .

Contractor as Principal	Surety
(Corp. Seal)	(Corp. Seal)
Company Name	Company Name
Signature	Signature
Print Name	Print Name
Title	Title
Street Address	Street Address
District, State, Zip Code	District, State, Zip Code

Note: Signatures of those executing for Surety must be properly acknowledged. The bond must be accompanied by a power of attorney from the Surety authorizing its agent to bind it to this bond.

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL

A. Unless otherwise specified in other individual sections of these Specifications, quantities of work shall be determined from measurements or dimensions in horizontal planes. However, linear quantities of pipe shall be considered as being the horizontal length as measured along the ground surface.

B. Units of measurement shall be in accordance with U.S. Standard Measures.

C. Materials and unit price items of work are to be paid for on a measurement basis in accordance with Part 2 of this section.

1.2 LUMP SUM PRICE BREAKDOWN (SCHEDULE OF VALUES)

A. Immediately after award of the Contract and prior to approval of initial payment request, the Contractor shall submit a cost breakdown list (Schedule of Values) to the Engineer for all lump sum bid items. This list shall consist of the major components of work that make up the lump sum bid items and shall be used for determining progress pay estimates. The Contractor shall fill in the amounts for each component, prorating general costs (such as, setup, overhead, and profit) in each component. The total of all components of each lump sum bid item shall equal the total of that lump sum bid item. If the amount indicated in the Contractor's Schedule of Values for any item on the list appears unbalanced, the Engineer may request that the Contractor revise the item as deemed necessary by the Engineer, unless the Contractor can substantiate these costs.

B. Only work items of value to the Owner shall be included in the list. An item for cleanup shall be listed in the breakdown, in the amount of at least one quarter of one percent (0.25%) of the total bid item. If cleanup proceeds as the job progresses, then partial payments of these amounts will be made accordingly.

PART 2 PRODUCTS

2.1 BID ITEMS

A. The Bid Amounts for each Bid Item will be used for comparative bid analysis. The Bid amounts will also form the basis of monthly progress payments. Each Lump Sum bid amount will undergo further breakdown as described previously in this section. Bid items are not intended to be exclusive descriptions of Work categories and the Contractor shall determine and include in its pricing all materials, labor, and equipment necessary to complete each Bid Item (Work phase) as shown and specified.

B. All pay line items will be paid for at the prices named in the Bid Schedule for the respective items of Work. The quantities of work or materials stated as unit price items on the Bid Schedule are supplied only to give an indication of the general scope of the Work.

C. Payment for dewatering, field engineering and all other work required to complete the work in this contract is included in the various items of work. No separate payment will be made for any of these items of work.

D. A bid item quantity shown as a final (F) pay item is for payment purposes only. For a final pay item, accept payment based on the Bid Item List quantity, regardless of the actual quantity used unless dimensions are changed by the Engineer.

E. All bid items including pipelines, conduits, vaults and buried valves, including but not limited to recycled water mains, recycled water services, storm drains, electrical conduits and telecommunication conduits shall include, but not be limited to excavation and disposal of material, root pruning, bedding, pipe, joints and other fittings as required, pipe embedment material, import backfill material, tunneling above and below existing utilities, underground detection tape, tracer wire, concrete thrust blocks, potholing existing utilities as required to positively verify their location and for adequate protection, supporting exposed utilities and pipes, trench backfill, protective trench cover, polyethylene wrap, bedding and cover on existing utility conduits and pipes, compaction, control of grades, control of groundwater, dewatering, cleaning, flushing, testing, temporary paving or trench plating, permanent asphalt and concrete paving and surfacing, traffic markers, alignment survey staking, field engineering and all other related work as described in the Contract Documents unless otherwise included in another bid item.

F. Contractor shall include in their bid minor adjustments of up to three feet in the recycled water pipeline horizontal alignment, which may be necessary during construction to avoid existing underground utilities and full lane repaving.

2.2 BASE BID ITEM DESCRIPTIONS

A. **SCHEDULE A: Recycled Water Expansion.** The following SCHEDULE A Bid item descriptions are numbered in accordance with Bid Schedule A in the Bid Proposal Form.

1. Bid Item A-1: Mobilization and Demobilization
   Full compensation for **Mobilization and Demobilization** will be paid for at the contract **lump sum** price, which price shall constitute full compensation for all such work. Maximum value shall not exceed five percent (5%) of total Schedule A contract price. The scope of work for Mobilization shall include, but not be limited to, obtaining all bonds, insurance and permits, moving onto and out of the site of all plant and equipment, submitting a construction schedule, obtaining approval of a schedule of values for lump sum items and approval of critical path submittals. Payment for Mobilization shall not exceed 75% of the contract lump sum price. Payment for Demobilization shall occur when all required items per the contract are fulfilled and the site is free of equipment and clean and ready for use by the public as determined by the Engineer. Payment for Demobilization includes the utility locator specified in Section 33 11 00.
2. Bid Item A-2: Water Pollution Control
   Full compensation for **Water Pollution Control** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for preparing and obtaining approval for a Water Pollution Control Plan (WPCP) for the project and for implementation of the WPCP, including furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in installing temporary erosion control measures within the limits shown on the Plans, approved WPCP and as specified in the Standard Specifications and these Technical Specifications, including but not limited to temporary construction fence, silt fence, seed, hydroseed, fiber rolls, erosion control blankets, covers, gravel bags, filter bags, hydraulic mulch, tacked straw, top soil, fine grading, cleaning and removing sediment deposits inside existing storm drains and drainage ditches, sampling, testing and reporting, and related work as enumerated in the Plans and these Specifications.

3. Bid Item A-3: Temporary Traffic Control
   Full compensation for **Temporary Traffic Control** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for preparing and obtaining approval for a Traffic Control Plan as part of County of Mendocino Department of Transportation Encroachment Permit, and for implementation of the TCP, including furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in installing and maintaining temporary traffic control measures within the limits shown on the Plans and beyond as necessary to provide safe passage of vehicular and non-vehicular traffic, as specified in the Standard Specifications and these Technical Specifications, including but not limited to temporary construction delineators, striping, signing, flagging, staging, and reporting, and related work, as enumerated in the Plans and these Specifications.
4. Bid Item A-4: Trench Sheeting, Shoring and Bracing
   Full compensation for **Trench Sheeting, Shoring and Bracing** shall be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools and equipment and doing all work involved in trench bracing, sheeting and shoring or equivalent method as needed to construct the distribution system including but not limited to that required by Sections 6700-6708 of the Labor Code as specified herein.
5. Bid Item A-5: 8-Inch Open-Trench Recycled Water Main, AC Pavement Surface Restoration
   Full compensation for **8-Inch Open-Trench Recycled Water Main, AC Pavement Surface Restoration** will be paid for at the contract unit price per **linear foot (LF)** for each size shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in establishing lines and grades and constructing open-trench new recycled water mains including but not limited to, permits, saw cutting pavements, removal of existing bollards, trench excavation, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, joint restraint, installation, backfilling, compaction, connections to existing pipelines and recycled water services, removal and disposal of abandoned asbestos-cement pipe in conflict with the work, abandonment, quality control testing, paving and resurfacing, surface restoration, striping, signing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
6. Bid Item A-6: 2-Inch Open-Trench RW Service, AC Pavement Surface Restoration
   Full compensation for **2-Inch Open-Trench Recycled Water Service, AC Pavement Surface Restoration** will be paid for at the contract unit price per **linear foot (LF)** for each size shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in establishing lines and grades and constructing open-trench new recycled water mains including but not limited to, permits, saw cutting pavements, removal of existing bollards, trench excavation, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, joint restraint, installation, backfilling, compaction, connections to existing pipelines and irrigation services, removal and disposal of abandoned asbestos-cement pipe in conflict with the work, abandonment, quality control testing, paving and resurfacing, surface restoration, striping, signing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
7. Bid Item A-7: 1-Inch Open-Trench RW Service, AC Pavement Surface Restoration
   Full compensation for **1-Inch Open-Trench Recycled Water Service, AC Pavement Surface Restoration** will be paid for at the contract unit price per **linear foot (LF)** for each size shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in establishing lines and grades and constructing open-trench new recycled water mains including but not limited to, permits, saw cutting, trench excavation, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, joint restraint,

installation, backfilling, compaction, connections to existing pipelines and irrigation services, removal and disposal of abandoned asbestos-cement pipe in conflict with the work, abandonment, quality control testing, paving and resurfacing, surface restoration, striping, signing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

8. Bid Item A-8: 2-Inch Meter and Backflow Assembly
   Full compensation for **2-Inch Meter and Backflow Assembly** will be paid for at the contract unit price per **each (EA)** as shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing the recycled water meter, box, backflow assembly and connecting piping, including submittals, fittings, enclosure, concrete pad, dielectric fittings, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
9. Bid Item A-9: 1-Inch Meter and Backflow Assembly
   Full compensation for **1-Inch Meter and Backflow Assembly** will be paid for at the contract unit price per **each (EA)** as shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing the recycled water meter, box, backflow assembly and connecting piping, including submittals, fittings, enclosure, concrete pad, dielectric fittings, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
10. Bid Item A-10: 8-Inch Gate Valve
    Full compensation for **8-Inch Gate Valve** will be paid for at the contract unit price per **each (EA)** as shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing valves on pipelines including valves on fire hydrant laterals, submittals, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
11. Bid Item A-11: Permanent Blowoff
    Full compensation for **Permanent Blowoff** will be paid for at the contract unit price per **each (EA)** as shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing permanent blowoff assemblies on pipelines, including submittals, piping, fittings, boxes, testing and related work, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
12. Bid Item A-12: 1-Inch Air Release/Vacuum Valve
    Full compensation for **Air Release/Vacuum Valve** will be paid for at the contract unit price per **each (EA)** as shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing air release/vacuum valves on pipelines, including submittals, piping, fittings, enclosure, concrete pad, dielectric fittings, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
13. Bid Item A-13: Fire Hydrant
    Full compensation for **Fire Hydrant** will be paid for at the contract unit price per **each (EA)**, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work required to provide fire hydrants from the vertical reducing bend to the hydrant, including but not limited to submittals, saw cutting, trench excavation, grading, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, joint restraint, fire hydrant, break-off check valve, riser, concrete pad, installation, painting, signing, backfilling, compaction, quality control testing, start-up testing, adjusting, all items of work described in Paragraph 2.1.E, and related work,

as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

14. Bid Item A-14: Ford House Public Restrooms Plumbing Retrofit
    Full compensation for **Ford House Public Restrooms Plumbing Retrofit** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in the plumbing retrofit within the Ford House Restrooms building to disconnect the potable water supply and connect the recycled water supply to the toilets, including piping, valves, fittings and appurtenances, and no additional allowances will be made therefor.
15. Bid Item A-15: Utility Conflict Resolution
    Measurement for **Utility Conflict Resolution** for payment will be based upon, but not limited to, furnishing all labor, materials, tools, equipment and incidentals necessary to move, relocate or mitigate utility conflicts, conflicts with manmade buried objects or other unforeseen items that may be encountered during construction or during potholing investigations. **Utility Conflict Resolution** shall be paid for on a **Force Account (FA)** basis up to the contract allowance price and shall include full compensation for furnishing all labor, materials, permits, tools and equipment, and for doing all the work involved as required to complete the work, and as directed by the Engineer, and no additional allowance shall be made therefor.

B. **SCHEDULE B: MCCSD Property Irrigation System.** The following SCHEDULE B Bid item descriptions are numbered in accordance with Bid Schedule B in the Bid Proposal Form.

1. Bid Item B-1: Palette Drive Irrigation System
   Full compensation for **MCCSD Property Irrigation System** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation system at the MCCSD owned property on Palette Drive, including but not limited to submittals, piping, saw cutting, trench excavation, bedding, pipeline and conduit materials, fittings, joints, installation, backfilling, compaction, sensor assembly, irrigation control valves, sprinkler heads, couplings, boxes, quality control testing, start-up testing, adjusting, signs and labeling, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
2. Bid Item B-2: Palette Drive Irrigation Controller
   Full compensation for **MCCSD Property Irrigation Controller** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation controller at the MCCSD owned property on Palette Drive, including but not limited to submittals, trench excavation, bedding, conduit, cables, installation, backfilling, compaction, quality control testing, and start-up testing, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
3. Bid Item B-3: Palette Drive PG&E Service
   Full compensation for **MCCSD Property PG&E Service** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the PG&E service for the irrigation system at the MCCSD owned property on Palette Drive, including but not limited to submittals, saw cutting, trench excavation, bedding, conduit, installation, backfilling, compaction, PG&E meter pedestal, grounding, quality control testing, start-up testing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

C. **SCHEDULE C: Hillcrest Cemetery Irrigation System.** The following SCHEDULE C Bid item descriptions are numbered in accordance with Bid Schedule C in the Bid Proposal Form.

1. Bid Item C-1: Hillcrest Cemetery Irrigation System
   Full compensation for **Hillcrest Cemetery Irrigation System** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation system at Hillcrest Cemetery, including but not limited to submittals, piping, saw cutting, trench excavation, bedding, pipeline materials, fittings, joints, installation, backfilling, compaction, couplings, boxes, quality control testing, start-up testing, adjusting, signs and labeling, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

D. **SCHEDULE D: Heider Field Irrigation System.** The following SCHEDULE D Bid item descriptions are numbered in accordance with Bid Schedule D in the Bid Proposal Form.
   1. Bid Item D-1: Heider Field Irrigation System
      Full compensation for **Heider Field Irrigation System** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation system at the State Parks owned Heider Field property on Little Lake Street, including but not limited to submittals, piping, saw cutting, trench excavation, bedding, pipeline and conduit materials, fittings, joints, installation, backfilling, compaction, sensor assembly, irrigation control valves, sprinkler heads, couplings, boxes, quality control testing, start-up testing, adjusting, signs and labeling, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
   2. Bid Item D-2: Heider Field Irrigation Controller
      Full compensation for **Heider Field Irrigation Controller** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation controller at the State Parks owned Heider Field property on Little Lake Street, including but not limited to submittals, trench excavation, bedding, conduit, cables, installation, backfilling, compaction, quality control testing, and start-up testing, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
   3. Bid Item D-3: Heider Field PG&E Service
      Full compensation for **Heider Field PG&E Service** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the PG&E service for the irrigation system at the State Parks owned Heider Field property on Little Lake Street, including but not limited to submittals, saw cutting, trench excavation, bedding, conduit, installation, backfilling, compaction, PG&E meter pedestal, grounding, quality control testing, start-up testing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

E. **SCHEDULE E: Evergreen Cemetery Irrigation System.** The following SCHEDULE E Bid item descriptions are numbered in accordance with Bid Schedule E in the Bid Proposal Form.
   1. Bid Item E-1: Evergreen Cemetery Irrigation System
      Full compensation for **Evergreen Cemetery Irrigation System** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing the irrigation system at Hillcrest Cemetery, including but not limited to submittals, piping, saw cutting, trench excavation, bedding, pipeline materials, fittings, joints, installation, backfilling, compaction, couplings, boxes, quality control testing, start-up testing, adjusting, signs and labeling, all items of work described in Paragraph 2.1.E, and related

work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

F. **SCHEDULE F: Evergreen Street Sewer Main Replacement.** The following SCHEDULE F Bid item descriptions are numbered in accordance with Bid Schedule F in the Bid Proposal Form.

1. Bid Item F-1: Trench Sheeting, Shoring and Bracing
   Full compensation for **Trench Sheeting, Shoring and Bracing** shall be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools and equipment and doing all work involved in trench bracing, sheeting and shoring or equivalent method as needed to construct the replacement sanitary sewer mains including but not limited to that required by Sections 6700-6708 of the Labor Code as specified herein, and no additional allowance will be made therefor.
2. Bid Item F-2: Open-Trench 8-Inch Sewer Main
   Full compensation for **Open-Trench 8-Inch Sewer Main** will be paid for at the contract unit price per **linear foot (LF)**, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in establishing lines and grades and constructing open-trench sewer main including but not limited to, permits, temporary bypass pumping, saw cutting, trench excavation, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, installation, backfilling, compaction, connections to pipelines and manholes, tree removal, fence removal and replacement, hydrant removal and replacement, quality control testing, paving and resurfacing, surface restoration, striping, signing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
3. Bid Item F-3: 48-Inch Sewer Manhole
   Full compensation for **48-Inch Sewer Manhole** will be paid for at the contract unit price per **each (EA)**, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in constructing new sewer manholes including but not limited to, saw cutting, excavation, subgrade preparation, scarification, moisture conditioning, backfilling, compaction, quality control testing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
4. Bid Item F-4: Connect Sewer Lateral
   Full compensation for **Connect Sewer Lateral** will be paid for at the contract unit price per **each (EA)**, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in connecting existing sewer laterals to the new sewer main including but not limited to, saw cutting, excavation, subgrade preparation, scarification, moisture conditioning, backfilling, compaction, lateral materials, fittings, installation, quality control testing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.
5. Bid Item F-5: Provide 2-Way Cleanout
   Full compensation for **Provide 2-Way Cleanout** will be paid for at the contract unit price per **each (EA)**, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in providing a two-way cleanout on reconnected laterals, and performing all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

G. **SCHEDULE G: Main Street Sewer Lift Station Improvements.** The following SCHEDULE G Bid item descriptions are numbered in accordance with Bid Schedule G in the Bid Proposal Form.

1. Bid Item G-1: Main Street Sewer Lift Station Wetwell Pumps
   Full compensation for **Main Street Sewer Lift Station Wetwell Pumps** will be paid for at the contract **lump sum (LS)** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in removing and disposing of the existing pressure ejector sewer pumping system from the drypit, removing and disposing of the existing wet well cover, and providing new wetwell submersible pumps, rail system, wetwell cover with access hatch, pump controller, electrical, piping, valves and appurtenances, including but not limited to submittals, disposal, piping, fittings, joints, installation, conduit, conductors, couplings, boxes, quality control testing, start-up testing, adjusting, labeling, all related items of work as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

H. **SCHEDULE H: Main Street Recycled Water Extension.** The following SCHEDULE H Bid item descriptions are numbered in accordance with Bid Schedule H in the Bid Proposal Form.
   1. Bid Item H-1: 8-Inch Open-Trench Recycled Water Main Extension
      Full compensation for **8-Inch Open-Trench Recycled Water Main Extension, AC Pavement Surface Restoration** will be paid for at the contract unit price per **linear foot (LF)** for each size shown on the bid schedule, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for performing all work involved in establishing lines and grades and constructing open-trench new recycled water mains including but not limited to, permits, saw cutting, trench excavation, subgrade preparation, scarification, moisture conditioning, pipe bedding, pipeline materials, fittings, joint restraint, installation, backfilling, compaction, connections to existing pipelines and irrigation services, removal and disposal of abandoned asbestos-cement pipe in conflict with the work, abandonment, quality control testing, paving and resurfacing, surface restoration, striping, signing, all items of work described in Paragraph 2.1.E, and related work, as enumerated in the plans and these specifications, and no additional allowances will be made therefor.

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 33 11 00

RECYCLED WATER UTILITIES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section includes: The Contractor shall provide all materials, equipment, and labor necessary to furnish and install all water pipe with all necessary fittings and coupling systems and all appurtenant work, complete and operable, including all connections as shown on the Drawings and as specified herein.

B. All recycled water piping materials, equipment and installation shall be in accordance with the AWWA Standards.

C. Section includes:
1. Recycled Water Main Piping.
2. Couplings.
3. Dismantling Joints.
4. Restrained Joints for DI Piping.
5. Restrained Joints for PVC Piping.
6. Service Meters.
7. Fire Hydrants.
8. Tracer Wire.
9. Detectable Pipe Warning Tape.
10. Bedding and Cover Materials.
11. Gate Valves.
12. Pressure Reducing Valves.
13. Air Release / Vacuum Valves.
14. Bronze Ball Valves.
15. Bolts for Underground Piping and Valves.
16. Bolts for Aboveground Piping and Valves.
17. Pipe Hangers, Supports and Stem Guides.
18. Flange Insulation Kits.
19. Mechanical Seals and Water Stops.
20. Non-shrink Grout.
21. Pressure Gauges.
~~21.~~22. Utility Locator
~~22.~~23. Recycled Water System Labeling.

1.2 RELATED WORK

A. Contract General Conditions.

B. Section 03 05 00 - Basic Concrete Materials.

C. Section 31 01 40 - Shoring and Trench Safety.

D. Section 31 23 00 - Trench Excavation and Backfill.

E. Section 31 23 19 - Dewatering.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. American Public Works Association (APWA)
   1. Uniform Color Code for Marking of Underground Utility Locations.

B. American Society of Testing and Materials (ASTM)
   1. ASTM A193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications
   2. ASTM A194 – Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
   3. ASTM A536 – Standard Specification for Ductile Iron Castings
   4. ASTM D2737 – Standard Specification for Polyethylene (PE) Plastic Tubing
   5. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

C. American Water Works Association (AWWA)
   1. AWWA C104 – Standard for Cement–Mortar Lining for Ductile-Iron Pipe and Fittings
   2. AWWA C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems
   3. AWWA C110 – Standard for Ductile-Iron and Gray-Iron Fittings
   4. AWWA C111 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
   5. AWWA C153 – Standard for Ductile-Iron Compact Fittings for Water Service
   6. AWWA C509 – Resilient-Seated Gate Valves for Water Supply Service
   7. AWWA C550 – Protective Interior Coatings for Valves and Hydrants
   8. AWWA C600 – Installation of Ductile Iron Water Mains and their Appurtenances.
   9. AWWA C901 – Standard for Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) through 3 In. (76 mm), for Water Service – PE material designations PE 2708, PE 3608, and PE 4710.

D. National Fire Protection Association (NFPA):
   1. 24 95 Installation of Private Fire Service Mains and Their Appurtenances
   2. 291-01 Fire Flow Testing and Marking of Hydrants

E. NSF International:
   1. 61-02 Drinking Water System Components-Health Effects (Sections 1-9)

F. American Welding Society (AWS):
   1. A5.8 04 Brazing Filler Metal

G. Foundation for Cross-Connection Control and Hydraulic Research-2005

H. Copper Development Association’s Copper Tube Handbook-2005

1.4 QUALITY ASSURANCE

A. Standards: The materials and work performed in this Section shall conform to the applicable standards of:
   1. The American National Standards Institute (ANSI).
   2. The American Society for Testing and Materials (ASTM).
   3. American Water Works Association Inc. (AWWA).
   4. The National Sanitation Foundation (NSF).
   5. The American Society of Mechanical Engineers, Boiler and Pressure Vessel Code (ASME).
   6. Plumbing and Drainage Institute (PDI).
   7. Underwriters Laboratories Inc. (UL).
   8. Uniform Plumbing Code (UPC).
   9. National Fire Protection Association (NFPA).

10. Factory Mutual Research Corporation (FMRC).

B. Tests: All materials used in the manufacture of the pipe shall be tested in accordance with the requirements of AWWA and NSF-61, and the referenced standards, as applicable, in addition to national, local, and state codes.

C. Contractor shall coordinate with and provide a minimum 48 hour notice to the District for all inspections.

D. All costs of inspection and tests shall be borne by the Contractor.

E. The pipe shall be subjected to the specified hydrostatic strength tests, flexure tests, and crushing tests. The crushing tests shall be made on samples taken from the center of full-length sections of pipe.

F. The Contractor shall verify with the pipe manufacturer all connection details.

G. Qualification of manufacturers:
   1. The material shall be the product of a supplier regularly engaged in the manufacturing of pipe and plumbing products.
   2. All materials shall be new and of current manufacture and shall be guaranteed against defects or workmanship in accordance with the General Conditions.

H. Qualification of installers:
   1. For the actual assembly, installation, and testing of the work in this Section, use only thoroughly trained and experienced personnel who are completely familiar with the requirements for this work and with the installation recommendations of the manufacturers of the specified items.
   2. In acceptance or rejection of installed materials, no allowance will be made for lack of skill on the part of installers.

1.5 CONTRACTOR SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00, “Submittal Procedures”. Submit complete shop drawings including layouts, elevations, and details to the Engineer.

B. Submit all product data, shop drawings, laboratory test results, material source information, and certificates of compliance listed in this Section under a single submittal cover for review. Incomplete submittals will not be reviewed.

C. Material List:
   1. In accordance with the provisions of Section 01 33 00 “Submittal Procedures” of the Specifications, submit with the shop drawings a complete list of all materials and equipment proposed to be furnished and installed under this portion of the work, giving manufacturer's name, catalog number, and catalog cuts for each item where applicable.

D. Manufacturers' Literature and Data (Submit all items as one submittal package for review):
   1. Ductile Iron Pipe shall be in accordance with ANSI/AWWA C151/A21.51; and shall be provided to Engineer for approval.
   2. C900 PVC Pipe.
   3. Schedule 80 PVC Pipe.
   4. Piping.
   5. Gaskets.
   6. Valves.
   7. Check Valves.

8. Service line products.
9. Valve boxes.
10. Joint restraint.
11. Coupling.
12. Disinfection products.
13. Detection Wire

E. Testing Certifications:
   1. Hydrostatic Testing.
   2. Certification of Disinfection, including free chlorine residuals, and bacteriological examinations.

F. Temporary Water Supply Plan: Submit plan outlining the steps that the Contractor will take to provide water to properties where the water supplies have been disrupted.

G. Manufacturer's recommendations:
   1. Accompanying the materials list and shop drawings, submit four copies of the manufacturer's current recommended method of installation.

H. Certificates of Compliance: Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.

I. Refer to Section 09 90 00 for paint and coating submittal requirements.

1.6 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate the Work with termination of water connections inside and outside building, trenching, connection to municipal water system, and connection to treatment and backwash system.

1.7 DELIVERY, STORAGE, AND HANDLING:

A. Coated pipe shall be shipped on bunks, and secured with nylon belt tied down straps or padded banding located approximately over braces. Coated pipe shall be stored on padded skids, sand or dirt berms, sand bags, old tires or other suitable means so that coating will not be damaged. Coated pipe shall be handled with the wide belt slings, padded forks, or other means that will not damage the pipe or coating. Chains, cables or other equipment likely to cause damage to the pipe or coating shall not be used. Prior to shipment, the pipe shall be visually inspected for damage to the coating. Any damaged areas shall be repaired at the Contractor’s expense in accordance with the standard to which the coating was applied.

B. Deliver and store valves and other materials and appurtenances in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 GENERAL

A. These Specifications are intended to be standard specifications and they may therefore contain specifications for materials not required for this project or allowed on any or various parts of it. Certain materials, which are applicable for only one portion or a small portion, may be shown on the plans and not particularly specified herein.

B. All materials shall conform to sizes, capacity, quality and quantities as shown on the drawings or described in these Specifications. Materials shall be from new stock, delivered in good condition. No damage to stock shall be used.

C. Where no method of tests for materials is specified, the latest applicable test specified by ASTM or AWWA shall be followed.

D. After delivery to the site, all materials shall be carefully unloaded, protected against breakage, rusting, accumulation of foreign matter, disintegration, and injury. The Contractor shall be responsible for all lost or damaged material supplied and work done under this contract.

2.2 RECYCLED WATER MAIN PIPING

A. Polyvinyl Chloride (PVC) Pipe:
   1. Size: As shown on plans.
   2. Color: Purple
   3. Pipe: Less than 4": Schedule 80 PVC
      a. Fittings: Schedule 80 PVC
      b. Joints: Solvent weld, use heavy duty PVC cement and primer.
   4. Pipe: 4" through 12": AWWA C900 DR 18 Pressure Class 235, Cast-Iron Pipe Size
      a. Fittings: See Ductile Iron Fittings
      b. Joints:
         1) ASTM D3139 and ASTM F477 PVC flexible elastomeric seals. Solvent-cement couplings are not permitted, except in sizes less than 3" in diameter.
         2) All joints shall be integral, bell, and spigot gasketed joints or plain end with rubber ring couplings.
         3) All joints shall be supplied from the manufacturer with an assembly mark for use in installation so joints are not over-stabbed.
         4) When the spigot end of pipe is to be inserted into a mechanical joint fitting, the beveled end of the pipe shall be removed prior to insertion.

B. Ductile Iron Pipe (DIP):
   1. Size: As shown on plans.
   2. Pipe: ANSI/AWWA C151/A21.51, Pressure Class 350.
   3. Below Grade Pipe:
      a. Mechanical Joint Pipe.
      b. Restrained Joints:
         1) Boltless, push-on type, joint restraint independent of joint seal.
         2) Gaskets: rubber ring type push-on TYTON gasketed joints.
         3) Jackets: ANSI/AWWA C105/A21.5 polyethylene jacket.
            a) Color: Purple
            b) Provide a polyethylene encasement around pipe, fittings, and valves.
            c) Make provisions to keep the polyethylene from direct exposure to sunlight prior to installation. Backfill following installation without delay to avoid exposure to sunlight.
      c. Interior Lining:
         1) Cement mortar lining interior in accordance with ANSI/AWWA C104/A21.4.
      d. Exterior Coating:
         1) Asphaltic coating in accordance with ANSI/AWWA C151/A21.51.
      e. Manufacturer:
         1) U.S. Pipe.
         2) American.
         3) Clow Water Systems Co.
         4) Approved equivalent.
   4. Above Grade Pipe and Fittings:
      a. Flanged Joints: AWWA C115.

b. Gaskets: rubber gasketed joints, 1/8 inch thick.
c. Interior Lining: Fusion-bonded epoxy in accordance with ANSI/AWWA C116/A21.16.
d. Exterior Coating: Fusion-bonded epoxy in accordance with ANSI/AWWA C116/A21.16.

C. Ductile Iron Fittings (below grade):
   a. Ductile iron: ANSI/AWWA C110/A21.10.
   b. Compact fittings ANSI/AWWA C153/A21.53.
   c. Coating and Lining:
      1) Above Ground: Cement-mortar lining in accordance with AWWA-C104 and fusion-bonded epoxy coating in accordance with ANSI/AWWA C116/A21.16. Provide a polyurethane top coat on all above ground piping not made of stainless steel.
      2) Below Ground: Cement-mortar lining in accordance with AWWA-C104, and an exterior bituminous coating in accordance with AWWA C203
      3) Jackets for Below Ground: ANSI/AWWA C105/A21.5 polyethylene jacket.

2.3 COUPLINGS

A. Restrained Coupling
   1. Type: AWWA C219, NSF 61 listed.
   2. Body:
      a. Ductile Iron; ASTM A536
      b. Carbon Steel; ASTM A513, ASTM A53 or ASTM A283C
   3. Gaskets: Virgin Styrene Butadiene Rubber (SBR) for water services; ASTM D2000 MBA 710
   4. Bolts: 316 stainless steel.
   5. Coating: Fusion-bonded epoxy in accordance with ANSI/AWWA C116/A21.16, or approved equivalent.
   6. Pressure rating: meet or exceed adjacent piping system rating.
   7. System compatible with connecting pipe; verify connecting pipe O.D.

B. Restrained Flange Coupling Adaptor
   1. System: restrain plain end of pipe to a flange, conforming to AWWA C110.
   2. Body:
      a. Ductile Iron; ASTM A536
      b. Carbon Steel; ASTM A513, ASTM A53 or ASTM A283C
   3. Gaskets: Virgin Styrene Butadiene Rubber (SBR) for water services; ASTM D2000 MBA 710
   4. Bolts: 316 stainless steel,
   5. Coating: Fusion-bonded epoxy in accordance with ANSI/AWWA C116/A21.16, or approved equivalent.
   6. Pressure rating: meet or exceed adjacent piping system rating.
   7. System compatible with connecting pipe; verify connecting pipe O.D.

C. Reducing Coupling
   1. System: restrain plain end of pipe to a flange, conforming to AWWA C110.
   2. Body:
      a. Ductile Iron; ASTM A536
      b. Carbon Steel; ASTM A513, ASTM A53 or ASTM A283C
   3. Gaskets: Virgin Styrene Butadiene Rubber (SBR) for water services; ASTM D2000 MBA 710
   4. Bolts: 316 stainless steel,
   5. Coating: Fusion-bonded epoxy in accordance with ANSI/AWWA C116/A21.16, or approved equivalent.
   6. Pressure rating: meet or exceed adjacent piping system rating.

7. System compatible with connecting pipe; verify connecting pipe O.D.

D. Manufacturers:
1. ROMAC Industries, Inc.
2. Smith-Blair
3. Approved Equivalent

2.4 DISMANTLING JOINTS

A. Use: Potable water.

B. Type:
1. Flange Spool (3-12 inch): AWWA Class D steel ring flange, compatible with ANSI Class 125 and 150 bolt circles. Pipe is STD Weight Class per ASTM A53.
2. End Ring & Body (3-12 inch): ASTM A536 65-45-12 ductile iron.
3. Gaskets: NBR gaskets in accordance with ASTM D 2000 MBA810Z.
4. Bolts & Nuts: ASTM A588 HSLA bolt material.
5. Tie-Rods: High tensile steel per ASTM A193 grade B7.
6. Coating: Fusion bonded epoxy, NSF 61 certified.
7. Pressure (3-12 inch): Maximum rating, AWWA Class D 175 psig.

C. Size: Per plan.

D. Manufacturer:
1. Romac Industries, Inc. Model DJ400
2. Smith-Blair, Inc.
3. Substitutions: Section 01 60 00 - Product Requirements.

2.5 RESTRAINED JOINTS FOR DUCTILE IRON PIPING

A. Materials: Ductile Iron, ASTM A536.

B. Coating: Thermoset epoxy coating with heat cure, or approved equivalent.

C. Pressure rating: minimum working pressure rating equivalent to the pipe.

D. Bell Restraint Harness for Ductile Iron Pipe:
1. EBAA Iron, Inc., Series 1700.
2. Romac Industries, Inc., 600 Series, Style 611.
3. StarGrip Series 3100S or 3100P.
4. Approved Equivalent.

E. Mechanical Joint Fittings for Ductile Iron:
1. EBAA Iron - Series 1100.
2. StarGrip Series 3000.
3. Romac Industries, Inc. - Romagrip.
4. Substitutions: Section 01 60 00 - Product Requirements.

2.6 RESTRAINED JOINTS FOR POLYVINYL CHLORIDE PIPING

A. Bell Restraint Harness for C900:
1. EBAA Iron, Inc., Series 1600.
2. Romac Industries, Inc., 600 Series, Style 611.
3. StarGrip Series 4100P.
4. Approved Equivalent.

B. Mechanical Joint Fittings for C900 and C905:
   1. EBAA Iron, Inc., Series 2000PV.
   2. Romac Industries, Inc., PVC – RomaGrip.
   3. StarGrip Series 4000.
   4. Approved Equivalent.

2.7 SERVICE PIPING AND FITTINGS
   1. Brass Piping and Associated Fittings:
      a. Pipe, ASTM B43/, lead free.
      b. Fittings, ASTM B584, ANSI/ASME B16.15, lead free. Compression or threaded.
   2. Copper Tubing: Type K; ASTM B280, ASTM B306, ASTM B819, ASTM B88
   3. Insulating Joints:
      a. Joints between pipe of dissimilar metals shall have a suitable approved type of insulating joint prevent metal-to-metal contact between adjacent sections of piping.
   4. Service Saddles:
      a. Materials: Bronze and stainless steel nylon coated of the double strap type.
      b. Saddle shall be stamped for use with ductile iron or PVC pipe.
      c. Manufacturer:
         1) Romac 202N.
         2) Mueller BR2B or BR2S.
         3) Substitutions: Approved Equivalent
   5. Tapping Sleeves:
      a. Material: Stainless steel
      b. Sleeve must be compatible with pipe type.
      c. Manufacturers:
         1) Dresser: Style 630.
         2) Ford: FTSS
         3) JMC: 415, 432
         4) Mueler: H-615, H-616 or H-667
         5) American Flow Control: MJ Split Tapping Sleeve
         6) Smith-Blair: 664-665
         7) APAC Tapping Sleeve
         8) Clow Corp: MJ, F-5093 or F-5205
         9) M&H Valve and Fitting Co.: Catalog 52, Style 974
         10) U.S. Pipe: Smith Dual Compression Seal Tapping Sleeve.
         11) Substitutions: Approved Equivalent
   6. Corporation Stops:
      a. Materials: Bronze conforming to AWWA C800 and ASTM B62.
      b. Manufacturer:
         1) Ford FB500, FB1000-6-Q-NL
         2) Jones J1943, E19375SG
         3) McDonald 74701BQ.
         4) Mueller B-25008N.
         5) Substitutions: Approved Equivalent.
   7. Angle Meter Ball Valve:
      a. Materials: Bronze conforming to AWWA C800 and ASTM B62.
      b. Manufacturer:
         1) Ford
         2) Jones
         3) McDonald
         4) Mueller
         5) Substitutions: Approved Equivalent.
   8. Water Meters:
      a. Size: Size per plan.
      b. Type: Disc
      c. Material: Cast Bronze.

d. Accessories: Strainer.
e. Connection: NPT Threaded.
f. Gage: Gallons
g. Manufacturer: BadgerMeter, Inc.
h. Model: Recordall
i. Substitutions: Require approval of the Engineer.

9. Water Meter Boxes and Lids:
   a. Manufacturer: Oldcastle Precast per Section 33 05 17.
   b. Size: As required to provide 6 inches clear around meter or other appurtenance.
   c. Substitutions: Approved Equivalent.

2.8 FIRE HYDRANTS

A. Provide only wet-barrel type hydrants, AWWA C503 or UL 246 compliant.

B. Hydrant shall have factory-applied prime coat of paint and a field-applied polyurethane top coat.

C. Hydrants shall have 6 inch inlet, one 4-1/2 inch pumper connection and two, 2-1/2 inch hose connections.

D. Pumper connection and hose connections shall be individually valved with independent nozzle gate valves.

E. Each outlet shall be independently valved with 1-1/8 inch pentagon operating nut on the valve cap.

F. Hydrant shall be complete with 6-inch bury length (bury to suit depth of water main connection as indicated on the Drawings).

G. Hydrants shall be supplied with ‘break-away’ type bolts at hydrant base connection to the break-off check valve.

H. Bolts shall be oriented such that nut is on the top side of the hydrant flange.

I. Hydrant shall be equipped with a break-off check valve.
   1. Clow Model LP619
   2. Approved Equivalent.
   3. Substitutions: Section 01 60 00 - Product Requirements.

J. Hydrant Manufacturers:
   1. Clow Model 950 or 960.
   2. Approved Equivalent.
   3. Substitutions: Section 01 60 00 - Product Requirements.

2.9 TRACER WIRE

A. Manufacturers:
   1. Pro-Line
   2. Substitutions: Section 01 60 00 - Product Requirements.

B. Characteristics:
   1. Type: THWN
   2. Gage: No. 12
   3. Materials: Copper conductor, PVC insulation, nylon jacket.

2.10 WARNING TAPE

A. Tape shall be an inert plastic film (non-metallic) formulated for prolonged underground use that will not degrade when exposed to alkalies, acids and other destructive substances commonly found in soil.

B. Tape shall be puncture-resistant and shall have an elongation of two times its original length before parting.

C. Tape shall be installed with the printed side up and run continuously along the entire length of the utility intended for identification. Tape shall be installed on the main piping and all appurtenant laterals, including blowoffs, air valve assemblies, fire hydrants, and services. Tape splices shall overlap a minimum of twenty-four (24) inches for continuous coverage.

D. Tape shall be colored blue to identify the waterline with printed message: “Caution: Waterline Buried Below”. Ink used to print messages shall be permanently fixed to tape and shall be black in color with message printed continuously throughout.

E. Tape shall be minimum 0.004 inches (or 4 mil) thick x six (6) inches wide with a printed message on one side. Tape used with the installation of onsite potable shall be a minimum of three (3) inches wide.

2.11 BEDDING AND COVER MATERIALS

A. Unless otherwise specified or shown, all material used for pipe embedment shall be as specified in Section 31 23 00, “Trench Excavation and Backfill.”

B. For pipe bedding and backfill, refer to Section 31 00 00, “Earthwork.”

2.12 GATE VALVES

A. Resilient Wedge Gate Valves: AWWA C509.
   1. Body Material: ductile iron.
   2. Working Pressure: 250psig.
   3. Seat: Resilient.
   4. Stem: Non-rising bronze stem.
   5. Underground Installation: Operating Nut: 2-inch square; open counterclockwise unless otherwise indicated.
   6. Aboveground Installation: Hand wheel.
   7. Ends: Mechanical joint end connections for underground installation. Flanged joint end connections for aboveground installation.
   8. Coating: 12-mil holiday-free epoxy AWWA C550; interior/exterior.
   9. Bolting: 304 stainless steel.

B. Manufacturers:
   1. Mueller Company.
   2. Clow Eddy – Iowa.
   3. American Flow Control.
   4. Substitutions: Section 01 60 00 - Product Requirements.

2.13 PRESSURE REDUCING VALVE

A. Pressure Reducing Valve:
   1. Body Material: ductile iron.
   2. Working Pressure: 300psig.

3. Trim: Bronze
4. Disc: Buna-N Rubber
5. Ends: Flanged.
6. Diaphragm: Nylon Reinforced Buna-N Rubber
7. Stem: Stainless Steel
8. Coating: 12-mil holiday-free epoxy AWWA C550; interior/exterior.
9. Bolting: 304 stainless steel

B. Manufacturer:
1. Cla-Val Co., Model No. 90-01 PBDY
2. Substitutions: Section 01 60 00 - Product Requirements.

2.14 AIR RELEASE / VACUUM VALVE

A. Size: Per plan.

B. Well Service Air Valves, Hydrostatically tested to ANSI/AWWA C512 standards.

C. Stainless steel floats, cast iron body and cover, Buna-N seat, stainless steel needle.

D. Stainless steel protection screens.

E. NSF/ANSI 61 Certified.

F. Enclosure:
1. Material: 14 gauge steel with 10 gauge steel top with one expanded metal face, 2-3 mil powder coated.
2. Base Frame made from 2″x 2″ angle, 3/16” thick.
3. Stainless steel internal hinges. No exterior hinges or anchor fasteners.
4. Stainless steel recessed single lock hasp for security.
5. Exterior handles for accessibility.
6. Full access service ability.
7. Top surfaces crowned for drainage.
8. Manufacturer:
a. Placer Waterworks, Inc. R-Model.
b. Approved Equivalent.

G. Manufacturers:
1. ValMatic 800 Series.
2. APCO clean water air release valve.
3. Substitutions: Section 01 60 00 - Product Requirements.

2.15 BRONZE BALL VALVES

A. Materials:
1. Body: Bronze no-lead alloy conforming to AWWA C800 and ASTM B62.
2. Ball: Stainless steel.
3. Seats and Seals: Teflon.
4. 1/4 turn.
5. Suitable for potable water.

B. Handle: Straight lever handle, where shown on Drawings.

C. Manufacturer:
1. Mueller.

2. Ford.
3. Jones.
4. McDonald.
5. Watts.
6. Substitutions: Section 01 60 00 - Product Requirements.

2.16 BOLTS FOR UNDERGROUND PIPING AND VALVES

A. Bolts: ASTM A307, Grade B heavy hex head.

B. Nuts: ASTM A563, heavy hex nuts.

C. Plastic washers and sleeves for dielectric joints shall be provided.

D. All nuts and bolts shall have a fluoropolymer coating. Fluoropolymer coating for bolts and nuts shall be applied at a nominal thickness of 1 mil. and baked on. Coating shall have a minimum kinetic friction coefficient of 0.08. Coating shall be Tripac 2000 Blue Coating System, or approved equivalent.

2.17 BOLTS FOR ABOVEGROUND PIPING AND VALVES

A. Bolts for exposed flanged ductile iron and steel pipe shall be type 304 stainless steel bolting with the heavy duty type 304 stainless steel nuts (only).

2.18 PIPE HANGERS, SUPPORTS AND STEM GUIDES

A. Components:
1. Pipe Supports: provide pipe support with saddle, U-bolt, gusset, pipe adjuster, base stand, expansion anchor bolts, and all other required installation hardware.
2. Brackets and Stem Guides: provide brackets, stem guides, supports, bolts pipe clamps, and all other required installation hardware.
3. Material: stainless steel.
4. Provide copper clad for support of copper piping that is not insulated.
5. Use padded hangers for piping that is subject to scratching.

B. Manufacturer:
1. B-Line.
2. Waterman.
3. Substitutions: Section 01 60 00 - Product Requirements.

2.19 FLANGE INSULATION KITS

A. The Contractor shall provide a flange insulation kit for flanged connections between metallic pipes of dissimilar materials. Flange insulation kits shall be of the full face gasketed type for use with potable or non-potable water.

B. Manufacturer:
1. Calpico, Inc.
2. Substitutions: Section 01 60 00 - Product Requirements.

2.20 MECHANICAL SEALS AND WATERSTOPS

A. Mechanical Seals:

1. Description: Shall be modular, mechanical type for core drilled applications, consisting of inter-locking synthetic elastomeric rubber links shaped to continuously fill the annular space between the pipe and the wall opening.
2. Seal Element: EPDM.
3. Pressure Plates: Reinforced Nylon Polymer
4. Bolts, Nuts and Hardware: 316 Stainless Steel.
5. Manufacturer: Link-Seal.
6. Substitutions: Section 01 60 00 - Product Requirements.

B. Silicone Sealants: High-performance waterproof silicone sealant specifically designed for below grade and submerged applications.

C. Waterstops:
1. See Section 03 30 00.
2. Substitutions: Section 01600 - Product Requirements.

2.21 NON-SHRINK GROUT

A. Pre-mixed ready for use formulation requiring only addition of water; non-shrink, non-corrosive, non-metallic, non-gas forming, no chlorides.

B. Properties: Certified to maintain initial placement volume or expand after set and meet the following minimum properties when tested in accordance with CRD-C621, for Type D non-shrink grout:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (Approx)
		Final	3 hours (Approx)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	CRD-C621	1 day	4,000 psi
		7 days	7,000 psi
		28 days	10,000 psi to 10,800 psi

2.22 PRESSURE GAUGES

A. Provide on sampling taps.

B. Lead free brass/bronze wetted parts.

C. Stainless steel case material.

D. Size: ¼”

E. Manufacturer:
1. Winters Model PFQ804LF.
2. Substitutions: Section 01 60 00 - Product Requirements.

2.23 ACCESSORIES

A. Requirement: Provide one (1) electronic utility locator / detector capable of detecting buried utilities.

B. Detection Depth: Up to 15 feet.

C. Power: 4 C-cell batteries or optional 18V Battery Adapter.

D. Sonde Frequencies: 512 Hz, 640 Hz, 874 Hz, 33 kHz.

E. Line Trace Frequencies: 128 Hz, 8 kHz, 33 kHz.

F. System carry bag.

G. Warranty: Lifetime warranty for defects in workmanship and materials.

H. Manufacturer:
1. RIGID 19238 NaviTrack Scout Locator.
2. Substitutions: Section 01 60 00 - Product Requirements.

~~2.23~~2.24 RECYCLED WATER SYSTEM LABELING

A. Below Grade Pipe:
1. Pipe Color: Purple
2. Pipe Label: “RECYCLED WATER - DO NOT DRINK”
3. Label Location: Opposite sides of the pipe.
4. Where purple pipe cannot be used, the pipes shall be installed with warning tape. The plastic warning tape shall be an inert plastic film specifically formulated for prolonged underground use and shall be prepared with black printing on a purple field having the words, "RECYCLED WATER - DO NOT DRINK". The minimum thickness shall be 4 mils and the overall width of the tape shall be a minimum of 3-inches.

B. Above Grade Pipe:
1. All above grade recycled water mains and appurtenances shall be coated in accordance with Section 09800, “Protective Coatings.”
2. Pipe Color Coding: “Irvine Purple,” Pantone 240, 241, or 512.
3. Pipe Label: “RECYCLED WATER - DO NOT DRINK”.
a. Color: Black
b. Stenciled letters: 2-inches in height.
c. Location: Top and bottom of the pipe at 5-foot intervals.

C. ARVs and Enclosures:
1. Coating: Section 09800 - Protective Coatings.
2. Color: “Irvine Purple,” Pantone 240, 241, or 512.
3. Label: “RECYCLED WATER - DO NOT DRINK”.
4. Stenciled letters: 2-inches in height.

D. Fire Hydrants:
1. Coating: Section 09800 - Protective Coatings.
2. Color:
a. Body: White
b. Cap and Nozzles: “Irvine Purple,” Pantone 240, 241, or 512.

E. Identification Tags and Labels:
1. Material: Permanent inert material specifically formulated for prolonged exposure to weather, UV, and immersion without fading or deterioration
2. Label: Black printing on a purple field with the words: "WARNING - RECYCLED WATER - NOT FOR DRINKING” on one side and “AVISO - NO ES PARA BEBER" on the other side.
3. Size: The minimum height of letters shall be 1/2-inch. The minimum tag thickness shall be 4 mils for adhesive backed labels and 10 mils for tag type labels. Tag type labels shall have reinforced tie holes.

4. Submit sample of each label type to Engineer for approval prior to procuring labels.
5. The type of label, location and attachment method shall be as follows and subject to acceptance by the Engineer:

Item	Label Type	Label Location	Attachment Method
Valve (below grade)	Tag	Top of riser pipe	Heavy-duty nylon fasteners
Valve (above grade)	Tag	Hand wheel	Heavy-duty nylon fasteners
Valve Box	Lettering	Top of cover	Factory Cast
ARV	Tag	Front of cabinet	Rivets or bolts
Blow-off	Tag	Top of riser pipe	Heavy-duty nylon fasteners
Blow-off Box	Lettering	Top of cover	Factory Cast
Meter Box	Lettering	Top of cover	Factory Cast
Angle Meter Valve	Tag	Valve body	Heavy-duty nylon fasteners
Backflow Assembly	Tag	Valve body	Heavy-duty nylon fasteners

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify existing utility water main size, location, and inverts are as indicated on Drawings.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs. Use only equipment specifically designed for pipe cutting. Use of chisels or hand saws will not be permitted. Grind edges smooth with beveled end for push-on connections.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.3 BEDDING AND BACKFILL

A. For pipe bedding and backfill, refer to Section 31 00 00, “Earthwork.”

B. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

A. Install pipe in accordance with manufacturer’s installation instructions. Provide copy of manufacturer’s installation instructions to Engineer.

B. Install ductile iron pipe in accordance with manufacturer’s instructions and AWWA C600.

C. Install PVC pipe in accordance with manufacturer’s instructions and AWWA C900.

D. Maintain separation from potable water main in accordance with State of California Department of Public Health and Division of Drinking Water code.

E. Install pipe to indicated elevation to within tolerance of 5/8 inches.

F. Install tracer wire on the top of the installed pipe. Tape tracer wire to pipe at minimum 10 foot intervals.

G. Route pipe in straight line.

H. Curvature of PVC pipe shall be accomplished through longitudinal bending of the pipe barrel only. Deflection of joints is not allowed.

I. When curving pipe, do not deflect joints in PVC pipe. Joints in DIP may be deflected within allowable limits specified by manufacturer.

J. When stabbing bell and spigot pipe, verify that the manufacturer's assembly mark on the pipe joint is flush with the end of the bell.

K. Install pipe with no high points, except where shown on Plans. If unforeseen field conditions arise which necessitate high points, install air release valves as directed by Engineer.

L. Install pipe to have bearing along entire length of pipe. Excavate bell holes to permit proper joint installation. Do not lay pipe in wet or frozen trench.

M. Install pipe to allow for expansion and contraction without stressing pipe or joints.

N. Close pipe openings with watertight plugs during work stoppages.

O. Install access fittings to permit disinfection of water system.

P. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.

Q. Establish elevations of buried piping with not less than 4 feet of cover. Measure depth of cover from final surface grade to top of pipe barrel.

R. Install pipe warning tape continuous over top of pipe buried 12 inches below finish grade, above pipe line.

3.5 INSTALLATION - VALVES

A. Gate Valves: Install valves per Plan.

B. Set valves on solid bearing compacted soil.

C. Center and plumb valve box over valve. Set box cover flush with finished grade.

D. Install tracer wire from pipe on both sides of valve into PVC riser and to within 2 inches of the top of the valve box.

3.6 POLYETHYLENE ENCASEMENT

A. Encase ductile iron pipe fittings in polyethylene to prevent contact with surrounding backfill material.

B. Install in accordance with AWWA C105.

C. Terminate encasement 3 to 6 inches above ground where pipe is exposed.

3.7 PIPE SLEEVES:

A. Install where water lines pass through retaining walls, building foundations and floors. Seal with modular mechanical type link seal. Install piping so that no joint occurs within a sleeve. Split sleeves may be installed where existing lines pass through new construction.

3.8 THRUST RESTRAINT

A. Install clamps, set screw retainer glands, or restrained joints. Protect metal restrained joint components against corrosion by applying a bituminous coating, or by concrete mortar encasement of metal area. Do not encase pipe and fitting joints to flanges.

B. Install thrust blocks as shown on the Drawings. Concrete for thrust blocks shall be in accordance with Section 03 05 00 Basic Concrete Materials.

3.9 WATER METERS

A. Install water meter box and water meter per Drawings.

3.10 HANGER AND SUPPORT INSTALLATION

A. Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

3.11 PRESSURE TESTING

A. Prior to acceptance of the Work by the District, the Contractor shall perform pressure testing on potable water distribution systems in accordance:
   1. AWWA C600 for ductile iron pipe.
   2. AWWA C605 for PVC pipe.
   3. AWWA C901 for Polyethylene pressure pipe.

B. Prior to acceptance and initial operation, inspect and test the piping system to ensure that the design, materials, fabrication, and installation are in accordance with these specifications.

C. Test piping prior to being enclosed, covered-up, or treated externally with insulation, tape wrapping, mastic coating, and like treatments, unless noted otherwise in other sections.

D. When existing water mains are used to supply test water, they shall be protected from backflow contamination by temporarily installing a double-check-valve assembly between the test and supply main or by other approved means. Before pressure testing, the temporary backflow protection shall be removed and the main under test isolated from the supply main.

E. Notify the Engineer at least 48 hours prior to testing, and conduct tests in the presence of Engineer.

F. Piping systems shall show no pressure loss, unless noted otherwise, while being tested in accordance with this section. When leakage or other defects are located, repair or replace the affected portion of the piping system and retest. In the event repairs, replacement, or additions are made following the pressure test, retest the affected piping. In the case of very minor repairs, replacement, or additions, the Engineer may, solely at its discretion, omit retesting provided precautionary measures are taken to assure sound construction.

G. When tests indicate Work does not meet specified requirements, remove Work, replace and retest at the Contractor’s expense.

H. General Test Procedures:
   1. All valves shall be in full-open position during the test. Do not include components (gauges, relief valves, instrumentation, and like items) as part of the tests that are not rated for the testing pressure.
   2. Do not attempt to modify a piping system when it is pressurized, including tightening leaking joints. Do not repair, replace, or retighten leaking joints or components until the pressure has been reduced to ambient level.
   3. Measure test pressure with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate the maximum test pressure. Record pressure loss due to leakage during the pressure test period while the system is pressurized but isolated from the pressure source.
   4. Test at a minimum of 150 percent of their maximum sustained working pressure using clean water. The test allowance shall not be less than the amount determined using AWWA C605 for any segment of pipe tested. The Engineer must witness hydrostatic testing. The test pressure shall be not less than the following values, irrespective of the design maximum allowable working pressure:
      a. Maximum Sustained Working Pressure: 167 psi
      b. Test Pressure: 250 psi (minimum)
      c. Test duration: 2 hours (minimum)
   5. Prepare test records of inspection and tests performed. Indicate which portions of the piping system are in accordance these specifications. Briefly document test procedures, instruments and media used, and test pressures. Before requesting final approval of a piping installation, submit copies of test records for Engineer's approval.

3.12 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Compaction Requirements: In accordance with Section 31 23 00.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest at the Contractor's expense.

END OF SECTION