EXHIBIT A: TECHNICAL SPECIFICATIONS

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GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agency* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed: Northwest California Resource Conservation & Development Council.

3. *Agreement* – The written instrument which is evidence of the agreement between Agency and Contractor covering the Work.

4. Invoice – The form acceptable to Agency, subject to paragraph IV of the agreement, which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Agreement

5. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder* – The individual or entity who submits a Bid directly to Agency.

7. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements* – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order* – A document recommended by Agency which is signed by Contractor and Agency and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Contract* – The entire and integrated written agreement between the Agency and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

11. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other

Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

12. *Contract Price* – The moneys payable by to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement

13. *Contract Times* – The number of work days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial; and (iii) complete the Work so that it is ready for final payment as evidenced by Agency 's written recommendation of final payment.

14. *Contractor* – The individual or entity with whom Agency has entered into the Agreement.

15. *Drawings* – That part of the Contract Documents prepared or approved by Agency which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

16. *Field Order* – A written order issued by Agency which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

17. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

18. *Notice of Award* – The written notice by Agency to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the condition's precedent listed therein, Agency will sign and deliver the Agreement.

19. *Notice to Proceed* – A written notice given by Agency to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

20. *Site* – Lands or areas indicated in the Contract Documents where the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands which are designated for the use of Contractor

21. *Technical Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

22. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

23. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Agency makes an award.

24. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

25. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

26. *Work* – The entire construction or the various separately identifiable parts thereof required to be

provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Preconstruction Conference

A. Before any Work at the Site is started, a conference attended by Agency, Contractor, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the project timeline, procedures for handling submittals, and maintaining required records.

2.02 Submission of Invoices

A. At least 10 days before submission of the first Invoice, a conference attended by Contractor, Agency, and others as appropriate will be held to review Invoice for initial acceptability to Agency. Additional criteria as provided in paragraph IV of the Agreement shall be applied to Invoice by Agency accounting and other staff before final approval of Invoice. Contractor shall have 10 days to make corrections and adjustments based on the conference and to complete and resubmit the Invoice(s). No progress payment shall be made to Contractor until acceptable Invoices are submitted to Agency.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

A. The contract documents are complementary; what is required by one is as binding as if required by all.

3.02 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Agency any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Agency before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Agency in writing. Contractor shall not proceed with the Work affected thereby until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Agency for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.03 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Agency's written interpretation or clarification.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. Agency shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Agency will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Agency are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Agency's furnishing the Site or a part thereof, Contractor may make a claim.

B. Upon reasonable written request, Agency shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Agency's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Underground Facilities

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Agency by the owners of such Underground Facilities, including Agency, or by others.

1. Agency shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Agency, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

3. The Contractor will be responsible for calling in a USA 811 ticket 48 hours before beginning any excavation at the project site.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection, identify the owner of such Underground Facility and give written notice to that owner and to Agency. Agency will promptly review the Underground Facility and determine the extent, if any, to which a change is

required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Agency concludes that a change in the Contract Documents is required, a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Agency and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Agency or Contractor may make a claim.

4.03 Reference Points

A. Agency shall provide surveys to establish reference points for construction which in Agency's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Agency. Contractor shall report to Agency whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

ARTICLE 5 – NOT USED

ARTICLE 6 – ADDITIONAL CONTRACTOR RESPONSIBILITIES

6.1 Record Documents

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents will be available to Agency for reference. Upon completion of the Work, these record documents will be delivered to Agency.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

A. Agency may perform other work related to the Project at the Site with Agency's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Agency, if Agency is performing other work with Agency's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Agency and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Agency and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Agency in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

A. If Agency intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Agency shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Agency.

B. Each other direct contract of Agency under Paragraph 7.01.A shall provide that the other contractor is liable to Agency and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Agency and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 – NOT USED

ARTICLE 9 – NOT USED

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Agency may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Agency and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Order,

10.02 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 Execution of Change Orders

A. Agency and Contractor shall execute appropriate Change Orders recommended by Agency Staff covering:

1. changes in the Work which are: (i) ordered by Agency (ii) required because of acceptance of defective Work or Agency's correction of defective Work (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Order; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work

ARTICLE 11 – NOT USED

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Agency and the other party to the Contract in accordance with the provisions of the Agreement.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved; or

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum; or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work plus a Contractor's fee for overhead and profit.

12.02 Delays

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in this Paragraph. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Agency, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Agency or other contractors or utility owners performing other work for Agency as contemplated by Article 7, or anyone for whom Agency is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Agency, or other causes not the fault of and beyond control of Agency and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.B.

D. Agency, and the Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Agency has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

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

13.03 Tests and Inspections

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

B. Agency shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Agency the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Agency's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Agency.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Agency, it must, if requested by Agency be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Agency timely notice of Contractor's intention to cover the same and Agency has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

A. If any Work is covered contrary to the written request of Agency, it must, if requested by Agency, be uncovered for Agency's observation and replaced at Contractor's expense.

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

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Agency shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Agency may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Agency May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Agency will take action as described in Exhibit D of agreement.

13.06 Correction Period

A. If within one year after the date of completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Agency or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Agency and in accordance with Agency's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Agency, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

SPECIAL PROVISIONS

SECTION SP1 GENERAL

SP1-1 STANDARD SPECIFICATIONS

The work provided herein shall be performed in accordance with the General Conditions of these Specifications and are incorporated herein by reference for this Section and all subsequent Sections. In case of conflict between the General Conditions and the Special Provisions, the Special Provisions shall govern.

SP1-2 BUILDING CODE

All construction shall conform to the most recent editions of the pertinent codes and standards associated with the nature of the work; including but not limited to the following:

- California Building Code (CBC)
- California Plumbing Code (CPC)
- California Electrical Code (CEC)
- American Water Works Association (AWWA)
- CalTrans Standard Specifications

SP1-3 TEMPORARY CONSTRUCTION UTILITIES AND FACILITIES

SP1-3.1 Temporary Water

SP1-3.1.1
Water for pressure testing and disinfection will be provided by the contractor and be potable water.

SP1-3.1.2
Water required for controlling dust caused by the Contractor's operations shall be applied as required at the Contractor's expense.

SP1-3.2 Sanitary facilities
The Contractor shall provide a chemical toilet of suitable type at all work areas and maintain the facilities in a sanitary condition at all times. The chemical toilet shall be of watertight construction so that no contamination of the area can result from its use. The facility shall conform to code requirements and be acceptable to the sanitary authorities. Upon completion of the work, the sanitary facility shall be removed and the area restored to its original condition.

SP1-3.3 Discharge of Water
The chlorinated water used in disinfection will be dechlorinated (using an Agency and District approved dechlorination agent) by the Contractor.

SP1-4 NOT USED

SP1-5 SUBMITTAL LIST

SP1-5.1 Submittals
The intent of this section is to serve as a checklist for required shop drawings and submittals. These shop drawings and submittals may be requested in detail in other areas of the Standard Specifications, Technical Provisions, or Special Provisions. Exclusion from the following list does not relieve the Contractor of submitting the required submittal or shop drawing. All submittals shall highlight, arrow, circle, or otherwise identify the specific size, model, or material proposed.

- Construction Schedule;
- Pipe, joints, gaskets, and fittings;

- Control equipment including (but not limited to) valves, gauges, meters, and appurtenances;
- Roadway materials including (but not limited to) aggregate, etc;
- Water Services including (but not limited to) meters, tubing, stops saddles, and fittings
- Water meter valve and vault
- Construction progress schedules;
- System start-up and testing plans;
- All warranties on equipment and workmanship;
- As-built drawings.

SP1-6 MEASUREMENT AND PAYMENT

1 – MOBILIZATION

When invoices, not including the amount earned for mobilization, are 5 percent or more of the original contract amount, 50 percent of the contract item price for mobilization shall be included in said invoice.

When invoices of the amount earned, not including the amount earned for mobilization, are 50 percent or more of the original contract amount, the total amount earned for mobilization shall be 100% of the contract item price for mobilization and said amount shall be included in said invoice.

The contract lump sum price paid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals associated with moving all necessary equipment that will be required for the first month of operation onto the job site; establishment of storage areas for contractor's use, as necessary; provision of temporary power and lighting, as necessary; establishment of temporary on-site sanitation facilities; and implementation of Best Management Practices to protect surface waters from run-off originating at the construction site throughout all phases of construction.

No adjustment shall be made to the original lump sum item price for mobilization. If other contract items are adjusted, and if the costs applicable to such work includes mobilization cost, such mobilization will be deemed to have been recovered by the payments made for mobilization and will be excluded from consideration in determining compensation.

The retention provisions contained in this contract shall apply to the lump sum item price of mobilization.

2 – POTHOLE FOR EXISTING UTILITIES EA

Measurement and payment for Potholing for Existing Utilities shall be on a lump sum basis. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete all work involved in potholing for existing utilities as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the.

3 – 6-INCH C900 OR CONTINUOUS HDPE WATER MAIN LF

Measurement and payment for 6-inch C900 PVC Water Main or 6" HDPE pipe shall be on a per lineal foot basis. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete all work involved in locating existing utilities along water main alignment; trenching; subgrade preparation; water main installation including fittings, couplings, and all appurtenances; backfill material and placement if necessary; necessary shoring and trench protection; compaction; compaction testing; saw cutting; chip seal replacement;; excavated soil disposal and related work necessary for installing the 6-inch C900 (or accepted alternative) PVC water main as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. During construction Contractor is required as much as possible to maintain one-way traffic. Each day the road is required to be open to one-way traffic from 7:45am-8:15 am, 12 -12:30 pm and 5:00 to 5:30pm. Agency may adjust road opening times to better accommodate landowner schedules and will notify Contractor in writing.

4 – MAINLINE GATE VALVES EA

Measurement and payment for the Mainline Gate Valves shall be based on the unit quantity. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for

installing the mainline gate valves and boxes as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. Note that gate valves required for hydrants, blow-offs, and pressure reducing valve assemblies are paid for under separate bid items.

5 – COMBINATION AIR\VACUUM VALVES EA

Measurement and payment for the Combination Air\Vacuum Valves shall be based on unit quantity. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for installing the combination air\vacuum valve assemblies as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency.

6 – WATER SERVICE WITH METER BOX AND CONNECTION TO EXISTING WATER SYSTEM EA

Measurement and payment for the Water Service with Meter Box and Connection To Existing Water System connection shall be on a per each basis. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for installing the water service connection as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. Extent and components of individual water service stated on Plans. Locations of Meters will be staked in the field by Agency.

7 - INSTALLATION OF BACKFLOW PREVENTER WITH ENCLOSURE EA

Measurement and payment for the Installation of Backflow Preventer with Enclosure shall be on a per each basis. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for installing the Backflow Preventer as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. Water services that require backflow preventers are shown on the Plans.

8 INSTALLATION OF LATERAL WITH METER BOX AND NO CONNECTION TO EXISTING WATER SYSTEM EA

Measurement and payment for the Installation of Lateral with Meter Box and No Connection to Existing Water System shall be on a per each basis. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for installing the above item as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency.

9 – INSTALLATION OF WATER SERVICE LATERAL WITH EMPTY METER BOX AND CAPPED SERVICE LATERAL EA

Measurement and payment for the Installation of Water Service Laterals with Empty Meter Box and Capped Service Lateral shall be on a per each basis. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for installation of the above item as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. Water services that have only a capped lateral in a meter box are shown on the Plans.

10 – CONNECTION TO EXISTING 8” WATER MAIN LS

Measurement and payment for the Connection to the Existing 8” Water Main shall be based on the unit quantity. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary for connecting the new 6” water main to the existing 8” water main as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency. Connection to existing 8” main will require complying with the encroachment permit from Trinity County Department of Transportation. The encroachment permit requires sand cement slurry trench backfill with asphalt patch

11 - HYDROSTATIC TESTING AND DISINFECTANT LS

Measurement and payment for the Hydrostatic Testing and Disinfection shall be on a lump sum basis. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete hydrostatic testing and disinfection water main of the piping, valves, and all equipment in contact with potable water; and de-chlorination and flushing of the main as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency

12 – SITE CLEAN-UP AND PROJECT CLOSE-OUT LS

Measurement and payment for Site Clean-up and Project Close-out shall be on a lump sum basis. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to clean-up the site to pre-construction condition and to close-out the project as required by the Plans, the General Conditions, these Special Provisions, the Technical Specifications, and as directed by the Agency.

SP1-7 COMPLIANCE WITH PERMITS AND AGREEMENTS

Contractor shall comply with the following permits and agreements:
Trinity County Encroachment Permit
All other permits, agreements, and requirements referenced by or contained in the Contract Documents.

SP1-8 NOISE

(See Exhibit B of Agreement)

SP1-9 WORK AREA RESTRICTIONS AT INSTALLATION SITE

9-1 Agency Access
The Contractor shall provide proper facilities for access to the site and permit inspection of any part of the project site by the Agency, its consultants and its agents. The Contractor shall not restrict Agency access to existing facilities.

9-2 Concurrent Work During the Contract Period (by Others)
During the contract period, the Agency may have its personnel or other contractors or agencies performing work on the site. Contractor shall afford these other parties reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly conduct and coordinate work with others.

Residential Access -During construction Contractor is required as much as possible to maintain one-way traffic. Each day the road is - required to be open to one-way traffic from 7:45-8:15 am, 12 -12:30 pm and 5:00 to 5:30.

SP1-10 COORDINATION AND INTERPRETATION OF SPECIFICATIONS AND DRAWINGS

The General Conditions, Agreement, Technical Provisions, Plans, Shop Drawings, Contract Change Orders, addenda and all other supplementary documents are essential parts of the Contract Documents, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe a complete work. In case of conflict, the following shall be the rules of interpretation:

A. The Agency's Agreement shall govern over the General Conditions and Supplemental Conditions.

B. Plans shall govern over the General Conditions.

C. The Technical Provisions shall govern over both the General Conditions and the Plans.

D. The Supplementary Conditions shall govern over the Technical Provisions, the General Conditions and the Plans.

E. Detail or shop drawings shall govern over general drawings.

F. Figures written on drawings shall govern over the drawings themselves. Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, Contractor shall apply in writing to the Agency for such further explanations as may be necessary and shall conform to them as part of the Contract Documents.

SP1-11 SAFETY EQUIPMENT

All personnel, when on the project site, shall wear hard hats. Additionally, all personnel will be required to wear shirts, full length pants and shoes. The Contractor is responsible for providing all safety equipment necessary and required for the work in accordance with Cal-OSHA Safety Standards.

END OF SECTION

TECHNICAL PROVISIONS
TABLE OF CONTENTS

DIVISION 5 - TECHNICAL PROVISIONS
SECTION 01000
GENERAL REQUIREMENTS

PART 1 – GENERAL

1.01 LOCATION OF WORK

A. The Work described in these Contract Documents is located on land or easements owned by the County of Trinity or the residents of East Branch Road

1.02 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to construct a potable water main extension, and appurtenances, shown on the Drawings and as specified herein.

B. The Work includes, but is not necessarily limited to, the following:
   1. Maintenance of construction schedules;
   2. Excavation backfill and compaction of trenches;
   3. Trench shoring and bracing;
   4. Protection of existing facilities and utilities;
   5. Installation and testing of below-ground pipelines, valves, and other related appurtenances;
   6. Installation of concrete thrust blocks;
   7. Disinfection of the pipelines, appurtenances and all potable water piping and valving;
   8. Record keeping of submittals and performance testing;
   9. Submittal of red-line as-built drawings and contract closeout documentation.

1.03 WORK SEQUENCE AND CONSTRAINTS

A. As described in the Special Provisions

1.04 AGENCY SUPPLIED ITEMS

A. 200 tons of AC grindings for road repair after trenching.
B. Traffic signage and traffic control
C. 2,000 ft of buried warning tape
D. 2,000 ft of blue 12 awg tracer wire

1.05 CONTRACTOR'S USE OF SITE AND PREMISES

A. Coordinate use of premises other than specified areas on the Drawings with Agency.

B. Contractor shall assume full responsibility for security of all Contractor's and Contractor's subcontractors' materials and equipment stored on the site.

C. If directed by the Agency, Contractor shall move any stored items which may interfere with operations of Agency or other contractors.

D. Contractor shall obtain and pay for use of additional storage or work areas if needed to perform the Work.

E. Any damage to existing facilities, including contamination, which may be caused by Contractor's personnel, callers, visitors, materials or equipment, shall be repaired or corrected at the sole expense of the Contractor.

F. Any fence that is damaged or removed by the Contractor shall be replaced at the Contractor's expense in kind and to the satisfaction of the Agency.

1.06 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held within 10 days after the Contract Times start to run. The conference will be held at a location selected by the Agency. The conference will be attended by:

1. Contractor's Office Representative.
2. Contractor's General Superintendent.
3. Any subcontractors' or suppliers' representatives whom the Contractor may desire to invite or the Agency may request.
4. Agency.
5. District
6. Such other individuals that the Agency may invite.

B. Discussion may include, but not be limited to, the following subjects:

1. Scheduled completion dates.
2. Liquidated damages.
3. Shop drawing submittal and approval procedure.
4. Chain of command, direction of correspondence, and coordinating responsibility between Contractors.
5. Request for periodic job meetings for all involved.
6. Introduction of the key project personnel.
7. Laboratory testing of material requirements.
8. Inventory of material stored on site provisions.
9. Progress estimate and payment procedure.
10. Discussion of Contractor's Safety program.
11. CEQA Compliance

C. The Agency will preside at the conference, prepare the minutes of the meeting and distribute copies of same to all participants who so request by fully completing the attendance form to be circulated at the beginning of the conference.

1.07 COORDINATION WITH AGENCY'S OPERATIONS AND OTHER FACILITIES

A. The proposed work under this contract will interface with other work or projects of the Agency or County, Contractor shall plan carefully the schedule of that portion of the work which will affect the other work or facilities. Such plans and schedules shall be subject to the approval of the Agency.

The Contractor shall coordinate his work with that of the Agency's forces or other contractors.

1.08 REFERENCE STANDARDS

A. The Contract Documents contain references to various standard specifications, code practices, and requirements for materials, work quality, installation, inspections, and tests, which are published and issued by the organizations, societies, and associations. Such references are hereby made a part of the Contract Documents to the extent required. When such references are specified, and the effective dates are not given, it shall be understood that the current edition or latest revision thereof and any amendments of supplements in effect on the date of issue of these Contracts, as indicated on the cover, shall govern the work.

Reference standards are not furnished with the Contract Documents since the Contractor, subcontractors, manufacturers, and the trades involved are assumed to be familiar with their requirements. The Agency will furnish, upon request, information as to how copies of specified standards may be obtained.

Whenever reference is made to "Caltrans Standard Specifications" it shall be understood to be the most recent edition of the State of California, Department of Transportation, Standard Specifications.

1.09 INTERPRETATION OF SPECIFICATIONS AND DRAWINGS

A. The rules of interpretation shall be in accordance with the Special Provisions Section SP1-11.

Should it appear that the work to be done are not sufficiently detailed or explained in the Contract Documents, Bidder or Contractor shall apply in writing to the Agency for such further explanations as may be necessary.

1.10 MATERIALS FURNISHED BY CONTRACTOR

A. All materials furnished by the Contractor shall be new, in first-class condition and subject to the approval of the Agency.

1.11 CONTRACTOR'S FACILITIES

A. Contractor's facilities shall be provided in accordance with the Special Provisions.

1.12 WORK HOURS

A. Work hours shall as set forth in the Special Provisions.

1.13 TEMPORARY UTILITIES

A. Temporary Utilities shall be provided in accordance with the Special Provisions.

1.14 SAFETY AND PRECAUTIONS

A. The Contractor shall conduct operations in accordance with the rules and regulations of the California Division of Industrial Safety and the current requirements of the Occupational Safety and Health Administration (Cal. OSHA).

1.15 PERMIT REQUIREMENTS

A. The Contractor shall comply with the terms and conditions of all appropriate licenses or permits and all costs shall be at his/her expense.

1.16 PRESERVATION, RESTORATION, AND CLEANUP

A. Preservation and Cleanup

At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment and leave the project free of rubbish or excess materials of any kind.

Stockpile excavated materials in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on private property, or on state or county rights-of-way. Remove all excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition.

B. Erosion and Sediment Control

The Contractor shall exercise care and diligence to limit damage caused by erosion and sediment loosened by the Contractor's operation and shall take all precautions necessary to sustain adjacent properties.

If excavation activity is initiated during the rainy season (October 15 through April 15), the Contractor shall install BMPs in accordance with the Stormwater Pollution Prevention Plan. The Contractor shall maintain and repair the BMPs including cleanup and disposal of sediments. Repairs as required and sediment cleanup and disposal will be at no additional cost to the Agency. The BMPs shall be removed and properly disposed of by the Contractor upon completion of construction.

All existing drainage ditches and culverts shall be reopened and graded and natural drainage restored. Restore culverts broken or damaged to their original condition and location.

C. Site Restoration
Upon completion of the project, all areas used by the Contractor shall be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend with the abutting property. Areas used for the deposit of waste materials shall be furnished to properly drain and blend with the surrounding terrain.

1.17 INSPECTION AND TESTING

A. The Contractor shall not cover, or allow to be covered, any of the work installed under this Contract before it has been inspected and approved by the Agency. Should any of the work be covered prior to such approval, the Agency shall have the authority to require the work to be uncovered for inspection and approval, recovered, and all resultant damage repaired, at the Contractor's expense.

1. The Agency will employ, and pay for services of an independent material testing laboratory.
2. The laboratory will perform inspections, tests, and other services specified in individual Specification sections and as required by the Agency.
3. Reports will be submitted by the laboratory to the Agency, in duplicate, indicating observations and results of tests and indicating compliance or non- compliance with Contract Documents.
4. The Contractor shall cooperate with the laboratory; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
    a. The Contractor shall notify Agency and the laboratory 48 hours prior to requiring services.
    b. The Contractor shall make arrangements with the laboratory and pay for any additional samples and tests required for Contractor's use.

E. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by the same laboratory on instructions by the Agency. Payment for re-testing or re-inspection will be born by the Contractor.

PART 2 - MATERIALS

Not Used

PART 3 – EXECUTION

Not Used

(END OF SECTION)

SECTION 01020
CONTROL OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section describes special requirements and construction constraints that may affect the Work. These requirements and constraints are in addition to those appearing elsewhere in the specifications.

1.02 WORKING HOURS

A. Work hours shall as set forth in the Special Provisions.

1.03 PRIVATE LAND

A. Do not enter or occupy private land outside of easements, except by permission of the individual land owner.

1.04 PIPE LOCATIONS

A. Locate pipelines as indicated on the Drawings. The Agency reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

B. It is intended that wherever existing utilities such as water, wastewater, cable, telephone, fiber optic, electrical and other service lines must be crossed, the Contractor shall coordinate with the utility to move or replace the existing utility in order to achieve the desired crossing clearance.

C. Any project delays resulting from the required management, protection, or relocations of any utilities, whether performed by the Contractor, the utility owner, or its designees, shall be the responsibility of the Contractor and shall not be the basis for any time extensions to the contract unless such an extension is requested prior to the activity causing delay and pre-approved by the Agency.

1.05 OBSTRUCTIONS

A. Existing utilities are shown in their approximate locations on the Drawings. Contractor to verify locations of all underground utilities. Should damage occur to an existing utility, it shall be repaired at no cost to the Agency. The Contractor shall be responsible for paying all fees or penalties levied by any utility due to any interruption in service, either planned or unplanned, caused by the Work.

B. The Contractor shall contact Underground Service Alert (USA) at least 2 working days prior to starting any excavations so utility personnel can locate and protect facilities if required by the utility.

C. The Contractor shall note that there are overhead electric power, cable television, telephone, and other utilities. Exercise caution when operating heavy equipment near or

around overhead lines. The Contractor shall place warning signs to indicate locations where low overhead lines exist.

D. The Contractor shall be responsible for stabilizing all utility or other poles which may be endangered by the close proximity of excavations.

1.06 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. Assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Immediately repair any damage resulting from the construction operations.

B. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines and sewers). Maintain services to buildings and pay costs or charges resulting from damage thereto.

C. If, in the opinion of the Agency, permanent relocation of a utility not otherwise considered part of the Contract is required, the Agency may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for as extra work under Article 10 of the General Conditions and Supplementary Conditions. If relocation of a privately owned utility is required, the Contractor will notify the Utility to perform the work as expeditiously as possible. The Contractor shall cooperate with the Agency and Utility. No claim for delay will be allowed due to such relocation.

1.07 OPEN EXCAVATIONS

A. Adequately safeguard all open excavations by providing temporary barricades, caution signs, lights, trench plates and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Remove bridges provided for access during construction when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Agency. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Agency may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. Take precautions to prevent injury to the public due to open trenches. Provide adequate light at all trenches, excavated material, equipment, or other obstacles which could be dangerous to the public at night.

1.08 TEST PITS

A. Excavate test pits, at the direction of the, to locate underground pipelines or structures in advance of the construction. Backfill test pits immediately after their purpose has been satisfied and restore and maintain the surface in a manner satisfactory to the Agency.

1.09 MAINTENANCE OF TRAFFIC

A. Unless permission to close a street is received in writing from the proper authority, place all excavated material so that vehicular and pedestrian traffic may be maintained at all times. If the construction operations cause traffic hazards, repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the.

B. Detours around construction will be subject to the approval of, the Agency. Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic. Expedite construction operations while traffic is detoured. Periods when traffic is being detoured will be strictly controlled by the Agency.

C. Take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. Be fully responsible for damage or injuries whether or not police protection has been provided.

1.10 CARE AND PROTECTION OF PROPERTY

A. Be responsible for the preservation of all public and private property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, restore such property to a condition similar or equal to that existing before the damage was done, or make good the damage in other manner acceptable to the Agency.

1.11 RUBBISH CONTROL

A. During the progress of the Work, the Contractor shall keep the site of the Work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all

rubbish and waste materials of any nature occurring at the Work site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable laws and regulations.

1.12 SANITATION

A. Sanitary facilities shall be provided in accordance with the Special Provisions.

1.13 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with Contractor, Suppliers and Subcontractors or trades and assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Agency.

1.14 MAINTENANCE OF FLOW

A. Provide for the flow of sewers, drains and water courses interrupted during the progress of the work, and immediately cart away and remove all offensive matter. Discuss the entire procedure of maintaining existing flow with the Agency well in advance of the interruption of any flow.

1.15 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the work, keep the site of operations as clean and neat as possible. Dispose of all residues resulting from the construction work and, at the conclusion of the work, remove and haul away any broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and in other related Sections.

C. Disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. The Contractor will be required to remove the fill and restore the area impacted at no increase in the Contract Price.

1.16 PROTECTION OF CONSTRUCTION STAKING

A. The Contractor shall coordinate with the Agency to locate control points in specific locations for the Contractor's use; points destroyed by the Contractor shall be re-set at the Contractor's sole expense.

(END OF SECTION)

SECTION 01100

SPECIAL PROJECT PROCEDURES, ENVIRONMENTAL MITIGATION MEASURES AND SCHEDULING CONSTRAINTS

PART 1 - GENERAL

1.01 INTRODUCTION

A. The purpose of this section is to summarize minimum construction scheduling, labor, material, equipment, and facility operation constraints and requirements associated with coordination and cooperation with work performed by Others inherent to this Contract which the Contractor shall take into consideration and to bring forth regulatory and environmental mitigation requirements when planning, budgeting, and scheduling work under this Contract.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

A. The following mitigation requirements and regulatory constrains are part of the work under this contract. The contractor shall be responsible for implementing the following items at no additional cost to Agency, except as identified in the case of discovery of human remains.

1. All construction activity shall comply with North Coast Unified Air Quality Management District (NCUAMD) Rule 104, Section 4.0 regarding management of fugitive dust.
2. As shown on the design plans, no trees or shrubs are expected to be removed as a result of the project. If any tree or shrub removal is required for the project, and will occur between February 1 and August 31, a pre-construction nesting bird survey by a qualified biologist will be required. Each tree or shrub must be cleared by a biologist no more than three weeks before removal. If nesting birds are present, the tree or shrub must be left in place until the nest is abandoned or the chicks fledge.As shown on the design plans, the project does not call for any work outside of the road easement, except to provide individual water services to certain homes on East Branch Road.

4) If human remains are discovered during project construction, the contractor shall stop work at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie human remains (Public Resource Code, Section 7050.5). The contractor shall contact the Trinity County coroner to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, the contractor shall comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98. Work may resume if NAHC is unable to identify a descendant or the descendant failed to make a recommendation.

The following steps will be followed to implement this project requirement, if necessary:

- Immediately following discovery of known or potential human remains, all ground-disturbing activities at the point of discovery shall be halted:
  - No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off;
  - Northwest CA Resource Conservation and Development Council shall be notified and they shall contact the county coroner; and
  - The Northwest CA Resource Conservation and Development Council will retain the services of a Professional Archaeologist to immediately examine the find and assist the county coroner's

process.

- All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.
- The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.
- Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis.
- The Coroner has two working days to examine the remains after being notified. If the remains are Native American, the Coroner has 24 hours to notify the Native American Heritage Council (NAHC) in Sacramento (telephone (916) 653-4082).
- The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.
- Within 24 hours of their notification by the NAHC, the MLD shall be granted permission by the landowner's authorized representative to inspect the discovery site, if they so choose.
- Within 24 hours of their notification by the NAHC, the MLD shall recommend to the Northwest CA Resource Conservation and Development Council means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The recommendation may include the scientific removal and non- destructive or destructive analysis of human remains and items associated with Native American burials.
- Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance.
- Following final treatment measures, the Northwest CA Resource Conservation and Development Council shall ensure that a report is prepared that describes the circumstances, nature, and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). Northwest CA Resource Conservation and Development Council shall ensure that report copies are distributed to the NCIC, NAHC, and MLD.

5) The Contractor shall prepare a Spill Prevention Control and Countermeasure Plan (SPCCP) which shall include a requirement to store absorbent material along the construction route. All project-site employees shall be properly trained to address any potential hazardous material spills in the event of an accidental release. The SPCCP shall be submitted to the California Department of Fish and Game and the US Army Corps of Engineers prior to construction.

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. This Section specifies the general methods and requirements of submissions applicable to Shop Drawings, Product Data, Samples, Calculations, Mock Ups, Construction Photographs and Construction. Additional general submission requirements are contained in the General Conditions. Detailed submittal requirements are specified in the technical Sections.

B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Drawing Number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

1. Shop drawings as specified in individual Sections include, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the work.

2. All shop drawings submitted by subcontractors and vendors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

3. The Contractor shall check all subcontractors' and vendors' shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Drawings and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.

4. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.

B. Product Data

1. Product data as specified in individual Sections include, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

1. Samples specified in individual Sections include physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the Agency for independent inspection and testing, as applicable to the work.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
   1. Field measurements
   2. Field construction criteria
   3. Catalog numbers and similar data
   4. Conformance with related Sections

B. Certification Statement
   1. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor:

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

   2. Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project representative a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the Agency.

C. The Contractor shall number submittals consecutively based on the order in which they are submitted and title each submittal with a heading describing the item or material proposed. If multiple variations of the material are used in the work the title shall clearly describe the specific use of the proposed material or item (for example, concrete mix design submittals for thrust blocks may differ from concrete mix design for foundations – the submittal title(s) shall clearly differentiate between the two).

D. Notify the Agency in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.

E. The review and approval of shop drawings, samples or product data by the Agency shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Agency will have no responsibility therefore.

F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Agency will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

G. Project work, materials, fabrication, and installation shall conform to approved shop drawings, applicable samples, and product data.

1.04 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other contractor. Contractor shall submit all submittals to Agency.

B. Number of submittals required:
   1. Shop Drawings and Product Data: Two 2) copies. (If contractor requires more than one copy returned, the Contractor shall submit more than the number of copies listed above.)

2. Samples: Submit the number stated in the respective Sections.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
3. Contractor identification.
4. The names of:
   a. Contractor
   b. Supplier
   c. Manufacturer
5. Identification of the product, with the section number, page and paragraph(s).
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal Standards numbers.
9. Identification by colored highlighting of deviations from Contract Documents.
10. Identification by colored highlighting of revisions on resubmittals.
11. A 5-in by 3-in blank space for Agency review stamp.
12. Where calculations are required to be submitted by the Contractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

D. Where product data sheets include multiple products, sizes, models, or options, the Contractor shall highlight, circle, arrow, or otherwise clearly indicate the exact product, size and options proposed.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed as:

1. Permitting any departure from the Contract requirements;
2. Relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
3. Approving departures from details furnished by the Agency, except as otherwise provided herein.

B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Agency finds to be in the interest of the Agency and to be so minor as not to involve a change in Contract Price or Contract Time, the Agency may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the following codes.

Code 1 - "NO EXCEPTIONS NOTED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture. The submittal is accepted subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal.

Code 2 - "MAKE CORRECTIONS NOTED" - This code is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may, at his own risk, release the

equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Agency within 15 calendar days of the date of the Agency's transmittal requiring the confirmation.

Code 3 - "AMEND AND RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Agency's transmittal requiring the resubmittal.

Code 4 - "REJECTED - RESUBMIT" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 5 - "RECEIPT ACKNOWLEDGED" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Agency's review and approval; and, is being filed for informational purposes only. This code is generally used in acknowledging receipt of *means and methods of construction* work plan, field conformance test reports, and Health and Safety plans.

E. Normally, submittals, appropriately coded, will be returned within 14 calendar days following receipt of submittal by the Agency. Additional review time may be required for especially large submittals.

F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by the use of color highlighting, and by use of revision triangles or other similar methods. The resubmittal shall clearly respond to each comment made by the Agency on the previous submission.

Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Agency on previous submissions.

G. Partial submittals may not be reviewed. The Agency will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor and will be considered "Not Approved" until resubmitted. The Agency may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Agency at least 7 working days prior to release for manufacture.

I. When the shop drawings have been completed to the satisfaction of the Agency, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Agency.

1.06 DISTRIBUTION

A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Agency. Number of copies shall be as directed by the Agency but shall not exceed six.

1.09 SCHEDULES

A. Provide all schedules required by the General Conditions and elsewhere.

1.10 PROFESSIONAL ENGINEER (P.E.) AND REGISTERED LAND SURVEYOR (R.L.S.) CERTIFICATION FORM

A. Not Used

1.11 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

(END OF SECTION)

SECTION 01700
PROJECT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
   1. Closeout procedures.
   2. Final cleaning.
   3. Adjusting.
   4. Project as-built documents.
   5. Spare parts and maintenance materials.

1.02 RELATED WORK

A. Operation and Maintenance Data are included in Section 01730.

B. Warranties and Bonds are included in Section 01740.

1.03 AS-BUILT DOCUMENTS

A. Maintain on site, one set of the following documents; actual revisions to the work shall be recorded in these documents:
   1. Contract Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other Modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.

B. Store As-Built Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and Modifications.

E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.

4. Field changes of dimension and detail.
5. Details not on original Contract Drawings.

F. Submit documents to Agency with Application for Final Payment

1.04 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, work has been inspected and that work is complete in accordance with Contract Documents and ready for Agency's inspection.

B. Provide submittals to Agency that are required by governing or other authorities.

C. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.05 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for completion.
1. Remove labels that are not permanent labels.
2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
4. Wipe surface of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
5. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.06 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

SECTION 02221

TRENCHING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Excavation, trenching, backfilling and compacting for all underground utilities.
   2. Water piping.
   3. All related utility and process appurtenances.

1.2 DEFINITIONS

A. Excavation:
   1. All excavation will be defined as unclassified. The Contractor shall complete all excavations regardless of the type of materials encountered. The Contractor shall make his own estimate of the kind and extent of the various materials which will be encountered in the excavation.

1.3 SUBMITTALS

A. Shop Drawings:
   1. See Section 01300.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
   3. Trench Safety Plan and/or trench shoring drawings including current certification of trench shields (trench boxes) if employed.
   4. Submit respective pipe or conduit manufacturer's data regarding bedding methods of installation and general recommendations.
   5. Submit sieve analysis reports on all granular materials.

B. Miscellaneous Submittals: Upon request, the following items shall be submitted and approved by the Agency.
   1. Submit test reports and fully document each with specific location or stationing information, date, and other pertinent information.
   2. Permit and notification form for excavations 5 feet or more in depth as required by Cal-OSHA, including any trench excavation or shoring plans.

1.4 SITE CONDITIONS

A. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving. Maintain and trim excavated materials in such manner to be as little inconvenience as possible to public and adjoining property owners.

B. Provide full access to public and private premises and fire hydrants, at street crossings, sidewalks and other points as designated by Agency to prevent serious interruption of travel.

C. Protect and maintain bench marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Agency and controlling agency.

D. Verify location of existing underground utilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Backfill Material:
   1. Backfill shall be as shown on the drawings and shall be Class 2 Aggregate Base meeting Caltrans Standard Specifications Section 26-1.02A.

B. Pipe Bedding Materials:
Sand conforming to Caltrans Standard Specifications, Section 19-3.025B, Sand Bedding.

C. Subgrade Stabilization Materials:
   1. Provide subgrade stabilization/foundation material consisting of Type 2 Base as directed by Agency.

PART 3 - EXECUTION

3.1 GENERAL

A. Remove and dispose of unsuitable materials at a legal disposal facility at no additional cost to Agency.

3.2 EXCAVATION

A. Unclassified Excavation:
   1. Remove clay, silt, gravel, hard pan, loose shale, and loose stone as directed by Agency.

B. Excavation for Appurtenances:
   1. 12 inch (minimum) clear distance between outer surface and embankment.

C. Trench Excavation:
   1. Excavate trenches by open cut method to depth shown on Drawings and necessary to accommodate work.
      a. Support existing utility lines and yard piping where proposed work crosses at a lower elevation.
         1) Stabilize excavation to prevent undermining of existing utility and yard piping.
   2. Open trench:
      a. No more than 500 LF unless approved by the Agency in writing.
      b. Field adjust limitations as weather conditions dictate.
      c. Trench sections shall be repaved per the plans in maximum section length of 2,000 L.F.
   3. Any trench or portion of trench, which is opened and remains idle for 7 calendar days, or longer, as determined by the Agency, may be directed to be immediately refilled, without completion of work, at no additional cost to Agency. Said trench may not be reopened until Agency is satisfied that work associated with trench will be prosecuted with dispatch.
   4. Observe following trenching criteria:
      a. Trench size.
         1) Excavate width to accommodate free working space.
         2) Maximum trench width at top of pipe or conduit may not exceed outside diameter of utility service by more than the following dimensions:

OVERALL DIAMETER OF UTILITY SERVICE	EXCESS DIMENSION
6 IN and less	12 IN

         3) Cut trench walls vertically from bottom of trench to 1 FT above top of pipe, conduit, or utility service.
         4) Keep trenches free of water. Include cost of dewatering in original proposal.

D. Discovery of Historic Resources:
   1. Refer to Section 01100.

3.3 ROCK EXCAVATION

A. Rock encountered during the course of excavation which is sufficiently hard to cause refusal to equipment specified below shall be deemed inexcavatable. Rock deemed inexcavatable shall be removed by reciprocating hydraulic hammers and shall conform to this specification. Blasting will not be permitted.
   1. Refusal to be considered as the inability of the following equipment to excavate rock as caused by the hardness of the rock:
      a. Tractor mounted excavator, Caterpillar 375, or equal. Refusal shall be demonstrated to Agency prior to rock being deemed inexcavatable.

B. All rock excavation shall be under one classification. This classification shall include solid ledge rock in its natural location that requires systematic quarrying, drilling and/or blasting for its removal and also boulders that exceed 0.25 CY in volume.

C. When rock is encountered, strip free of earth. After verification by a representative of the Agency that the material encountered is rock (as defined above), employ an independent surveyor to determine rock quantities before removal operation begins. In computing the volumetric content of rock excavation for payment, the pay lines shall be taken as follows:
   1. For structures (including air/vacuum manholes): 2 FT outside the exterior limits of foundations and from rock surface to 6 IN below bottom of foundations.
   2. For piping and utilities: A width 18 IN wider than the outside diameter of the pipe or conduit and from rock surface to 4 IN below bottom exterior surface of the pipe or conduit.

D. Blasting will not be permitted.

E. Hydraulic Hammer: Hydraulic hammering or alternate means approved by the Agency shall be employed.

3.4 PREPARATION OF FOUNDATION FOR PIPE LAYING

A. Over-Excavation:
   1. Backfill and compact to 90 percent of maximum dry density per Caltrans 216 and 231.
   2. Backfill with bedding material as option.

B. Rock Excavation:
   1. Excavate minimum of 4 IN below bottom exterior surface of the pipe or conduit.
   2. Backfill to grade with suitable material.
   3. Form bell holes in trench bottom, as required.

C. Subgrade Stabilization:
   1. Stabilize the subgrade when directed by the Agency.
   2. Observe the following requirements when unstable trench bottom materials are encountered.
      a. Notify Agency when unstable materials are encountered.
         1) Define by drawing station locations and limits.
      b. Remove unstable trench bottom caused by Contractor failure to dewater, rainfall, or Contractor operations.
         1) Replace with subgrade stabilization with no additional compensation.

D. Trench Foundation: The trench bottom shall be graded to provide a smooth, firm and stable foundation at every point throughout the length of the pipe. Should large gravel and cobbles be encountered at the trench bottom or pipe subgrade, they shall be removed from beneath the pipe and replaced with clean imported sand which shall be compacted to provide uniform support and a firm foundation.

3.5 BACKFILLING METHODS

A. Carefully Compacted Backfill:

1. Furnish for trench embedment conditions and for compacted backfill conditions up to 12 inch above top of pipe or conduit.
2. Comply with the following:
   a. Place backfill in lifts not exceeding 8 inch (loose thickness).
   b. Hand place, shovel slice, and pneumatically tamp all carefully compacted backfill.
   c. Observe specific manufacturer's recommendations regarding backfilling and compaction.
   d. Compact each lift to specified requirements.
   e. Install locator tape and toning wire per standard details.

B. Common Trench Backfill for Native and Intermediate Backfill:

1. Not Used.

C. Water flushing for consolidation is not permitted.

D. Backfill shall be completed within the shortest possible time so that the construction area or street can be opened to traffic. If for any reason construction of the pipeline or appurtenances thereto is delayed, the Agency may require that the trench be backfilled and such areas or streets opened to traffic.

1. Pipe Zone: After completion of the trench excavation and proper preparation of the foundation, 6 inches of bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug to provide adequate clearance between the pipe bell and the bedding material. All pipe shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, the remainder of the pipe bedding shall be placed to the limits as shown on the Drawings. All bedding material shall be compacted 90 percent as measured by Test Method California 231 (or alternate test method as approved by Agency), prior to placement of subsequent backfill.

   When bedding material is selected or imported sand, the pipe bedding backfill shall be brought to optimum moisture content and shall be placed by hand in layers not exceeding 3 inches in thickness to the centerline (springline) of the pipe and each layer shall be solidly tamped with the proper tools so as not to injure, damage, or disturb the pipe. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe.

   Each lift shall be “walked in” and supplemented by slicing with a shovel to ensure that all voids around the pipe have been completely filled. Mechanical compaction such as “pogo sticks” or “wackers”, as approved, shall be used for compaction of pipe zone.

2. Initial Backfill: The remaining portion of the trench shall be backfilled, compacted and/or consolidated by approved methods to obtain a 95% compaction as measured by Cal Test Method 231 or other mutually acceptable method. Class II aggregate or other mutually acceptable material, including acceptable excavated trench spoils maybe used for backfill as specified in the Drawings.

   When backfill is placed mechanically, the backfill material shall be pushed onto the slope of the backfill previously placed and allowed to slide down into the trench. The Contractor shall not push backfill into the trench in such a way as to permit free fall of the material until at least 18 inches of cover is provided over the top of the pipe. Under no circumstances shall sharp, heavy pieces of materials be allowed to be dropped directly onto the pipe or the tamped material around the pipe. Backfill shall be placed in layers not exceeding 8 inches and compacted by an approved method.

   Heavy duty compacting equipment having an overall weight in excess of 125 pounds shall not be used until backfill has been completed to a depth of 2 feet over the top of the pipe.

   If hydro-hammer is used for compaction of overlying materials, at least 4 feet of backfill must be placed

over the top of pipe prior to its use. This is required to ensure that the pipe is not damaged.

3. Final Backfill: Final backfill placed in trenches below roadways or below shoulders of roadways, shall be compacted to a density of not less than 95% or as directed by the encroachment permit. Backfill outside of roadways shall be compacted to 90%

   Backfill shall be placed in layers not exceeding 8 inches, compacted and brought up to the subgrade of the roadway.

4. Alternatives to trenching, fill and compaction- If horizontal drilling is utilized for pipeline installation Contractor shall prepare drilling plan that may obviate standards for Section 3.5

3.6 COMPACTION

A. General:
   1. Place and assure bedding, backfill, and fill materials achieve an equal or "higher" degree of compaction than undisturbed materials adjacent to the work.
   2. In no case shall degree of compaction below "Minimum Compaction" specified be accepted.

B. Compaction Requirements: Unless noted otherwise on Drawings or more stringently by other sections of these Specifications, comply with following trench compaction criteria:

MINIMUM COMPACTIONS		
LOCATION	SOIL TYPE	RELATIVE COMPACTION
1. Bedding material, initial backfill, intermediate backfill, and common trench backfill.	Caltrans Class 2 Aggregate Base, Clean Sand or other mutually acceptable material, including acceptable excavated trench spoils	90% RC by Cal 216 or other mutually acceptable method for materials deeper than 30-inches below finished grade and deeper 95% RC by Cal 216 for materials 30-inches below finished grade.

3.7 FIELD QUALITY CONTROL

A. Testing:
   1. Perform in-place moisture-density tests as directed by the Agency.
   2. Perform tests through recognized testing laboratory approved by Agency.
   3. Costs of "Passing" tests paid by Agency.
   4. Perform additional tests as directed until compaction meets or exceeds requirements.
   5. Cost associated with "Failing" tests shall be paid by Contractor.
   6. Assure Agency has immediate access for testing of all soils related work.
   7. Ensure excavations are safe for testing personnel.

3.8 GRADING AND STOCKPILING

A. The Contractor shall control grading in a manner to prevent water running into excavations. Obstructions of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can be uninterrupted in existing gutters, other surface drains or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the lease possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters and private drives.

3.9 DEWATERING

A. The Contractor shall provide and maintain, at all times during construction, ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. Said methods may include well points, sump pumps, suitable rock or gravel placed below the required bedding for drainage and pumping purposes, temporary pipelines and other means, all subject to the approval of the Agency.

Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall continue until the backfill at the pipe zone has been completed.

The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Agency. Water shall be disposed in such a manner as not to be a menace to public health, and consistent with the laws of California.

3.10 CORRECTION OF FAULTY GRADES

A. Any over-excavation carried below the grade as specified or shown, shall be rectified by backfilling with approved sand and/or gravel, and shall be compacted to provide a firm and unyielding subgrade and/or foundation, as directed by the Agency, at no additional cost to Agency.

3.11 STRUCTURE PROTECTION

A. Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers and other obstructions encountered in the progress of the work shall be furnished by the Contractor at his expense and subject to the approval of the Agency. Any structure that has been disturbed shall be restored upon completion of the work.

3.12 PROTECTION OF PROPERTY AND SURFACE STRUCTURES

A. Trees, shrubbery, fences, poles and all other property and surface structures shall be protected unless their removal is shown on the drawings or authorized by the Agency.

END OF SECTION

SECTION 02510

POTHOLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Excavations necessary to determine the vertical and horizontal location of existing underground pipes or facilities.

B. Related Sections include but are not necessarily limited to:
   1. Section 02221 – Trenching Backfilling Compaction for Utilities
   2. Section 02514 – Restoration of Asphalt Pavement and Graveled Surfaces
   3. Section 02660 – Water Main Construction.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. Standard Specifications: State of California, Department of Transportation 2015

B. Miscellaneous:
   1. Should conflicts arise between standard specifications of government agencies mentioned herein and Contract Documents, Contract Documents shall govern.

1.3 SUBMITTALS

1. Not Used.

1.4 EXISTING UTILITIES

A. Contractor's operations will be conducted in a manner that will not harm or damage existing utilities.

1.5 TRAFFIC CONTROL

A. Contractor must provide for one-way traffic flow with a minimum 10’ travel surface between 12:00 and 1:00 pm, 5:00-6:00 pm and from 8:00 am-to 8:30 am. Signs must be posted at either end of the construction zone warning oncoming vehicles of construction activities. Contractor shall have on-site sufficient plates, bridges or other covers to allow emergency response vehicles to pass through construction zone in as rapid period as is safe. Contractor shall inform Weaverville Fire Department of planned periods where access will be delayed, at least 24 hours prior to implementing work.

1.6 Not Used.

1.7 WARRANTY

A. Work under this section shall be subject to a 1-year good repair period as well as other warranties per the Agreement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Not Used

PART 3 - EXECUTION

3.1 METHODS

A. Contractor shall perform potholing at all utility crossings Authorization to proceed with any subsequent potholing event shall be by made by the Agency.

B. Allowable potholing methods are limited to hand digging, hydroexcavation and vacuum excavation at depths beyond one foot below ground surface to ensure no damage to existing utilities.

C. Once the utility has been located, heavy equipment may be used to dig within three feet of the utility's location. A setback must be maintained to allow for the teeth of the excavator, tolerances of the routing of the utility, and operator and equipment capability.

3.2 EXPOSED UTILITIES

A. Utilities exposed by potholing must be protected throughout the project duration. As necessary, place temporary support or shoring to support so that exposed utilities do not shift or sag when the soil that was supporting and protecting them is removed. Contractor shall place a barrier that protects exposed utilities from heavy and sharp objects that could fall into the excavation.

B. Costs associated with the repair and replacement of existing utilities damaged by the Contractor's potholing operations, including but not limited to the costs associated with manhours, equipment, materials, fees and/or penalties issued by the utility owner shall be borne by the Contractor at no cost to the Agency.

3.3 BACKFILL AND RESTORATION

A. Backfill and restoration shall be performed in accordance with Section 02514.

END OF SECTION

SECTION 02514

RESTORATION OF ASPHALT, PAVEMENT AND GRAVELED SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Restoration of existing driveways, road shoulders, chip seal pavement and similar items removed, damaged, or displaced.

B. Related Sections include but are not necessarily limited to:
   1. Division 1 - General Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. Standard Specifications: State of California, Department of Transportation, July 2002.
   2.

B. Miscellaneous:
   1. Should conflicts arise between standard specifications of government agencies mentioned herein and Contract Documents, Contract Documents shall govern.

1.3 SUBMITTALS

A. Shop Drawings:
   1. See Section 01300, Submittals.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
   3. Pavement, concrete and other surfaces and asphalt design mix.

1.4 EXISTING UTILITIES

A. Contractor's operations will be conducted in a manner that will not harm or damage existing utilities.

1.5 TRAFFIC CONTROL

A. Refer to contract specification section.

1.6 SEQUENCING AND SCHEDULING

A. Complete restoration of rocked or chip sealed surfaces prior to the beginning of the inclement weather period.

1.7 WARRANTY

A. Work, excepting road surface restoration under this section shall be subject to a 1-year good repair period as well as other warranties per the Agreement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chip Seal Roadway: For restoration of existing streets shall be patched using AC grindings equaling a total

depth of 3 inches.

B. Aggregate base shall be in accordance with Section 26, “Aggregate Bases”, Caltrans Standard Specifications (July 2002).

PART 3 - EXECUTION

3.1 PLACEMENT

A. Streets:

1. Surface restoration of drainage channels and v-ditches located in a shoulder within 20 FT of the traveled way, shall be restored to a condition as good or better than that condition prior to beginning construction.

END OF SECTION

SECTION 02660

WATER MAIN CONSTRUCTION PART

1 - GENERAL (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water main to the line and grade on the Drawings. Water mains to be staked at a minimum 100 FT interval with depth of cuts monitored.

B. Field verify depth of utilities that will be crossed.
   1. Adjust water main elevation as required during construction with written approval by Agency.
   2. No separate payment will be made for field verification or adjustment of main depths as required.

C. Contractor will restore all existing structures or services damaged by Contractor's operations at no cost to Agency.

3.2 INTERRUPTION OF SERVICE

A. Interruption of service to water users shall not exceed 4 HRS without prior written authorization from the Agency. Notify property owners of interruption a minimum of 24 HRS in advance.

3.3 UNDERGROUND SERVICES

A. Contact Underground Services Alert prior to construction to obtain available information on location of existing utilities. The Contractor shall be responsible for locating all utilities.

B. Contractor to verify the location of all underground utilities. Omission from, or the inclusion of utility locations on the plans is not to be considered as the nonexistence of or a definite location of existing underground utilities.

C. A representative of the underground utilities shall be notified a minimum of 48 HRS in advance of crossings.

3.4 CONNECTIONS TO EXISTING WATERMAINS

A. Make connections to existing water mains as shown on Drawings, by attaching to existing or changed fitting.

B. Contractor is responsible for dewatering and disposing of water in the trench at no additional cost to the Agency.

C. Connection to existing District transmission mains or distribution piping must be completed only after pre-approval of Schedule by the District. District personnel must be notified and present during any interconnection with their existing system

3.5 CROSSINGS

a) New water main shall not be installed in the same trench as, and shall be at least 10 feet horizontally from and one foot vertically above, any parallel pipeline conveying sewage or hazardous fluids, such as fuels.

b) New water main shall be installed at least 4 feet horizontally from and one foot vertically above, any parallel pipeline conveying storm drainage or untreated drinking water.

c) If crossing a pipeline conveying a fluid listed in (a) or (b) above, a new water main shall be C900-PVC, Class 200 and shall meet the separation requirements outlined in the plans (Sheet C14). Details include minimum 4-inch vertical separation and a single 20-foot long segment of pipe centered above/below fluid pipeline being crossed, such that no connection joints are made in the new main within eight horizontal feet of the fluid pipeline being crossed.

d) If above criteria cannot be met, consult with the Agency and CDPH.

3.6 FIELD QUALITY CONTROL

A. Pipe Testing – General:

1. The Contractor shall make all necessary provisions for conveying the water from the designated source to the points of use.
2. All pressure pipelines shall be tested. Disinfection shall be accomplished by chlorination. All chlorination and testing operations shall be performed in the presence of the Agency and a representative of the District.
3. Disinfection operations shall be scheduled by the Contractor as late as possible during the contract time period so as to assure the maximum degree of sterility of the facilities before the Work is accepted by the Agency and District. Bacteriological testing shall be performed by the District.
4. Release of water from pipelines, after testing and disinfecting have been completed, shall be in accordance with a written disposal plan reviewed by the Agency. De-chlorination shall be provided.
5. Hydrostatic Testing: The purpose of the hydrostatic test is both to test the ability of the pipeline to withstand the pressure and test for allowable leakage. Hydrostatic testing shall take place after backfilling of trench. These tests shall run simultaneously. The Agency and a representative of the District must be present during hydrostatic testing. Preparation: Prior to testing, the water main shall be slowly and carefully filled with water. All air shall be expelled slowly from the pipe and appurtenances in a manner so as not to create excessive surge pressures. All appurtenances shall be left on during the testing procedure. The line shall be filled with water at least twenty-four hours prior to testing when the pipeline has a mortar lining, thus allowing the lining material to become saturated. Water for testing shall be introduced at the low end of the section being tested to facilitate the elimination of air in the pipeline prior to testing. Where air valves or other suitable outlets are not available for releasing air before applying the test, approved taps and fittings shall be installed and later securely plugged.

   The Contractor may, at his own risk, test against existing valves. Suspected leaking of these valves will not be accepted as a reason for having not passed the leakage test requirements. These valves shall either be repaired or replaced prior to the start of another testing sequence. All new valves shall be tested against a reduced pressure side. Butterfly valves shall be tested in both directions.

   Contractor is responsible to provide a testing plan including the stationing and methods for capping or plugging the line. Testing against valves may be allowed with written approval of the Agency and District.

6. Test Section Length: The length of pipe being tested at any one time shall not exceed 5,000 feet unless otherwise approved by the Agency.
7. Test Pressure: Unless otherwise agreed to in writing by Agency, the test pressure shall be 1.25 times working pressure or 50 psi greater than design pressure of the system, whichever is greater, measured at the lowest point of the pressure zone being tested.
8. Test Duration: The test duration shall be two hours. Pressure in the water main shall be

maintained within 2 psi of the calculated test pressure for the full two-hour duration. The individual testing of the valves may be of a shorter duration as approved by the Agency.

9. Allowable leakage: The allowable leakage per test section shall be calculated from the formula contained in this subsection. Different sized water mains and different water main materials that might be contained within the same test section shall be calculated separately and then added together.

$W = ND\sqrt{P}/7400$ *WHERE:*
W = Allowable leakage in gal/hr.
N = Number of joints in the length of pipeline tested D = Normal diameter in inches
P = Average test pressure in psi

10. Repairs: During the pressure and leakage test, all accessible appurtenances shall be inspected for visual signs of leakage. All visual leaks shall be corrected immediately, regardless of the amount of leakage and the test shall be run again for its full duration. All leaks detected shall be repaired to a water tight condition. All repairs made shall be retested in accordance with the specifications. All repairs shall be made and a successful test accomplished prior to taking bacteriological samples.

B. Dielectric Testing Methods and Criteria:
   1. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained.
   2. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition.

C. All underground fire service piping shall be visually inspected by the Fire Department prior to backfill. Contractor shall schedule inspection by Fire Department. Failure to comply with this requirement will result in the uncovering of piping for the visual inspection.

3.7 CLEANING, DISINFECTION AND PURGING

A. Cleaning:
   1. Clean interior of piping systems thoroughly before installing.
   2. Maintain pipe in clean condition during installation.
   3. Before jointing piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.
   4. Immediately prior to pressure testing, clean and remove grease, metal cuttings, dirt, or other foreign materials which may have entered the system.
   5. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Agency.
   6. Disinfecting: After completion of testing operations, the Contractor shall sterilize all water mains, services and appurtenances. Sterilization shall be accomplished in accordance with the latest revision of AWWA C-601.

      The basic disinfection procedure consists of:

      - Preventing contamination materials from entering the water main during storage, construction or repair.
      - Removing, by flushing or other means, those materials that may have entered the water main.
      - Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.

- Determining the bacteriological quality by laboratory test after disinfection.

Three methods of chlorination are: tablet, continuous feed, and slug. The tablet method is preferred and shall be used unless an alternate method is approved by the Agency.

a. Tablet Method: The tablet method consists of placing calcium hypochlorite granules and tablets in the water mains as it is being installed and filling the main with potable water installation is completed. This method may be used only if the pipes and appurtenances are kept clean and dry during construction.

b. Placing of Calcium Hypochlorite Granules: During construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500 foot intervals. The quantity of granules shall be as shown in Table 1. Granules shall not be left in direct contact with metallic surfaces.

WARNING: This procedure must not be used on solvent-welded plastic or on screwed-joint pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

TABLE 1	
OUNCES OF CALCIUM HYPOCHLORITE GRANULES TO BE PLACED AT BEGINNING OF MAIN AND AT EACH 500-FT INTERVAL	
Pipe Diameter Inches	Calcium Hypocholorite Granules Oz.
4	.5
6	1.0
8	2.0
12	4.0
16 and larger	8.0

1) Placing of Calcium Hypochlorite Tablets – During construction 5-g calcium hypochlorite tablets shall be placed in each section of the pipe and also one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenances. The number of 5-g tablets required for each pipe section shall be $0.0012d^2L$ rounded to the net higher integer, where "d" is the pipe diameter in inches and "L" is the length of pipe section in feet. Tablets shall not be placed in direct contact with metallic surfaces.

TABLE 2 **NUMBER OF 5-G CALCIUM HYPOCHLROTE TABLETS REQUIRED FOR DOSE OF 25 MG/L*** **Length of Pipe Section / Ft.**					
Pipe Diameter in.	13 Or less	18	20	30	40
Number of 5-g Calcium Hypochlorite Tablets					
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7
16	4	6	7	10	13
18	5	7	8	12	16

Based on 3.25g available chlorine per tablet; any portion of tablet rounded to next higher number.

The tablets shall be attached by a food-grade adhesive such as Permatex Form-A-Gasket No. 2 or equal. There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

B. Filling and Contact: When tablet installation has been completed, the main shall be filled with water at a rate such that the water within the main will flow at a velocity no greater than 1 ft/s. Precautions shall be taken to assure that air pockets are eliminated. This water shall remain in the pipe for at least twenty- four hours. If the water temperature is less than 41 Degrees F (5 Degrees C), the water shall remain in the pipe for at least forty-eight hours. Valves shall be positioned so that the strong chlorine solution in the treated main will not flow into water mains in active service.

C. Final Flushing: After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that which is generally prevailing in the system or is acceptable for domestic use.

The environment to which the chlorinated water is to be discharged shall be inspected. If there is any question that the chlorinated discharge will cause damage to the environment, then a reducing agent shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining the water. Where necessary, federal, state, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

D. Bacteriological Tests: After completion of testing and sterilization, prior to final acceptance, the Agency will take water samples for bacteriological examination. Should any of the samples fail to meet minimum State of California, Department of Public Health requirements, the Contractor will continue to chlorinate and flush the system, as directed, until a satisfactory sample is obtained.

E. Redisinfection: If the initial disinfection fails to produce satisfactory bacteriological samples, the main may be reflushed and shall be resampled. If check samples show the presence of coliform organisms, then the main shall be rechlorinated by the continuous-feed or slug method or chlorination until satisfactory results are obtained.

NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sentiment that has accumulated in the existing mains. When check samples are taken, it is well to also sample water entering the new main.

3.8 LOCATION OF BURIED OBSTACLES

A. Furnish exact location and description of buried utilities encountered and thrust block placement.

B. Reference items to definitive reference point locations such as found property corners, entrances to buildings, existing structure lines, fire hydrants and related fixed structures.

C. Include such information as location, elevation, coverage, supports and additional pertinent information.

D. Incorporate information on "As-Recorded" Drawings.

END OF SECTION

SECTION 15025
PIPE AND FITTINGS

PART 1- GENERAL

1.01 SCOPE

A. This section consists of furnishing and installing black steel station piping, C-900 PVC, RCP, and Ductile Iron distribution pipe, CMP drainage pipe, fittings, closure pieces, pipe supports, bolts, nuts, gaskets, thrust blocks and all associated appurtenances, complete.

B. All materials, labor and workmanship associated with the installation of the piping shall conform to the Drawings and Specifications and to the improvement standards and technical specifications of the Agency. Copies of the subject standards are available from the Agency. See Section TRENCHING, BACKFILLING, AND COMPACTING FOR UTILTIES and WATER MAIN CONSTRUCTION for additional requirements.

1.02 DESIGN PRESSURES

A. The design pressure of pipe shown on the Drawings or in these Specifications is the minimum required static internal design pressure in pounds per square inch. The pipe shall be designed for this internal pressure, for earth loads, and for an AASHTO H-20 wheel load, all without exceeding the allowable design stresses. Pipe shall be designed for earth and wheel load both with and without internal pressure. In addition, pipe shall be designed for the test pressure specified herein without exceeding 75 percent of yield stresses or joint design pressures. All fittings, couplings, valves, and other appurtenances shall be rated for the same or a higher design pressure as the pipe they are used on and shall withstand the test pressure without damage.

1.03 PIPE DIAMETERS

A. The pipe diameters shown on the Drawings and used in these Specifications are inside diameters unless specific reference is made to outside diameter of the pipe or the pipe is a standardized product normally designated by a nominal size, e.g., ductile iron pipe.

1.04 SUBMITTALS

A. Shop drawings

The contractor shall submit complete data on pipe, fittings, linings, coatings, and any manufacturer's installation instructions.

B. Laying Plans

Shop drawings shall include a laying plan showing the location of each pipe section and each special length with each piece numbered or otherwise designated in sequence. Laying plans shall be submitted for welded steel and ductile iron pipe. All outlets and bends shall be installed where located on the Drawings unless otherwise approved.

C. Certification

Certification properly executed by the manufacturer shall be furnished to the Agency showing compliance to the required Specifications. Test data on tests performed shall be provided as requested by the Agency.

1.05 MARKING AT PLANT

A. Each pipe and fitting shall be marked at the plant. Marking shall include size or diameter and class of pipe or fittings, manufacturer's identification, and date of manufacture.

1.06 ACCESS FOR INSPECTION

A. The Agency and his representatives shall have access to all phases of the work, and the manufacturer shall provide proper facilities for access and inspection. Materials, fabricated parts, and pipe which are discovered to be defective, or which do not conform to the requirements of this Specification, will be subject to rejection at any time prior to final acceptance of the pipe. The Agency shall be notified a

minimum of 2 weeks prior to manufacture of the pipe or fittings. In addition, the Contractor shall give the Agency 3 working days advance notice of the start of any surface preparation or coating application work.

PART 2 - MATERIALS

2.01 PIPE

A. Pipe used in the construction of the water treatment facility shall be of the type shown on the Drawings. It shall be the regular product of a firm who has successfully manufactured comparable pipe for at least three years.

1. Black Steel Pipe (4 inches and smaller)
All black steel pipe size 4-inches in diameter and smaller shall conform to the requirements of ASTM A120, and shall be Schedule 40.

2. Black Steel Pipe (5 inches and larger)
Black steel station piping, including short underground runs shown on the Drawings, shall conform to the requirements of ASTM A53 and shall be Grade B.

3. Welded Steel Pipe
Welded steel pipe shall be manufactured of steel plate of the thickness shown on the Drawings. Where not shown, the thickness shall be not less than 3/16 of an inch for pipe 24 inches in diameter and smaller, and not less than 1/4 inch for larger sizes. Pipe materials, fabrication, and shop testing of straight pipe shall conform to the requirements of the "AWWA Standard for Steel Water Pipe 6 Inches and Larger" (AWWA C200). All outlets, 4-inch diameter and larger, shall be provided with reinforcing designed for the water working pressure specified or shown. Shop drawings of all welded steel pipe, 8 inches in diameter and larger shall be furnished in accordance with the general conditions. For pipe 14 inches in diameter and larger, the inside diameter after lining shall be not less than the
nominal diameter specified or shown. Pipe smaller than 14 inches in diameter may be furnished in standard outside diameters.

4. Polyvinyl Chloride Pipe (PVC)
PVC pipe shall conform to the latest revision of AWWA Standard C900. The Contractor shall use the class of pipe stated on the Drawings. The PVC pipe shall be manufactured in cast-iron O.D.s and in sections not to exceed 20 feet in length. The Contractor shall use either plain end pipe with elastomeric couplings or gasketed bell and spigot pipe. Pipe end couplings shall be US manufactured by Johns-Manville, Certainteed or equal.

5. Corrugated Metal Pipe (CMP)
Corrugated metal pipe shall conform to the Caltrans Standard Specifications, Section 66: Corrugated metal pipe.

6. Ductile Iron Pipe (DIP)
Ductile iron pipe shall conform to ANSI A21.51 (AWWA C15l) for a minimum working pressure of 150 psi unless otherwise specified. Ductile iron castings shall conform and be tested in accordance with ASTM A536. Casting grade for pipe shall be 60-42-10. Laying length shall be the manufacturer's standard length, not to exceed 20 feet. Shorter lengths may be used when required for closures and proper location of special sections. The interior surface of all DIP shall be cement-mortar lined and seal coated in conformance with AWWA C104, and the exterior surface shall have a bituminous coating of either coal tar or asphalt base, approximately 1 mil thick. Cement mortar shall be ASTM Cl50, Type II or V, low alkali, containing less than 0.06 percent alkalis. Joints shall be push-on or mechanical type and shall conform to ANSI 21.11 (AWWA C111).

7. Reinforced Concrete Pipe (RCP)
Reinforced concrete pipe shall conform to the specifications of ASTM Designation C76. Joints for

concrete pipe shall be tongue and groove, bell and spigot or other approved type, and shall be of such a design that when properly laid, they shall have a smooth and uniform interior surface. Each joint shall be sealed to prevent leakage. Sealing materials shall consist of either cement mortar, rubber gasketed joints, or resilient materials conforming to Section 65-l.06A, 65- 1.06B, and 65-1.06C of the Caltrans Standard State Specifications.

8. Polyethylene Tubing (PE)

Polyethylene pipe for water services shall be SDR 9, Iron Pipe Size (IPS) conforming to AWWA C901. Unless otherwise shown on the drawings, PE pipe shall be pressure class 200.

9. Cross-Linked Polyethylene Tubing (PEX)

PEX tubing for water services shall be manufactured to the requirements of ASTM F876, ASTM F876, AWWA C904, NSF 61, and/or CSA B137.5. PEX

tubing shall be SDR 9 rated for 160 PSI at 74 degrees Fahrenheit. Connections shall conform to ASTM F 1807 and/or ASTM F1960.

2.02 FITTINGS AND COUPLINGS

A. PVC Bell-and-Spigot Fittings

Socket or bell-and-spigot type PVC fittings shall be standard commercial products fabricated by molding or by extrusion and machining and shall conform to the requirements of ASTM D2241 and these Specifications. The manufacture of the fittings shall be in accordance with good commercial practice so as to produce fittings compatible with the type of PVC pipe furnished. Dimensions and tolerances of fitting joints shall conform to the tolerances of the PVC pipe furnished. The minimum burst strength of the fittings shall be not less than that of the adjacent pipe.

B. Ductile and Cast Iron Fittings

Fittings shall be of cast-iron conforming to the requirements of "American National Standard for Gray-hon and Other Liquids" (AWWA Cl 10). Fittings shall be lined with cement mortar in accordance with the requirements of the "American National Standard for Cement-Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fittings for Water" (AWWA C104). Joints between PVC pipe and cast-iron valves or fittings shall be mechanical joint or approved equal. AWWA Cl53 compact fittings may also be used as an approved equal. Fittings shall be of a class at least equal to that of the adjacent pipe.

C. Steel Fittings

Fabricated fittings shall be made up of steel pipe, conforming to ASTM Designation A53, 35,000 psi minimum yield strength, 1/4-inch wall, except 20-inch diameter through 24-inch diameter, which shall be 3/8-inch wall. Welding fittings shall be seamless steel conforming to ASTM Designation A234. Flanges shall be Class "D", slip-on steel ring flanges for welding to steel water pipe, welded front and back and faced, and all in accordance with AWWA Standard C207.

D. Reinforced Concrete Pipe Fittings

Fittings and specials for reinforced concrete pipe shall be shop fabricated. Fittings and specials shall be designed for the same internal and external pressures as the adjoining pipe or as shown. Fabrication details shall be submitted to the Agency for review prior to the manufacture of fittings and specials.

Fittings may be fabricated from steel plate cement mortar-lined and coated, or from mitered end concrete pipe provided the maximum angle of any miter is 10 degrees (maximum 20-degree bend). Steel plate fittings shall conform to the dimensional requirements of AWWA C208, Table 2. Steel plate thickness shall be 3/16-inch minimum. Steel fittings shall be lined and coated in accordance with AWWA C205. Bell adapters shall be fabricated from steel plate and shall be accurately dimensioned for a rubber gasket joint. Mitered end concrete pipe fittings will be allowed only for A-25, B-25, and C-25 reinforced concrete pipe. All other classes of reinforced concrete pipe will require steel fittings as specified.

E. High Deflection Couplings for Polyvinyl Chloride Pipe

High deflection couplings shall be manufactured of extruded PVC coupling stock with a rated working

pressure of 200 psi. Couplings shall meet the requirements of AWWA C900 Municipal Water Pipe. Couplings shall be High Deflection Stop Couplings by Certainteed or equal.

F. Flanged Coupling Adapters

Flanged coupling adapters shall be wrought steel or cast iron capable of withstanding the designated internal pressure without leakage or overstressing. Diameter of the coupling shall be compatible with the outside diameter of the pipe on which the coupling is installed. Furnish all joint accessories with couplings. Verify dimensions of all existing pipelines in the field before ordering couplings.

Steel style flanged couplings shall consist of a steel body, steel or malleable iron follower rings, and steel bolts. Steel flanged coupling shall be as manufactured by Rockwell International, Inc.; Dresser Manufacturing Division of Dresser Industries, Inc.; or equal.

G. Flexible Couplings

Flexible couplings for use with steel pipe shall be Dresser, Style 38; Rockwell, Style 411; or equal. Flexible couplings for use with ductile iron pipe shall be Dresser, Style 53, 153, or 38; Rockwell, Style 431; or equal. Bolts and nuts shall be zinc- coated. Steel middle rings shall be pressure tested beyond the yield point. Verify dimensions of all existing pipe. Middle rings and followers shall be fusion epoxy lined and coated in accordance with Section PAINTING.

Cast style flexible coupling shall consist of a cast iron middle ring, malleable iron follower rings, and steel bolts. Cast flexible couplings shall be as manufactured by Rockwell International, Inc.; Dresser manufacturing Division of Dresser Industries, Inc.; Romac Industries, Inc.; or equal.

H. Transition Couplings and Expansion Joints

Flexible transition couplings shall be bolted, with ductile iron sleeve and end rings, Ford Model 501, Dresser No. 153, or Rockwell No. 431. Flexible expansion joints shall have fully molded arches and operate up to a minimum operating pressure of 200 pounds per square inch. Flanges shall have a class rating of 150 pounds per square inch. Diameter of the coupling shall be compatible with the outside diameter of the pipe on which the coupling is installed. Furnish all joint accessories with Flexible Couplings.

I. Flanges

Unless otherwise shown on the Drawing, all flanges shall conform to AWWA C207 Class E. Steel ring flanges, 270-275 psi, shall match drilling pattern of ANSI B 16.5

150 psi Standard for steel flanges. If 300-lb. class flanges are shown, they shall conform to ANSI Bl6.5 300-lb. class. Flanges shall have flat faces. Pipe flanges shall be attached with bolt holes straddling the vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of the above-referenced AWWA Standard C207.

J. Nuts Bolts and Gaskets

Nuts and bolts shall be of carbon steel, ASTM A307, Grade A, hex head; the sizes and quantities recommend in AWWA C207. Gaskets for flanged joints shall be cloth- inserted sheet rubber gaskets in one piece conforming to AWWA C207, 1/8- inch thick. The gasket shall be full-cut, with holes to pass bolts. Gasket material shall be free from corrosive alkali or acid ingredients. Segmented straight-joint or interlocking gaskets will not be accepted.

2.03 APPURTENANCES

A. Service Saddles

Service saddles shall conform to the following, depending on the type and size of main on to which they are to be mounted.

1. Ductile iron Pipe and Polyvinyl Chloride Pipe, 8-inch through 16-inch diameter: Ductile or malleable iron saddle casing drilled and tapped for the corporation stop, with electro-galvanized carbon steel straps, shall be of the following:
   Romac No. 202, Ford No. F 202, Rockwell No. 313, Apac No. 103 or approved equal.

2. Ductile iron Pipe. NOT USED.

3. Brass saddles shall not be used.

B. Corporation Stops

Corporation stops shall be ball valves and be manufactured from 85-5-5-5 brass (ASTM Designation B62), with a standard male iron pipe thread inlet and compression ("Pack Joint") outlet for polyethylene tubing. Acceptable manufacturers include A.Y. McDonald, Ford, Romac, Mueller or approved equal.

C. Pressure Gauges

General purpose pressure gauges, shall be 2 1/2 inch diameter, 304 stainless steel bodied, have a shatter-resistant glass window, have a 304 stainless steel white background dial with black markings, an adjustable stainless steel black pointer with the movement and bourdon tube made of 300 series stainless steel. The gauge shall be fitted with 1/4 inch ANPT stem mount and shall be liquid filled with 200 cs silicone oil. The dial range shall indicate from 0 to 200 pounds per square inch with 10 pound intermediate graduations, unless otherwise specified herein or shown on the Drawings.

D. Water Service Meters

Meters for water services sizes 5/8-inch through 2-inch shall be magnetically driven with sealed registers, positive displacement-type with oscillating piston conforming to AWWA Standard C-700. Cases shall be non-corrosive Bismuth alloy or Brass alloy with a separate measuring chamber which can be removed from the case. Materials shall meet NSF 61 standards.

Water service meter shall be Neptune Meters R900 V4 5/8"x 3/4"meters or approved equal.

E. Coal Tar Tape

Coal Tar Tape shall be in conformance with AWWA C203.

F. Butyl Rubber Tape Wrap

Tape wrap shall be 15 mil butyl rubber adhesive, polyethylene-backed tape as produced by Polyken Division of the Kendall Company, Boston, MA; Royston Laboratories, Inc., Pittsburg, PA; or equal.

G. Joint Lubricant

Furnish joint lubricant with the pipe. Furnish the amount and type recommended by the pipe manufacturer. The lubricant for water pipes shall be a water-soluble, nontoxic, vegetable soap compound conforming to United States Pharmacopoeia No. P39.

H. Feeler Gauge

Furnish sufficient feeler gauges of the proper size, type, and shape for use during installation to check the rubber gaskets.

I. Hydrostatic Testing

Perform the tests and provide all hoses, plugs, and other necessary equipment to complete the tests.

J. Concrete for Thrust Blocks and Concrete Encasement

Concrete shall conform to Section 90 of the CalTrans Standard Specifications. Concrete shall have a minimum compressive strength of 2,000 psi and slump range of 4 to 6 inches.

K. Underground Warning Tape

Warning tape shall be non-detectable 4-mil Polyethylene film 6-inches in width having a minimum tensile strength of 1750 psi. Warning tape shall be colored blue and continuously labeled "CAUTION BURIED WATER LINE BELOW". Warning tape shall be Hytech Non-Detectable Tape by Northtown Company, or approved equal.

PART 3- EXECUTION

3.01 TRENCH EXCAVATION AND BACKFILL

A. Conform to the requirements of TRENCHING, BACKFILLING, AND COMPACTING FOR UTILTIES.

3.02 PREPARATION AND HANDLING

A. All pipe, fittings, and appurtenances shall be installed in accordance with the manufacturer's recommendations and according to accepted water works practice. Installation of PVC pipe shall meet the requirements of ASTM D2321. Each section of pipe and each fitting shall be thoroughly cleaned out before it is installed. All pipe, fittings, and appurtenances, shall be carefully lowered into the trench by suitable tools or equipment in such a manner as to prevent any damage, particularly to the lining and coating. When required by the Agency, approved slings shall be used to lower the pipe. Under no circumstances shall pipe or accessories be dropped into a trench. Mi pipe, fittings and appurtenances, shall be examined for defects before lowering into the trench. Any defective, damaged, or unsound materials shall be rejected.

3.03 DIRECTION OF LAYING

A. On slopes of 10 percent or less, the pipe may be laid in either direction on the slope. On slopes exceeding 10 percent, the pipes shall be laid in the uphill direction, unless otherwise permitted by the Agency. For pipes with push-on joints, the bell end shall normally face the direction of laying.

3.04 ALIGNMENT

A. Pipelines intended to be straight shall be so laid, and in no case shall deviation from a straight line exceed 0.30 foot for line and 0.10 foot for grade from the line and grade shown on the Drawings. Where pipelines are to be laid on a curve by means of unsymmetrical closure of spigot into bell, the pipe may be deflected at the joints. Under no circumstances shall the deflection exceed the maximum allowable as recommended by the pipe manufacturer. At no time shall horizontal or vertical deflections be achieved by pulling the pipe. Where horizontal or vertical curves are shown in the alignment which cannot be installed by joint deflection of standard pipe

lengths, the Contractor with the Agency's approval may select from the following options:

1. Use shorter pipe lengths and allowable joint deflection as specified.
2. Use special mitered joints.
3. Use standard or special fabricated bends.
4. Use high deflection couplings.

If alternates two or three are used, thrust blocking may be required. If the Agency determines that thrust blocking is necessary, it shall be furnished at no additional cost to the Agency.

3.05 LAYING AND JOINTING PIPE AND FITTINGS

A. Materials used in jointing pipe shall only be that furnished with the pipe or recommended by the manufacturer. Pipe laying shall proceed with the bell ends pointing upstream. After a selection of pipe has been lowered into the prepared trench, clean the end of the pipe to be joined, the inside of the joint, and the rubber ring immediately before joining the pipe. Make assembly of the joint in accordance with the recommendations of the manufacturer. Provide all special tools and appliances required for the jointing assembly.

The gasket position shall be checked with a feeler gauge, furnished by the pipe manufacturer, to assure proper seating. After the joint has been made, check pipe for alignment and grade. Apply sufficient pressure in making the joint to assure that the joint is "home," as defined in the standard installation instructions provided by the pipe manufacturer. To assure proper pipe alignment and joint makeup, place sufficient pipe zone material to secure the pipe from movement before the next joint is installed.

Take the necessary precautions required to prevent excavated or other foreign material from entering the pipe during the laying operation. At all times, when laying operations are not in progress, at the close of

the day's work, or whenever the workers are absent from the job, close and block the open end of the last laid section of pipe to prevent entry of foreign material or creep of the gasketed joints. Take all precautions necessary to prevent the "uplift" or floating of the line prior to the completion of the backfilling operation. When cutting and/or machining the pipe is necessary, use only tools and methods recommended by the pipe manufacturer. All field-cut PVC shall be beveled and lubricated before joining.

3.06 UNSUITABLE CONDITIONS FOR LAYING PIPE

A. Do not lay pipe in water, or on an unstable trench bottom, or when in the opinion of the Agency, trench conditions are unsuitable.

3.07 PIPE CUTTING

A. When necessary to cut pipe, it shall be neatly and squarely cut to length using methods recommended by the manufacturer.

3.08 COPPER TRACING WIRE

A. Pipelines shall be provided with No. 12 A.W.G. insulated copper wire laid along the top of the pipe and held in place with ties or hitches of the same kind of wire. The ties or hitches shall be spaced not more than 20 feet apart. The copper wire is to be used in the future as a means of locating the pipe with an electronic-type pipe locator. The copper wire shall be brought to the surface in each valve box so a direct connection can be made to the electric pipe locator. Care shall be taken to insure no "open" circuits occur. Electrical wire nuts will be an acceptable method of connection. Such joints will be taped and coated to prevent corrosion from damaging connections.

3.09 THRUST BLOCKS

A. All pipeline tees, plugs, caps, bends, and other locations where unbalanced forces exist shall be thrust restrained as shown or specified. Thrust blocks shall be installed such that the thrust block shall extend from the fitting to undisturbed soil, and shall be of such bearing area as to assure adequate resistance to the force to be encountered. Minimum size of thrust blocking shall be in accordance with the standard detail shown in the Drawings. The excavation configuration and soil conditions may require additional concrete. Additional concrete shall be furnished and installed as a part of the contract prices. Thrust blocks shall be kept clear of the joints so that the pipe and fitting joints will be accessible for repairs, unless otherwise directed. Side forms shall be used to contain the concrete.

3.10 CONCRETE ENCASEMENT

A. Concrete encasement shall be installed as indicated on the Drawings. All pipe to be encased shall be suitably supported and blocked in proper position, and shall be anchored to prevent flotation. Except for welded joint pipe, a flexible joint shall be provided within 18 inches and as shown on the Drawings, from the terminations of any concrete encasement.

3.11 DISCONTINUED PIPE LAYING

A. Whenever pipe laying is discontinued for an hour or more, the open end of all mains and fittings shall be closed with watertight plugs or bulkheads. The plug or bulkhead shall not be removed unless, or until, the trench is dry. Pipe shall not be laid when the condition of the trench or the weather is unsuitable.

3.12 BEVELED PIPE

A. Sections of pipe with one or both ends beveled may be used for curved alignment. Beveled pipe shall have a maximum deflection of five (5) degrees from a plane perpendicular to the pipe axis unless otherwise shown on the Drawings or approved by the Agency.

3.13 WELDING

A. All hand welding shall be done by welders certified in accordance with the "AWWA Standard for Field Welding of Steel Water Pipe" (AWWA C206). No welding of ductile iron pipe will be allowed.

3.14 THREADED JOINTS

A. Threaded joints, for service connections, air release assemblies, etc., shall be made with Teflon

Plumber's Tape.

3.15 REINFORCED CONCRETE PIPE JOINTS

A. Each joint shall be sealed to prevent leakage. Joints sealed with cement mortar or resilient materials, shall be sealed both inside and outside. If cement mortar is used in sealing the joint, the sealed joint shall be protected and cured in a manner approved by the Agency. If the sealing material will not adhere to the pipe, or if a portion of the outside of the joint is inaccessible, the Contractor shall use a "diaper" or other method approved by the to properly seal the joint. Immediately prior to making a cement mortar joint, the tongue and inside of the groove shall be thoroughly wetted with clean water.

3.16 WRAPPED PIPE

A. Field-applied tape wrap on minor piping shall be applied in accordance with manufacturer's instructions and as follows:

Clean items with power brushes to remove rust, scale, or other material. Grind or file smooth any sharp burrs that will damage the wrap and solvent clean to remove oils or greases. Apply primer and spiral wrap with a 50-percent overlap to form a double layer. Apply with enough tension to make wrap conform to the surface without wrinkles, but do not stretch excessively. Roll or press the overlap seams to ensure complete bonding.

All underground black steel pipe shall be double wrapped with coal tar tape or wrapping terminating a minimum of 6-inches above final grade in conformance with AWWA C203.

3.17 TESTING

A. All pipe and appurtenances shall be hydrostatically tested. See Section WATER MAIN CONSTRUCTION for Specifications.

END OF SECTION

SECTION 15110
VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 SCOPE

A. This section covers the work necessary for furnishing and installing butterfly valves, globe valves, gate valves, check valves, corporation stops, ball valves, combination air/vacuum valves, valve boxes, and all related appurtenances, complete. See Section 11 – Effluent Disposal Field for additional requirements.

1.02 SUBMITTALS

A. Complete specifications, data, and catalog cuts or drawings covering the items furnished under this section shall be submitted by the contractor.

PART 2 - MATERIALS

2.01 GENERAL

A. The Contractor shall furnish and install all valves as shown and specified. All valves shall be designed for and have a working pressure class rating equal to or greater than the design pressure shown on the Drawings for the adjoining pipe. Valves shall be capable of withstanding the field test pressure of the connecting piping without damage. All valves of one type and class shall be by the same manufacturer.

Each valve body shall be shop tested under a test pressure equal to twice its design water-working pressure, by the manufacturer, unless otherwise specified.

2.02 BUTTERFLY VALVES

A. Butterfly valves shall be Class 150 and shall meet or exceed the requirements of AWWA Standard C504. Valves shall be DRESSER “450” or approved equal. Valves shall be suitable for buried service, shall be equipped with a 2-inch square operating nut, and shall open CCW. Unless shown otherwise on the Drawings, valves shall be furnished with flanged, push-on or mechanical joint ends. Valves for above-ground service shall be equipped with manual gear actuator, handwheel, and position indicator.

2.03 GATE VALVES -3 INCHES OR SMALLER

A. Gate valves 3-inches and smaller shall be bronze-bodied, have wedge discs with full- open ports, rising stems, threaded ends, and rated 125 pounds WSP and 200 pounds WOG. All valves are to be Model 2500 gate valve as manufactured by the Ohio Brass Company, Mansfield, Ohio, Mueller or an approved equal.

2.04 GATE VALVES -4 INCHES OR LARGER

A. Gate valves shall be rated greater than or equal to the pressure class of the adjoining pipe, shall be resilient seat, and shall meet or exceed the requirements of AWWA Standard C509. When specified for underground service, valves shall be suitable for

buried service, be equipped with a 2-inch square operating nut and shall open CCW. Unless otherwise shown on the Drawings, valves shall be furnished with flanged, push-on or mechanical joints. Valves for above-ground service or installed in vaults shall be equipped with wheel handles.

2.05 CHECK VALVE - SWING TYPE 3 INCHES AND SMALLER

A. Check valves 3-inches or smaller shall be bronze-bodied, swing-type brass discs, threaded ends, and rated 125 pounds WSP and 200 pounds WOG. Valves shall be Model 806 swing check valve as manufactured by the Ohio Brass Company, Mansfield, Ohio or an approved equal.

2.06 CHECK VALVE - SWING TYPE 4 INCHES AND LARGER

A. Check valves shall be 125 pound class rating, iron body with flanged ends. Valve shall open to permit flow when inlet pressure is greater than the discharge pressure. When the discharge pressure is greater the valve shall close tightly to prevent return flow. For valves 4 inch and larger, closing shall be aided by a factory provided external lever and spring assembly. Valve shall be a globe pattern valve equipped with a resilient, synthetic rubber disc, having a rectangular cross-section, contained on three sides by a disc retainer and forming a tight seal against a single removable bronze seat insert. All necessary repairs shall be possible without removing valve from the line.

2.07 GLOBE VALVES

A. Globe valves shall be Class 150, resilient seat and have outside screw and yokes with rising stem and be equipped with wheel handles. Unless otherwise specified on Drawings, valves shall be furnished with flanges.

2.08 CORPORATION STOPS

A. Corporation stops shall be bronze with inlets/outlets suited for connection to the adjoining pipe or tubing type. Corporation stops shall be Ford FB 1101, Jones J-1936, or equal.

2.09 ANGLE METER VALVES

A. Angle meter valves shall be bronze full port ball style angle valves rated 300 PSI with lockwings conforming to AWWA C700. Angle meter valves shall be A.Y. McDonald Model 4602B-22 or approved equal.

2.10 BALL VALVES

A. Ball valves shall be bronze, Ford FB500, or equal. The valves shall be designed to the test pressures shown on the Drawings.

2.11 AIR RELEASE AND VACUUM VALVES

A. The valves shall be designed to operate under the same test pressures as the pipe to which they are attached. The valves shall have cast iron bodies and covers and stainless steel floats. Float guides, bushings, and linkage shall be stainless steel or

bronze. The design or operating pressure shall be no less than that of the adjoining pipe.

B. Valves shall have flanged or threaded ends to match piping. Seat washers and gaskets shall be of a material ensuring water tightness with a minimum of maintenance.

Valves shall be APCO as manufactured by Valve and Primer Corporation, Crispin as manufactured by Multiplex Manufacturing Company; Empire as manufactured by GA Industries, Inc.; or equal.

A. AIR RELEASE VALVES: Air release valves (ARV) shall have a small venting orifice to vent the accumulation of air and other gases with the line or system under pressure.

B. AIR AND VACUUM VALVES: Air and vacuum valves (A&V) shall have a large venting orifice to permit the release of air as the line is filling or relieve the vacuum as the line is draining or is under negative pressure.

C. COMBINATION AIR RELEASE VALVES: Combination air release valves (CARV) shall have operating features of both the air and vacuum valve and the air release valve. They include both single- and dual-body construction.

2.12 AIR VALVE ASSEMBLIES

A. The pipe and fittings shall be minimum class 150 psi but not less than that of the mainline pipe as shown on the drawings. Vent piping shall be schedule 40 PVC.

B. Above ground enclosures shall be Reliable Electric model TV80 or approved equal.

2.13 BRONZE APPURTENANCES

A. Unless otherwise specified, all interior bronze parts of valves except gate valve stems, shall conform to the requirements of the "Specification for Composition Bronze or Ounce Metal Castings" (ASTM B62). Gate valve stems shall be of bronze containing not more than 5 percent of zinc nor more than 2 percent of aluminum, and shall have a minimum tensile strength of 60,000 psi, a yield strength of 40,000 psi, and an elongation of at least ten percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems to be furnished are poured.

2.14 FLANGES

A. The flanges of valves shall be plain faced and shall have a pressure rating equal to or greater than the pressure class of the adjoining pipe. Flanges of valves for water- working pressures of 175 psi or less shall be faced and drilled to 125-lb. American Standard template. Flanges of valves for water-working pressures greater than 175 psi shall be faced and drilled to 250-lb. American Standard template.

2.15 BOLTS, NUTS, AND GASKETS

A. Flange gaskets shall be in accordance with applicable parts of ANSI B 16.21 and AWWA C207. Gaskets shall be 1/8-inch thick, cloth-inserted rubber, one-piece, fill- face, with holes to pass bolts. Bolts and nuts for joints shall be carbon steel, ASTM C307, Grade A, hex head, and shall conform to AWWA C207.

2.16 VALVE JOINTS

A. Joint materials for mechanical joint or push-on joint for ductile iron pipe shall conform to AWWA C111. Joint materials for flanged joints shall consist of 1/8-inch thick, fill-face, one-piece, cloth- inserted rubber gaskets conforming to Section 2 of AWWA C207, with bolt holes to pass bolts.

Bolts and nuts shall conform to Section 2 of AWWA C207. Bolts and nuts shall be coated as specified in Section Painting.

2.17 VALVE OPERATORS

A. Valve operators shall be of the ACME screw, traveling-nut type, sealed, gasketed, and lubricated for underground service. The operators shall be designed to meet the input torque requirements of AWWA C504 with a maximum pull of 80 pounds on a handwheel and a maximum input of 150 foot-pounds on a operating nut. They shall be capable of withstanding an overload torque of 450 foot-pounds at full-open or full- closed position without damage to the valves or valve operators. They shall be designed to resist submergence in water to 10-foot head pressure. All valves shall open counterclockwise. Valves to be installed in vaults shall be equipped with hand wheels at locations shown on the Drawings. All buried valves shall be equipped with a 2-inch operating nut. Operating nuts shall comply with the requirements of AWWA Specification C500, where applicable.

2.18 VALVE OPERATING EXTENSION

A. Valve operating extension shall be required whenever the valve is installed such that the operating nut is more than 32 inches below finished grade. The valve operating extension shall be constructed of steel with a 2-inch square operating nut.

2.19 WATER VALVE BOXES

A. Water valve boxes shall be Christy G-5 or Brooks 1 RT, having a cast iron face and cast iron traffic lid. Covers shall be marked 'WATER', and shall have a loose fit in the box. Valve box risers shall be fabricated from 8-inch diameter PVC pipe.

2.20 DRAIN VALVE BOXES

A. Drain valve boxes shall be Christy B-48 utility boxes or equal. Valve boxes shall be high density reinforced concrete with non-settling shoulders. Covers shall be 2 piece reinforced concrete. Valve box risers shall be reinforced concrete.

2.21 DRAIN ROCK

A. Drain rock shall be crushed rock.

2.22 BACKFLOW PREVENTION DEVICES

A. Reduced-Pressure Principle Backflow Prevention Devices
RP Backflow Preventers shall comply with AWWA C511-97 Standard for Reduce- Pressure Principle Backflow-Prevention Assemblies, and have met completely the laboratory and field performance specifications of the Foundation for Cross- Connection Control and Hydraulic Research of the University of Southern California. RP backflow preventers shall be the same size or larger than the meter to which they are connected. Piping shall be threaded or solvent-weld Sch. 80 PVC, brass, or type K copper. All assemblies shall be installed with two unions to allow the device to be removed without cutting the pipe. Strainers shall be provided for assemblies 2-inches and greater. Nuts and bolts shall be stainless steel. Acceptable manufacturers: Febco, Wilkins, Apollo or approved equal.

RP Backflow prevention enclosures, where called for in the Plans, shall be fiberglass enclosure sized to fit the backflow assembly. Enclosures shall be lockable with corrosion resistant hardware. Enclosures shall be drop-over enclosures as manufactured by HotBox or approved equal.

B. Double Check Valve Backflow Prevention Assemblies
DC Backflow prevention assemblies shall comply with AWWA C510 Standard for Double Check Valve Backflow Prevention Assembly. Valves shall be the same size or larger than the meter to which they are connected.

2.23 PAINTING

A. The interior of valves, unless of noncorrosive materials, shall be coated with the standard manufacturer's coating which is equal to or exceeds asphalt varnish.

PART 3 - EXECUTION

3.01 GENERAL

A. Valve-operating units stem extensions and other accessories shall be furnished and installed by the Contractor where shown, or where required in the opinion of the Agency to provide for convenience in operation. Where buried valves are indicated, the Contractor shall furnish and install valve boxes to grade. All valves shall be new and of current manufacture.

3.02 VALVES

A. Before installation, the valves shall be thoroughly cleaned of all foreign material, and shall be inspected for proper operation, both opening and closing, and to verify that the valves seat properly. Valves shall be installed so that the stems are vertical, unless otherwise directed by the Agency. Jointing shall conform to AWWA C600 or AWWA C603, whichever is applicable. Valves shall be installed as depicted on the Drawings. Joints shall be tested with the adjacent pipeline. If joints leak under test, valves shall be disconnected and reconnected, and the valve and/or the pipeline retested.

B. Faces of flanges shall be cleaned thoroughly before flanged joint is assembled. After cleaning, the gasket shall be inserted and the nuts tightened uniformly around the flange. If flanges leak under test, the nuts shall be loosened, the gasket reset or replaced, the nuts retightened, and the valve and/or pipeline retested.

3.03 VALVE BOXES

A. Center the valve boxes and set plumb over the wrench nuts of the valves. Set valve boxes so that they do not transmit shock or stress to the valves. Set the valve boxes and covers in accordance with the Drawings. Cut stem extensions to the proper length so that the valve box does not ride on the stem extension when set at grade.

B. Backfill for water valve boxes shall be the same as specified for the adjacent pipe. Backfill drain valve

boxes with drain rock as shown on the Drawings. Place backfill around the valve boxes and thoroughly compact to a density equal to that specified

for the adjacent trench and in such a manner that will not damage or displace the valve box from proper alignment or grade. Misaligned valve boxes shall be excavated, plumbed, and backfilled at the Contractor's expense.

3.04 VALVE TESTING

A. All valves shall be tested. Test valve operation under frill design pressure. Valves may be tested while filling the pipe for hydrostatic testing or as a separate step. Pump station valves must open and close smoothly with fill design pressure on upstream side and atmospheric pressure on downstream side. Test mainline valves for smooth operation will frill design hydrostatic pressure on both sides of valve.

B. After hydrostatic test, operate all drain valves under design static hydraulic pressure to verify that they operate correctly. Valves must open and close smoothly and seat watertight. Repair all defective drain valves and retest at design static hydraulic pressure. Additional drain rock and erosion control may be required based on actual flow patterns. During filling, check all air and vacuum valves to verify that they are operating correctly. Operate all service valves (but not isolation valves) on air and vacuum valves, under design hydrostatic pressure to ensure that they open and close smoothly. Repair any defective valves.

END OF SECTION

EAST BRANCH ROAD WATER RELIABILITY AND HANSEN DITCH WATER CONSERVATION PROJECT

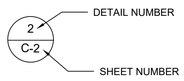
EAST BRANCH RD
WEAVERVILLE, CA

LEGEND

SD	STORM DRAINAGE
W	WATER SERVICE
G	GAS
S	SANITARY SEWER
E	POWER ELECTRICAL
	DITCH / FLOWLINE
	GRADING LIMIT
	GRADE SLOPE
	PROPERTY LINE
	CENTERLINE
	SAWCUT

STANDARD ABBREVIATIONS

AC	ASPHALTIC CONCRETE	IE	INVERT ELEVATION
BLDG	BUILDING	INV	INVERT
BCR	BEGIN CURB RETURN	LA	LANDSCAPE AREA
BVC	BEGIN VERTICAL CURVE	NG	NATURAL GRADE
BW	BOTTOM OF WALL	PA	PLANTER AREA
CB	CATCH BASIN	PCC	PORTLAND CEMENT CONCRETE
C/L	CENTERLINE	P/L	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	POC	POINT OF CONNECTION
CONC	CONCRETE	PS	PARKING STRIPE
DW	DRIVEWAY	PVC	POLYVINYL CHLORIDE
ECR	END CURB RETURN	RW	RIGHT OF WAY
EG	EXISTING GRADE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SG	SUB-GRADE ELEVATION
EVC	END VERTICAL CURVE	SS	SANITARY SEWER
FF	FINISHED FLOOR	TC	TOP OF CURB, CONCRETE
FG	FINISHED GRADE	TF	TOP OF FOOTING
FH	FIRE HYDRANT	TG	TOP OF GRATE
FL	FLOW LINE	TW	TOP OF WALL
FS	FINISHED SURFACE	VC	VERTICAL CURVE
GB	GRADE BREAK		



DETAIL NUMBER

SHEET NUMBER

VICINITY MAP

UTILITY PURVEYORS

ELECTRICITY: TRINITY PUBLIC UTILITIES DISTRICT
26 PONDEROSA LN
WEAVERVILLE, CA 96093
(530) 623 - 5536

PROPANE: CAMPORA PROPANE SERVICES
1766 MAIN ST,
WEAVERVILLE, CA 96093
(530) 623 - 2372

TELEPHONE: FRONTIER COMMUNICATIONS
9415 DESCHUTES RD,
PALO CEDRO CA 96073
(530) 623 - 5051

WATER: WEAVERVILLE COMMUNITY SERVICES DISTRICT (WCSD)
716 MAIN ST.
WEAVERVILLE, CA 96093
(530) 623 -5051

SURVEY NOTES

EXISTING TOPOGRAPHIC AND BOUNDARY INFORMATION SHOWN HEREON

BENCHMARK: (CONTROL POINT 11, UPSTREAM OF 191 DRIVEWAY ON LEFT SIDE OF ROAD HEADING UPSTREAM. MARKED WITH REBAR AND FLAGGING.)

SURVEY MONUMENT PROTECTION:

PROTECT AND PRESERVE, IN PLACE, ALL SURVEY MONUMENTS AND BENCHMARKS. DO NOT DISTURB, MOVE, OR RELOCATE MONUMENTS OR BENCHMARKS WITHOUT THE PRIOR REVIEW AND APPROVAL BY THE AGENCY HAVING JURISDICTION OVER THE MONUMENT OR BENCHMARK. THE CONTRACTOR SHALL CONTRACT WITH A LICENSED SURVEYOR FOR MONUMENTS REQUIRING DISTURBANCE OR REMOVAL, AND THE SURVEYOR SHALL RESET THE MONUMENTS OR PROVIDE PERMANENT WITNESS MONUMENTS AND FILE THE REQUIRED DOCUMENTATION WITH THE AUTHORITY HAVING JURISDICTION, PURSUANT TO ALL APPLICABLE BUSINESS AND PROFESSIONAL CODES.

DIG ALERT

DIG ALERT
DIAL TOLL FREE
811 OR
(1-800-422-4133)
AT LEAST TWO DAYS
BEFORE YOU DIG
UNDERGROUND SERVICE ALERT

PRIOR TO COMMENCING OF ANY EXCAVATION, DIGGING, POT HOLING, ETC. CALL DIG ALERT FOR ASSIGNMENT OF AN INQUIRY ID NUMBER, BECAUSE NO EARTH WORK SHALL COMMENCE UNLESS THE CONTRACTOR HAS OBTAINED THIS AND EACH UTILITY OR OWNER OF SUBSURFACE FACILITIES HAS LOCATED AND MARKED THEIR SUBSURFACE FACILITIES IN THE AREA OF WORK.

SHEET INDEX

5 COUNTIES SALMONID CONSERVATION PROGRAM
40 Horsesshoe Lane,
Weaverville, CA
(530) 623-3967
www.5counties.org

Plan Prepared By:

REGISTERED PROFESSIONAL ENGINEER
ARTHUR REEVE
C059625
EXP 12-31-21
CIVIL
STATE OF CALIFORNIA

EAST BRANCH ROAD WATER RELIABILITY AND HANSEN DITCH WATER CONSERVATION PROJECT

EAST BRANCH RD
WEAVERVILLE, CA 96093

Revisions:

1	.
2	.
3	.
4	.
5	.

Project Engineer: MM Ext: ----
Project Manager: ML
Date: 6/9/2021 Scale: PER PLAN
---- Sheet Size: 24" x 36"

TITLE SHEET

C-0.1

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE WEAVERVILLE COMMUNITY SERVICES DISTRICT.
2. IN THE EVENT OF A CONFLICT BETWEEN ANY REFERENCED STANDARD, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.
3. STORMWATER POLLUTION PREVENTION REQUIREMENTS PER TRINITY COUNTY REQUIREMENTS.
4. A COPY OF THESE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
5. BEFORE BEGINNING WORK, CONTRACTOR SHALL CONFIRM WITH AGENCIES HAVING JURISDICTION THAT ALL REQUIRED PERMITS AND LICENSES HAVE BEEN OBTAINED AND ALL REQUIRED NOTICES GIVEN.
6. UNDERGROUND AND OVERHEAD CONSTRUCTION IN ADDITION TO WHAT IS SHOWN ON THESE PLANS MAY BE PART OF THIS PROJECT, INCLUDING ARCHITECTURAL AND LANDSCAPE ARCHITECTURAL IMPROVEMENTS. ADDITIONAL PERMITS MAY BE REQUIRED.

A. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WORK AND INTERFACING IMPROVEMENTS WITH WORK BY OTHER CONTRACTORS AT THIS JOB SITE AND WITH IMPROVEMENTS REQUIRED BY PLANS BY OTHERS.

8. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE HEALTH AND SAFETY LAWS, ORDINANCES, REGULATIONS, RULES, AND STANDARDS INCLUDING ALL REQUIREMENTS OF THE STATE'S DIVISION OF INDUSTRIAL SAFETY AND OSHA.
9. ALL UNSUITABLE CONSTRUCTION MATERIALS AND RUBBISH AND DEBRIS SHALL BE REMOVED FROM THE JOB SITE; TRANSPORTED TO A SUITABLE LOCATION, AND DISPOSED OF IN A PROPER AND LEGAL MANNER.
10. ALL WORK INVOLVING EXCAVATION, INCLUDING THAT FOR WATER, SEWER, STORM DRAIN AND UTILITY CONDUITS AND ALL SERVICE CONNECTIONS AND METER BOXES SHALL BE COMPLETED AND OBSERVED AND APPROVED BY THE AGENCY HAVING JURISDICTION AND THE STRUCTURAL BACKFILL OBSERVED AND TESTED FOR COMPACTION BEFORE OTHER PERMANENT SURFACE CONSTRUCTION MAY COMMENCE.
11. BEFORE COMMENCING EXCAVATION, CONTRACTOR SHALL CONTACT PUBLIC WORKS AND UTILITY COMPANIES OR OTHER OWNERS OF SUBSURFACE FACILITIES WITHIN THE WORK SITE AND SHALL VERIFY WHETHER OR NOT A REPRESENTATIVE WILL BE PRESENT BEFORE AND/OR DURING EXCAVATION, AND SHALL DETERMINE SITE SPECIFIC REQUIREMENTS FOR EXCAVATION.
12. CONTRACTOR SHALL NOTIFY PUBLIC WORKS, BUILDING AND SAFETY, UTILITY COMPANIES, AND ENGINEER OF RECORD, AT LEAST 48 HOURS BEFORE START OF ANY CONSTRUCTION AND OF THE TIME AND LOCATION OF PRE-CONSTRUCTION CONFERENCE, AND SHALL DETERMINE FROM EACH PARTY THEIR SCOPE OF WORK TO BE OBSERVED AND BY WHOM, AND SCOPE OF TESTING. DURING THE COURSE OF WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR OBSERVATION AND TESTING AS STIPULATED PURSUANT TO ABOVE DETERMINATIONS. WORK NOT OBSERVED AND TESTED WILL BE SUBJECT TO REJECTION.
13. CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN SUCH SHEETING, SHORING, BRACING, AND/OR OTHER PROTECTION AS IS NECESSARY TO PREVENT FAILURE OF TEMPORARY EXCAVATIONS AND EMBANKMENTS AND TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS, TEMPORARY IMPROVEMENTS, AND PARTIALLY COMPLETED PORTIONS OF THE WORK. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SUFFICIENCY OF SUCH SUPPORTS AND/OR OTHER PROTECTION PER ALL REQUIREMENTS OF THE STATE'S DIVISION OF INDUSTRIAL SAFETY AND OSHA.
14. CONTRACTOR SHALL PROMPTLY NOTIFY ENGINEER OF RECORD AND AUTHORITY HAVING JURISDICTION BY TELEPHONE AND IN WRITING UPON DISCOVERY OF, AND BEFORE DISTURBING ANY PHYSICAL CONDITIONS DIFFERING FROM THOSE REPRESENTED BY APPROVED PLANS AND SPECIFICATIONS.
15. CONTRACTOR SHALL MAINTAIN A COMPLETE AND ACCURATE RECORD OF ALL CHANGES OF CONSTRUCTION FROM THAT SHOWN ON THESE PLANS AND SPECIFICATIONS FOR THE PURPOSE OF PROVIDING A BASIS FOR CONSTRUCTION OF RECORD DRAWINGS. NO CHANGES SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER OF RECORD AND AUTHORITY HAVING JURISDICTION. UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL DELIVER THIS RECORD OF ALL CONSTRUCTION CHANGES TO ENGINEER ALONG WITH A LETTER WHICH DECLARES THAT, OTHER THAN THESE NOTED CHANGES, "THE PROJECT WAS CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS."
    WARNING: ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY PREPARER.
16. CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONALS HARMLESS FROM ALL LIABILITY AND CLAIMS, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT AND ACCEPTS LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONALS.
17. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL AND SAFETY AND SHALL FURNISH, INSTALL, AND MAINTAIN SUCH FENCING, SIGNS, LIGHTS, TRENCH PLATES, BARRICADES, AND/OR OTHER PROTECTION AS IS NECESSARY FOR SAID CONTROL AND SAFETY.
18. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR PROTECTION OF PUBLIC AND PRIVATE PROPERTY AT OR IN THE VICINITY OF THE JOB SITE AND FURTHER AGREES TO, AT CONTRACTOR'S EXPENSE, REPAIR OR REPLACE TO ORIGINAL CONDITION, ALL EXISTING IMPROVEMENTS WITHIN OR IN THE VICINITY OF THE JOB SITE WHICH ARE NOT DESIGNATED FOR REMOVAL AND WHICH ARE DAMAGED OR REMOVED AS A RESULT OF CONTRACTOR'S OPERATIONS.

TRENCHING AND BACKFILL NOTES:

1. ALL TRENCHING, BEDDING AND BACKFILL MATERIAL AND CONSTRUCTION, SHALL BE IN ACCORDANCE WITH THESE PLANS INCLUDING THE PIPE TRENCH DETAIL.
2. TRENCH OR STRUCTURE EXCAVATION SUBGRADE SHALL BE OBSERVED BY THE ENGINEER PRIOR TO PLACEMENT OF BEDDING MATERIAL OR FORMS. WET OR UNSTABLE SOIL ENCOUNTERED IN THE BOTTOM OF THE EXCAVATION AND DEEMED BY THE ENGINEER TO BE INCAPABLE OF PROPERLY SUPPORTING THE PIPE OR STRUCTURE BEING CONSTRUCTED, SHALL BE REMOVED TO THE DEPTH RECOMMENDED BY THE ENGINEER AND THE EXCAVATION BACKFILLED TO THE BOTTOM OF THE PIPE OR STRUCTURE GRADE WITH SUITABLE MATERIAL RECOMMENDED BY THE ENGINEER.
3. BEDDING AND BACKFILL MATERIAL AND COMPACTED DENSITY, SHALL BE TESTED FOR COMPLIANCE WITH APPLICABLE REQUIREMENTS.
4. BEDDING AND PIPE ZONE BACKFILL MATERIAL, SHALL BE COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DENSITY. TRENCH BACKFILL SHALL BE COMPACTED TO NOT LESS THAN 90% OF MAXIMUM DENSITY. THE UPPER 12" BELOW THE BASE OR SUB-BASE COURSE IN PAVED AND OTHER TRAFFIC AREAS AND BELOW THE CONCRETE OR SAND COURSE IN WALKWAY AREAS SHALL BE COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DENSITY. BACKFILL COMPACTION SHALL BE TESTED FOR COMPLIANCE WITH THESE REQUIREMENTS IN ACCORDANCE WITH ASTM D-1557, LATEST REVISION, AND REPORTED BY THE GEOTECHNICAL ENGINEER.
5. CLASS I OR CLASS II (TRENCH) BACKFILL SHALL NOT BE PLACED UNTIL BEDDING AND INITIAL (PIPE ZONE) BACKFILL HAVE BEEN OBSERVED, TESTED AND APPROVED.
6. COMPACTION BY FLOODING OR JETTING IS NOT PERMITTED.
7. CONTRACTOR SHALL MAKE HIS OWN DEDUCTIONS AND CONCLUSIONS AS TO HOW EXISTING SURFACE AND SUB-SURFACE CONDITIONS WILL AFFECT OR BE AFFECTED BY HIS CONSTRUCTION OPERATIONS, INCLUDING THE NATURE OF MATERIALS TO BE EXCAVATED, THE DEGREE OF DIFFICULTY ASSOCIATED WITH MAKING AND MAINTAINING THE REQUIRED EXCAVATIONS, AND THE DEGREE OF DIFFICULTY WHICH MAY ARISE FROM SUBSURFACE CONDITIONS INCLUDING GROUNDWATER, AND SHALL ACCEPT FULL RESPONSIBILITY THEREOF.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THE INTEGRITY OF EXISTING PAVEMENT ALONG AND BEHIND THE TRENCH SAWCUT LINES DURING CONSTRUCTION. IF THIS PAVEMENT IS BROKEN-OFF OR OTHERWISE DAMAGED BEFORE NEW PAVEMENT IS PLACED, CONTRACTOR SHALL SAWCUT A NEW CONFORM LINE PARALLEL WITH, FULL LENGTH OF, AND SUFFICIENT DISTANCE (1-FOOT MINIMUM) BEHIND ORIGINAL SAWCUT SO AS TO REMOVE DAMAGED PAVEMENT AND / OR IRREGULARITY ALONG THE CONFORM LINE.
9. MEANS AND METHODS OF INSTALLING PIPELINE ARE UP TO DISCRETION OF CONTRACTOR.

USE OF PLANS:

THIS DRAWING IS PROVIDED IN AN ELECTRONIC FORMAT AS A COURTESY, IF REQUESTED BY THE USER. THE DELIVERY OF THE ELECTRONIC FILE DOES NOT CONSTITUTE THE DELIVERY OF OUR PROFESSIONAL WORK PRODUCT. THE SIGNED HARD COPY PREPARED FOR THE PROJECT CONSTITUTES OUR PROFESSIONAL WORK PRODUCT AND THE HARD COPY MUST BE REFERRED TO FOR THE CORRECT DESIGN INFORMATION. THESE PLANS HAVE BEEN PREPARED SOLELY FOR USE FOR THE PROJECT SCOPE AND SITE SPECIFICALLY IDENTIFIED HEREON AT THE TIME THESE PLANS ARE SIGNED. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, USE OF ANY PART OF THESE PLANS, INCLUDING ANY NOTE OR DETAIL, FOR ANY UNAPPROVED OR REVISED PROJECT SCOPE, OR FOR ANY OTHER PROJECT AT THIS OR ANY OTHER SITE. USER AGREES TO INDEMNIFY AND HOLD HARMLESS ASHLEY & VANCE FOR ALL COSTS AND DAMAGES IF USED.

USE OF ELECTRONIC INFORMATION:

ELECTRONIC INFORMATION MAY BE PROVIDED BY THE ENGINEER FOR CONVENIENCE; UNDER NO CIRCUMSTANCES SHALL DELIVERY OF ELECTRONIC FILES FOR USE BY OTHERS BE DEEMED A SALE BY THE ENGINEER AND THE ENGINEER MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE. IN NO EVENT SHALL THE ENGINEER BE LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES AS A RESULT OF THE USE OR REUSE OF THE ELECTRONIC FILES BY OTHERS.

ELECTRONIC INFORMATION IS INTENDED TO PROVIDE INFORMATION SUPPLEMENTAL AND SUBORDINATE TO THE CONSTRUCTION CONTRACT DOCUMENTS. LAYOUT AND CONSTRUCTION OF PROJECT ELEMENTS SHALL BE BASED ON DIMENSIONS AND INFORMATION INCLUDED ON THE SIGNED AND SEALED CONSTRUCTION CONTRACT DOCUMENTS WHICH SHALL CONTROL OVER ELECTRONIC INFORMATION. USER IS RESPONSIBLE FOR CONFIRMING LOCATION OF PROPOSED IMPROVEMENTS BASED ON DIMENSIONS AND INFORMATION INCLUDED ON THE CONSTRUCTION CONTRACT DOCUMENTS; INCONSISTENCIES BETWEEN THE ELECTRONIC INFORMATION AND THE CONSTRUCTION CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO CONSTRUCTION.

PROJECT ELEMENTS SUCH AS MANHOLES, CATCH BASINS, UTILITY VAULTS, VALVE ASSEMBLIES, STAIRS, RAMPS, WALLS, ETC. ARE SHOWN SCHEMATICALLY IN THE ELECTRONIC INFORMATION AND CONSTRUCTION OF THESE ELEMENTS SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION NOTES AND DETAILS PRESENTED OR REFERENCED IN THE SIGNED AND SEALED CONSTRUCTION CONTACT DOCUMENTS. IMPROVEMENTS CONSTRUCTED BASED ON ELECTRONIC INFORMATION AND IN CONFLICT WITH THE DRAWING DIMENSIONS DETAILS, AND THE CONSTRUCTION CONTRACT DOCUMENTS SHALL BE REMOVED AND CONSTRUCTED IN THE PROPER LOCATION AND DIMENSIONS AT CONTRACTOR'S SOLE EXPENSE.

DIGITAL DRAWINGS ARE TYPICALLY A COMPILATION OF DRAWINGS FROM A NUMBER OF SOURCES AND, AS SUCH, THERE IS INFORMATION IN THE ELECTRONIC FILE ISSUED BY THE ENGINEER THAT WAS NOT DEVELOPED BY THE ENGINEER AND IS NOT AUTHORIZED BY THE ENGINEER FOR USE BY OTHERS. ELECTRONIC INFORMATION PROVIDED BY THE ENGINEER SHALL ONLY BE APPLICABLE FOR IMPROVEMENTS DESIGNED BY THE ENGINEER AND WHICH ARE SPECIFICALLY DESIGNATED BY CONSTRUCTION NOTES AND/OR DETAILS ON THE SIGNED AND SEALED CONTRACT DOCUMENTS.

IF DIGITAL FILES ARE OBTAINED WITH THE INTENT TO USE THEM FOR PROJECT STAKING, THEY SHALL ONLY BE USED BY A QUALIFIED ENGINEER OR LAND SURVEYOR. DIGITAL INFORMATION SHALL ONLY BE USED FOR STAKING HORIZONTAL LOCATION OF PROPOSED IMPROVEMENTS AFTER IT HAS BEEN CONFIRMED WITH THE SIGNED AND SEALED CONSTRUCTION CONTRACT DOCUMENTS.

THE DIGITAL DRAWINGS ARE NOT INTENDED TO BE USED DIRECTLY FOR CONTROL OF CONTRACTOR'S GRADING OPERATIONS WITHOUT STAKING BY ENGINEER OR LAND SURVEYOR. THE INTERSECTION OF PROPOSED CUT AND FILL SLOPES WITH EXISTING GRADE IS APPROXIMATE WHERE SHOWN ON THE DRAWINGS AND SHALL BE CONFIRMED BY FIELD STAKING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT SLOPES IN CONFORMANCE WITH THE SPECIFIED AND DETAILED REQUIREMENTS CONTAINED IN THE CONTRACT DOCUMENTS.

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EAST BRANCH ROAD WATER RELIABILITY AND HANSEN DITCH WATER CONSERVATION PROJECT

EAST BRANCH RD
WEAVERVILLE, CA 96093

Revisions:	
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Project Manager: ML	
Date: 6/9/2021	Scale: PER PLAN
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NOTES SHEET

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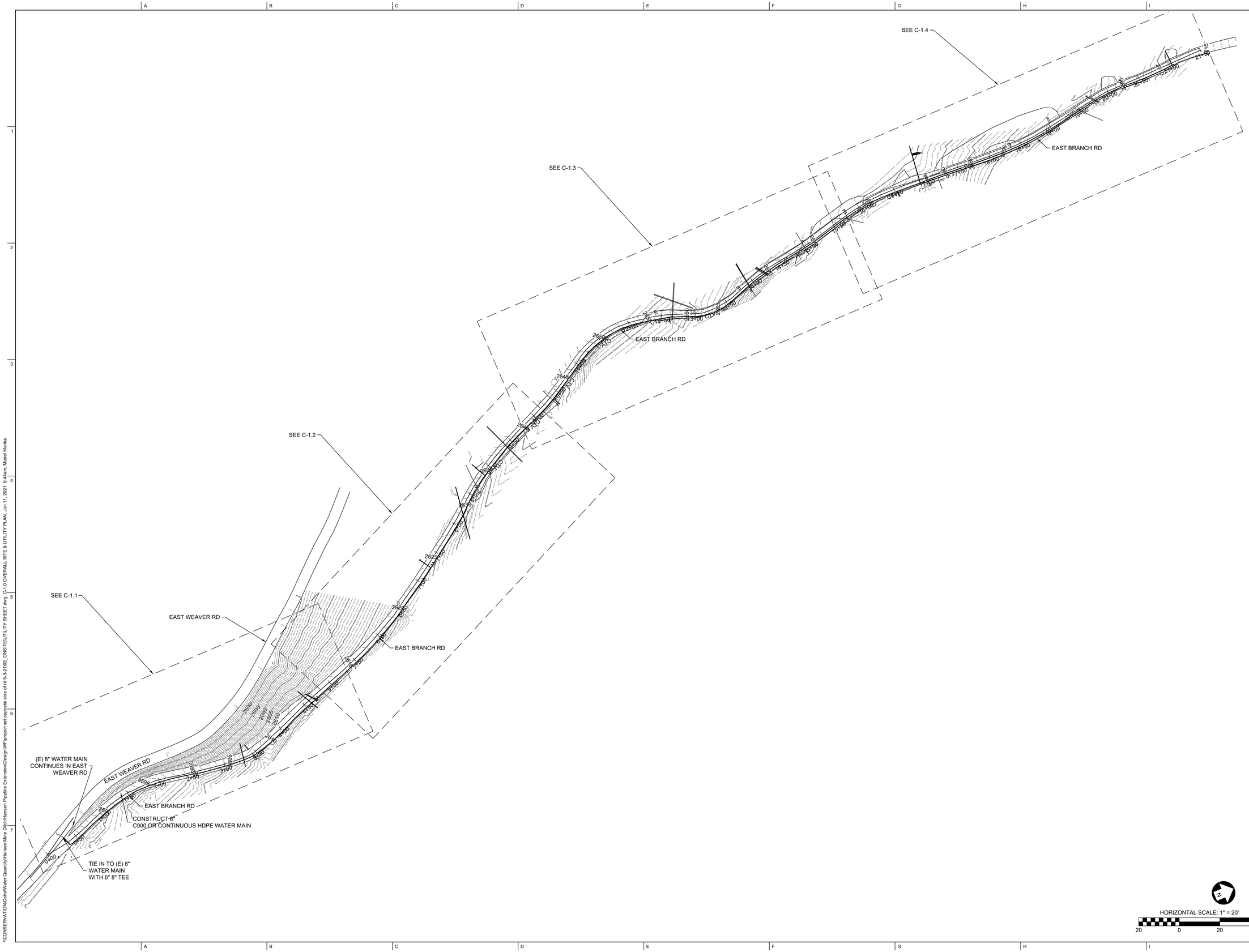

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OVERALL SITE & UTILITY PLAN

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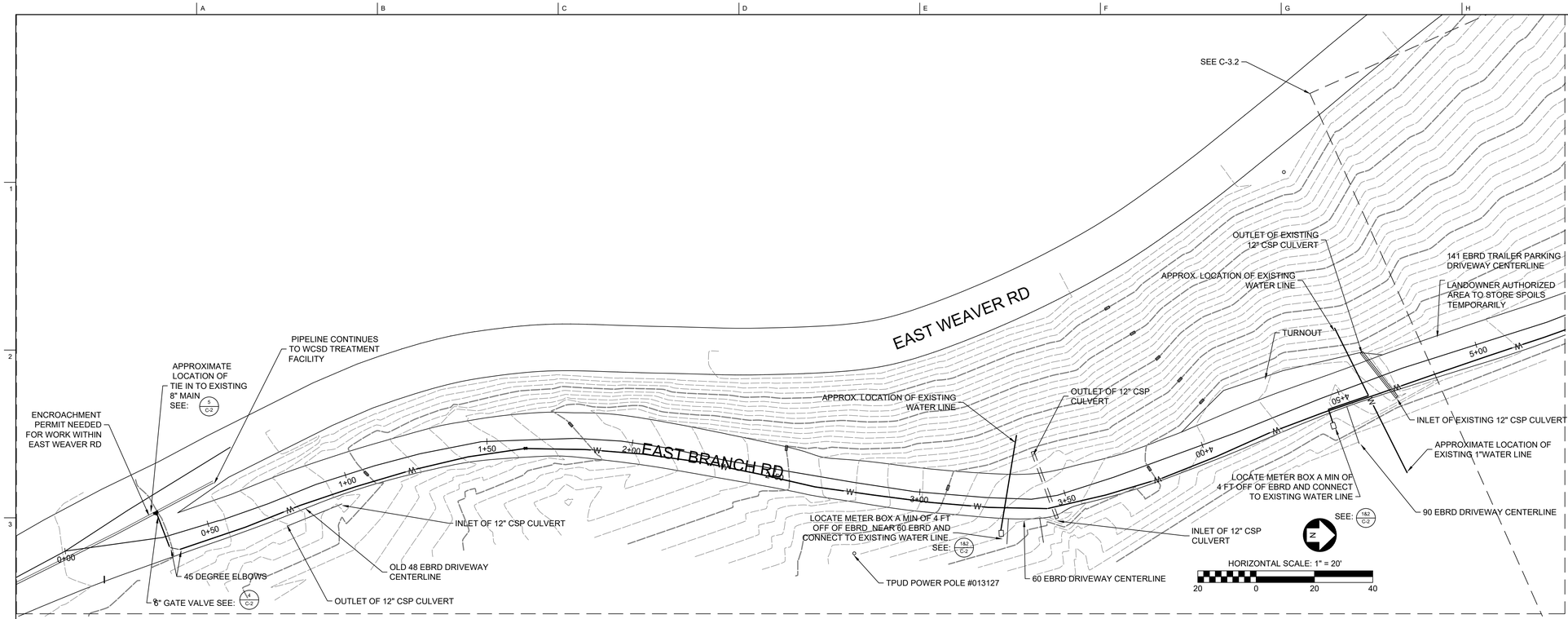

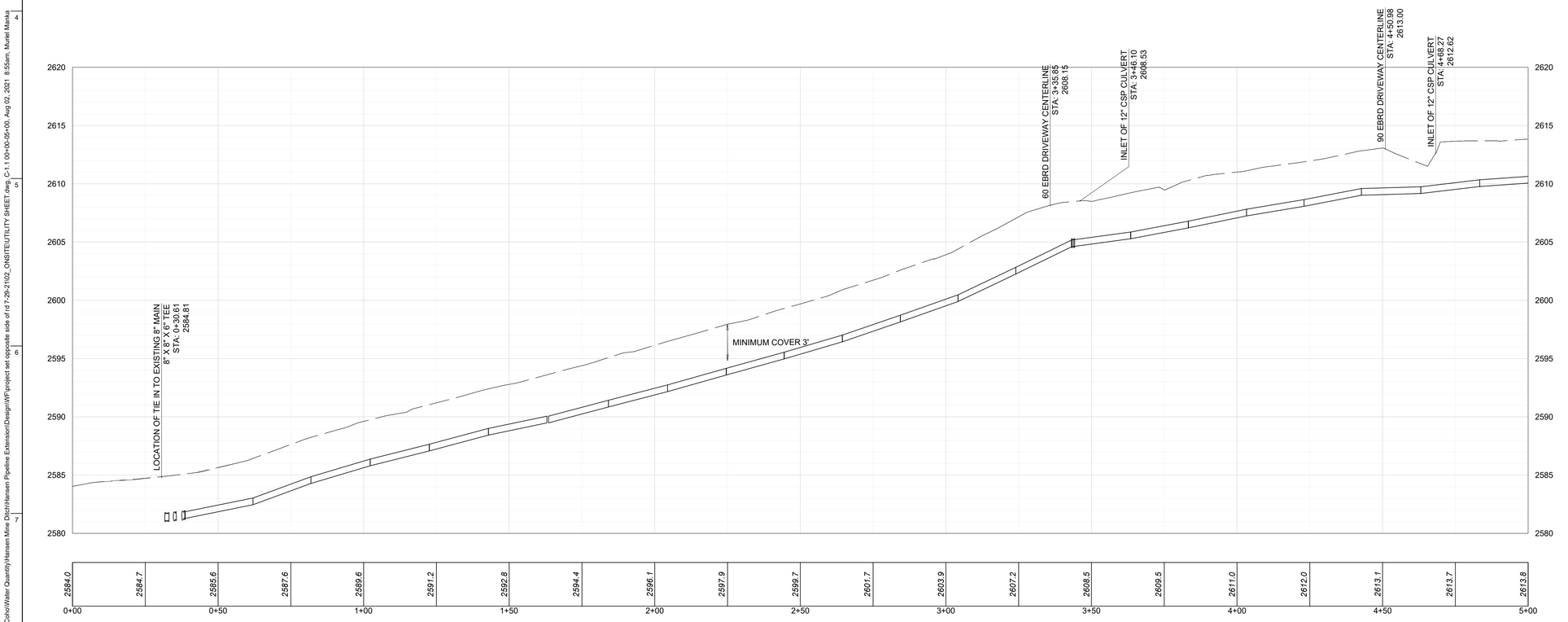

1 EAST BRANCH RD PROFILE STA: 0+00 - 5+00
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

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EAST BRANCH PLAN AND PROFILE
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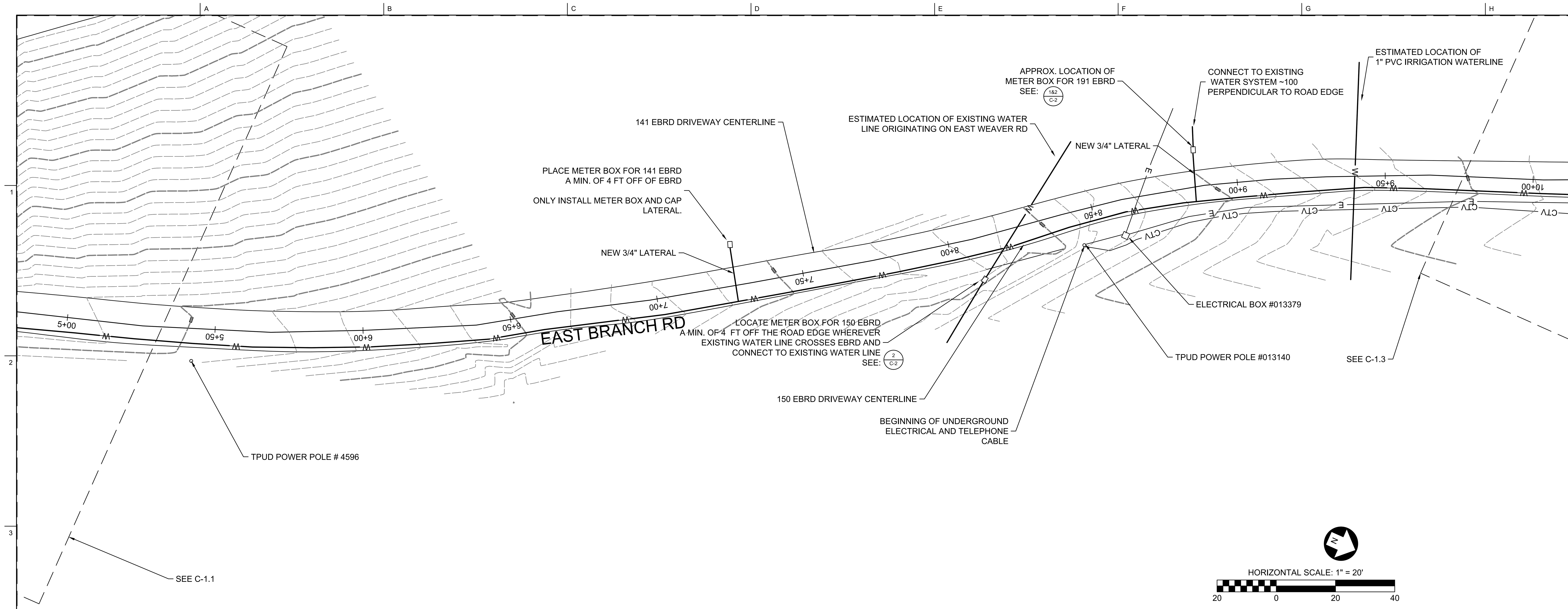

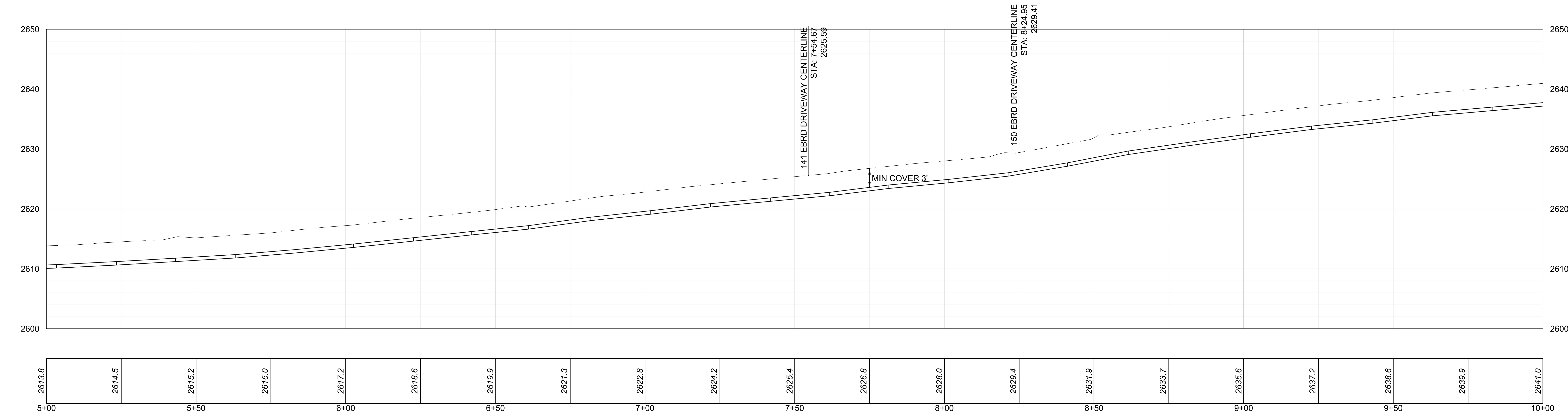

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HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

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EAST BRANCH PLAN AND PROFILE
05+00 - 10+00

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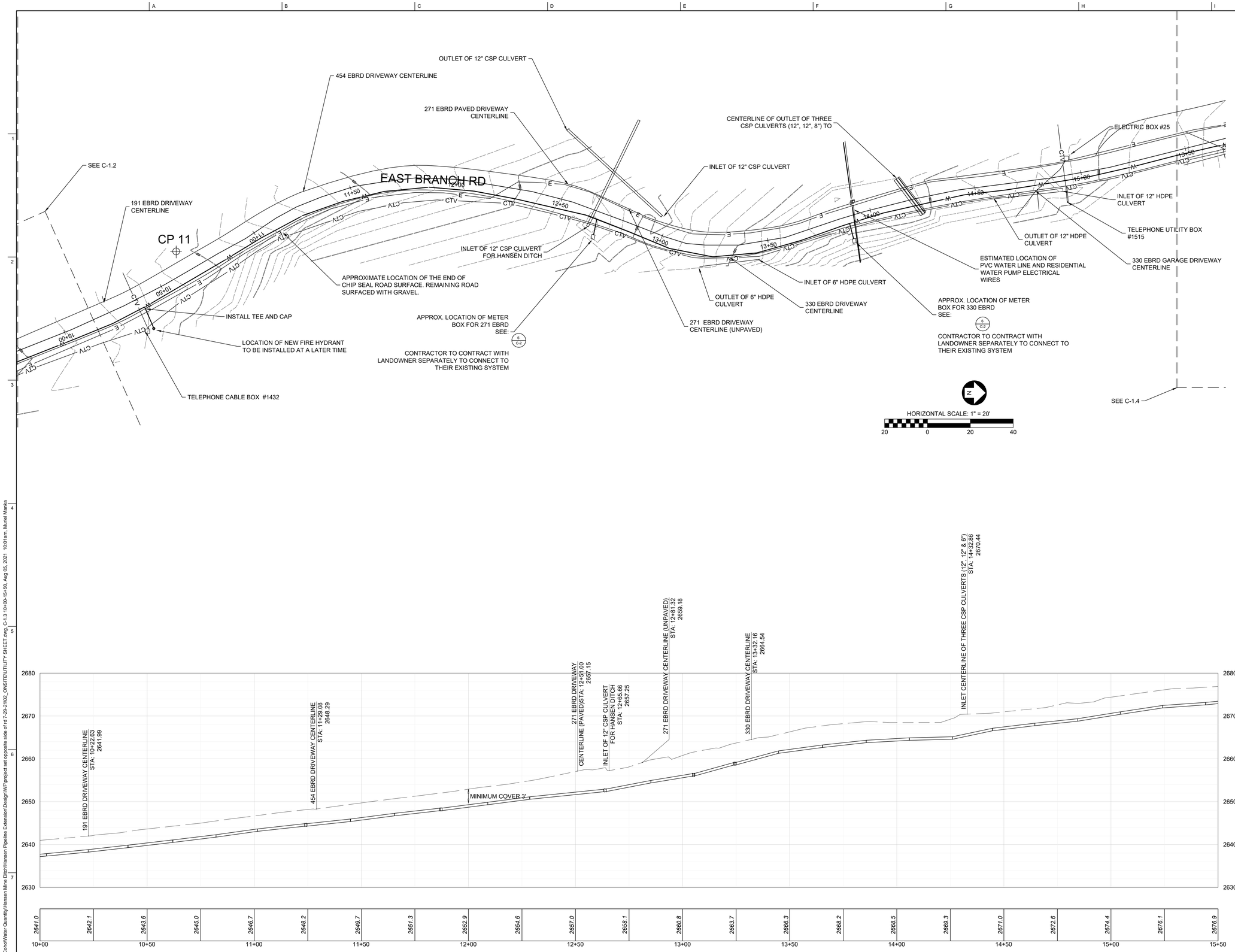

3 EAST BRANCH RD PROFILE STA: 10+00 - 15+50
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

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EAST BRANCH PLAN & PROFILE
10+00 - 15+00

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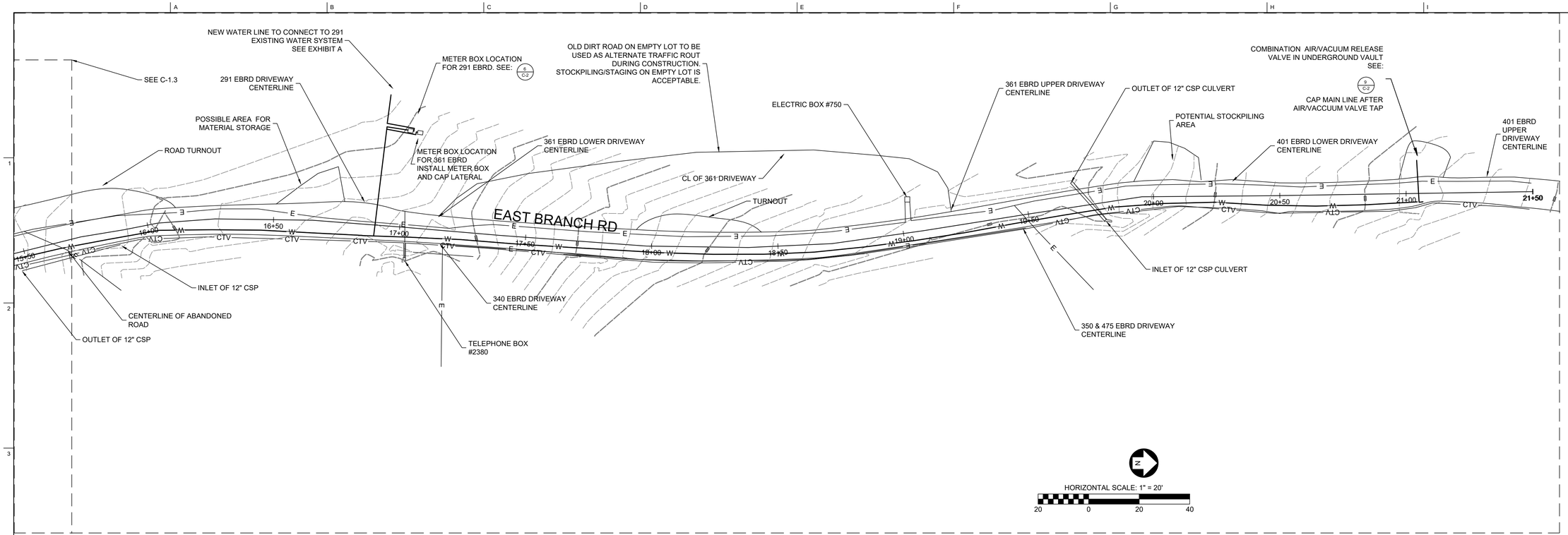

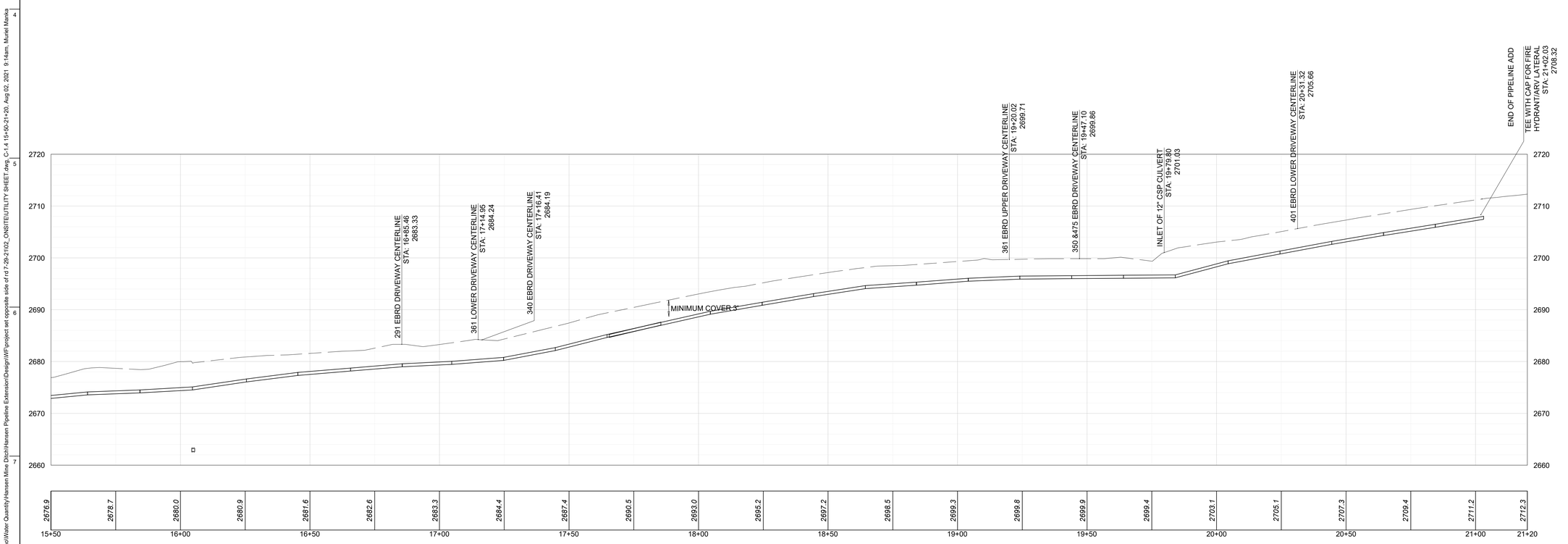

4 EAST BRANCH RD PROFILE STA: 15+50 - 21+20

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

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EAST BRANCH PLAN AND PROFILE 15+00 - 21+20

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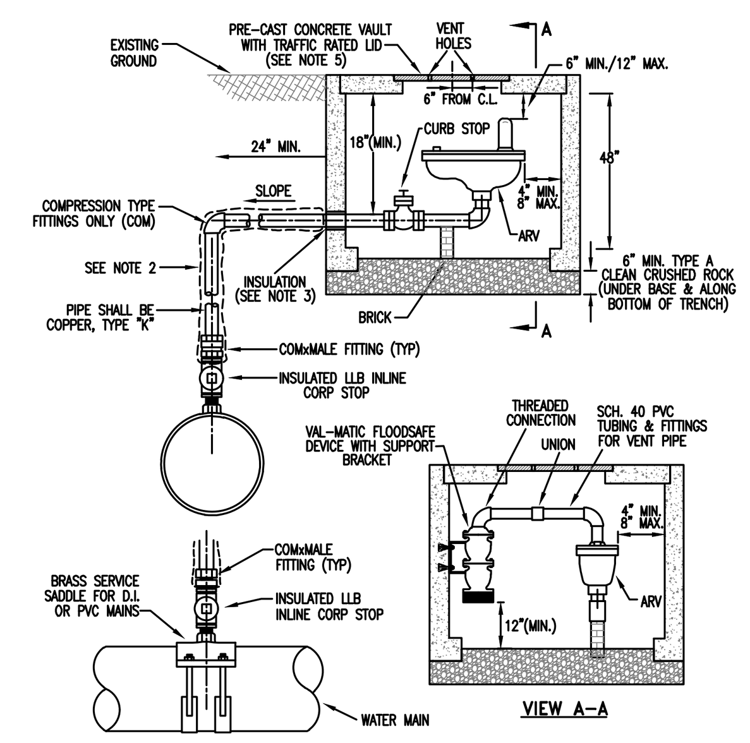
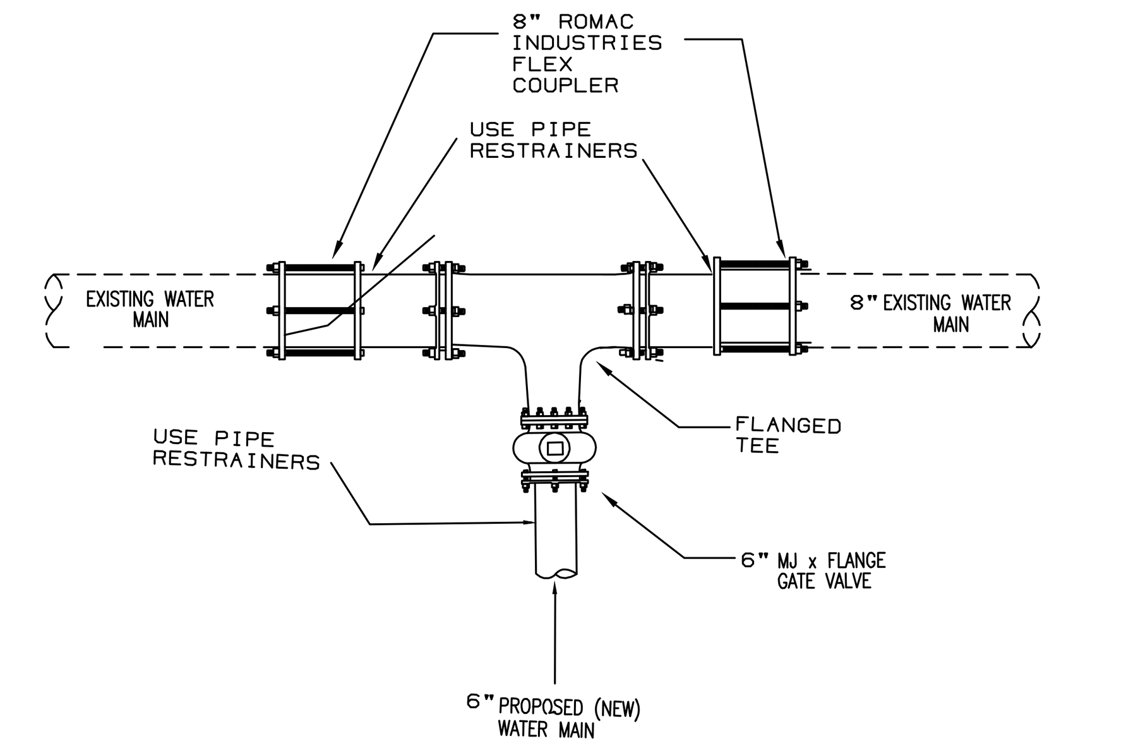
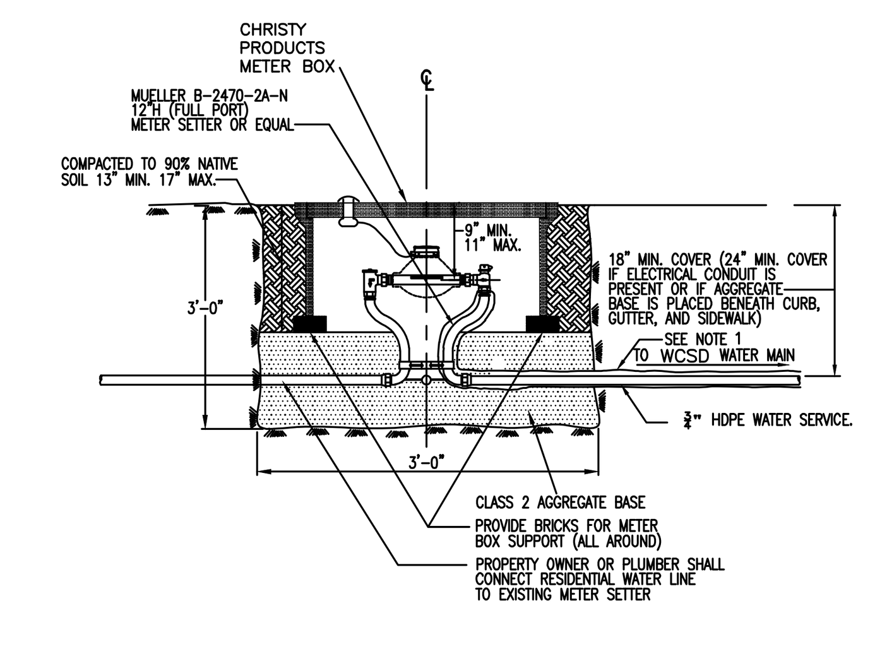


NOTES:
1. MAINTAIN A SLOPE UPWARD FROM CORP. STOP TO AIR VALVE. (NO TRAPS)
2. 6 MIL POLYETHYLENE ENCASEMENT WITH 10 MIL TAPE IS REQUIRED FOR ALL UNDERGROUND COPPER TUBIN
3. 3/32"x6" POLYETHYLENE FOAM WRAP REQUIRED THREE WRAPS AROUND THE PIPE.
4. PIPE AND FITTINGS BETWEEN WATER MAIN AND ARV SHALL BE COPPER AND BRASS ONLY.
5. VAULT SHALL BE JENSEN PRE-CAST DESIGN, OR APPROVED EQUAL. WHEN VAULT IS WITHIN VEHICULAR TRAFFICKED RIGHT-OF-WAY, LID SHALL BE A REMOVABLE TOP SLAB WITH A 36" DIAMETER RING & COVER



NOTE:
ALL INSTALLATIONS REQUIRE A SHUT DOWN AND DEWATERING OF THE EXISTING WATER MAIN.



NOTE:
1. 6 MIL POLYETHYLENE WRAP WITH 10 MIL TAPE IS REQUIRED ON COPPER SERVICE (ONLY).
3. FOR STREETS INSTALLATIONS, METER BOXES SHALL BE CONSTRUCTED OF AN H20 TRAFFIC RATED (PER AASHTO-H20 LOAD TEST) CONCRETE MATERIAL AND SHALL MEET THE CAL TRANS No. 5T OR 6T STATE SPECIFICATION. LIDS SHALL BE H20 RATED.
4. ALLEYS AND UNIMPROVED STREET SHALL HAVE A TIER 22 BOX AND COVER FOR ALL 1" TO 2" METERS.

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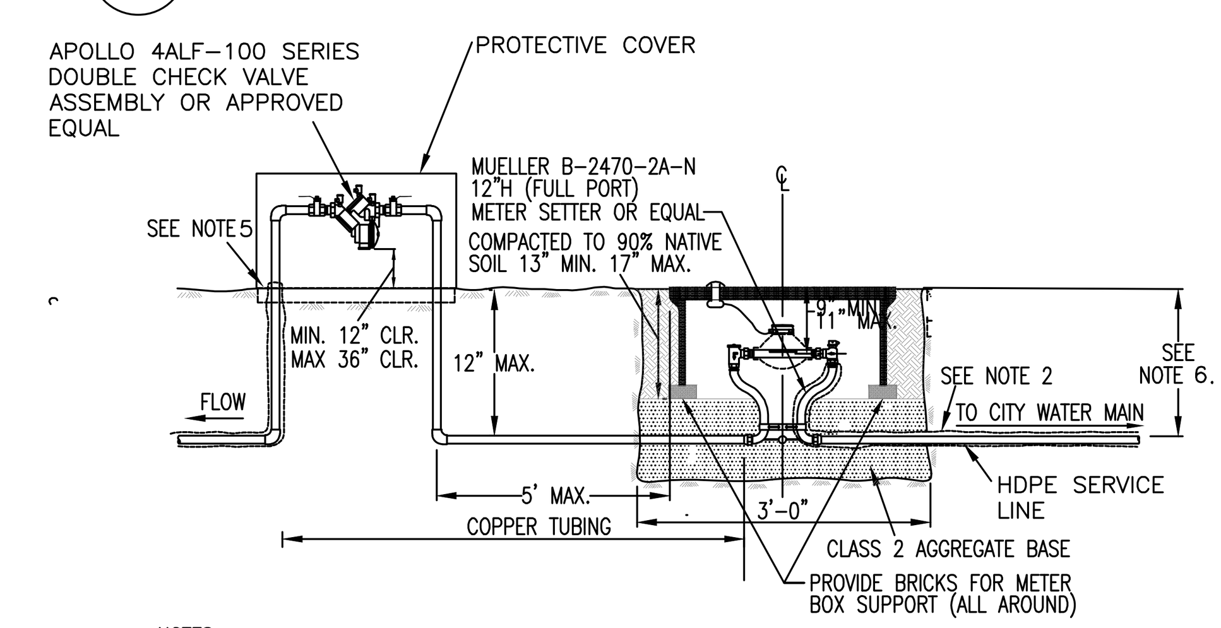
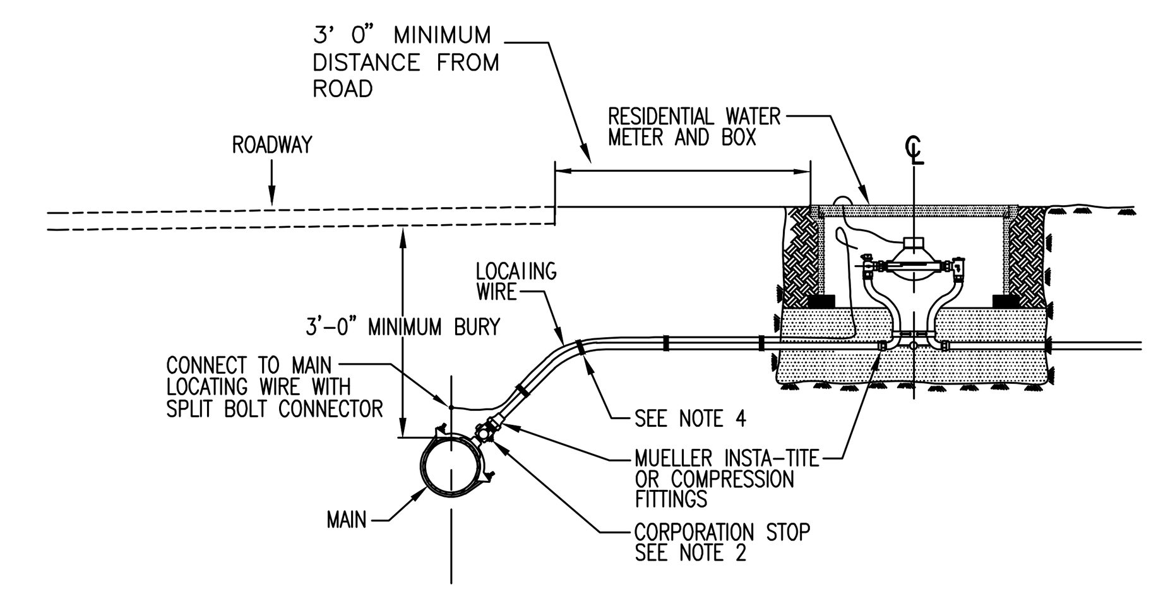
9 AIR RELEASE VALVE DETAIL

5 EXISTING WATER MAIN TIE IN

1 METER DETAIL (NTS)



NOTES:
1. INSTALLATION AND TESTING SHALL BE IN ACCORDANCE WITH THE CURRENT CROSS CONNECTION CONTROL POLICY.
2. REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLIES SHALL BE CONNECTED TO CITY WATER AND TESTED PRIOR TO BEING PLACED INTO SERVICE.
3. THE BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED ABOVE GROUND, IN A HORIZONTAL AND LEVEL POSITION. THE ASSEMBLY SHALL BE LOCATED ON THE CUSTOMER'S SIDE AND NO FURTHER THAN FIVE (5) FEET FROM THE POINT OF SERVICE OR THE METER.
4. OUTLETS, TAPS, TEES, OR CONNECTIONS BETWEEN THE WATER MAIN AND BACKFLOW PREVENTER ARE NOT ALLOWED.
5. CONCRETE PAD IS RECOMMENDED IF ASSEMBLY IS PLACED WITHIN A PROTECTIVE ENCLOSURE.
FREEZE BAGS ARE RECOMMENDED FOR FREEZE PROTECTION.
6. 18" MIN. COVER (24" MIN. COVER IF ELECTRICAL CONDUIT IS PRESENT OR IF AGGREGATE BASE IS PLACED BENEATH CURB, GUTTER, AND SIDEWALK).



NOTES:
1. COPPER TUBING SIZE HDPE PIPE AND METER SETTER TO BE SAME SIZE AS CORPORATION STOP.
2. SEE DETAIL 3 FOR DETAIL OF CONNECTION TO MAIN.
3. LOCATING WIRE TERMINATING IN METER BOX SHALL EXTEND INSIDE BOX A MINIMUM OF 10".
4. CONNECT LOCATING WIRE TO HDPE USING 10 MIL TAPE @ 3' INTERVALS.

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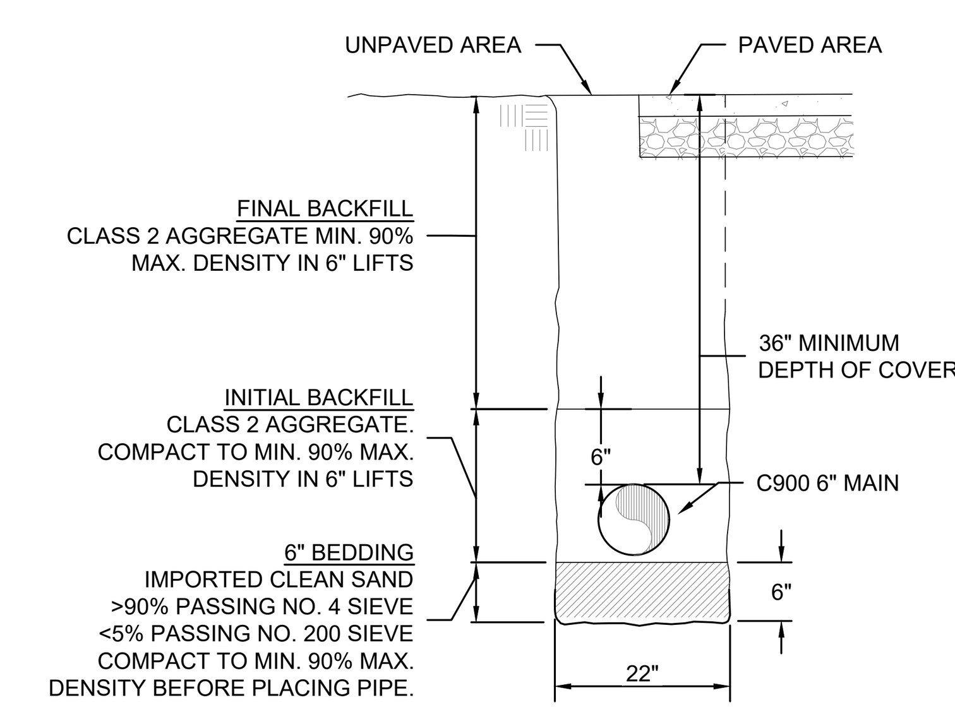
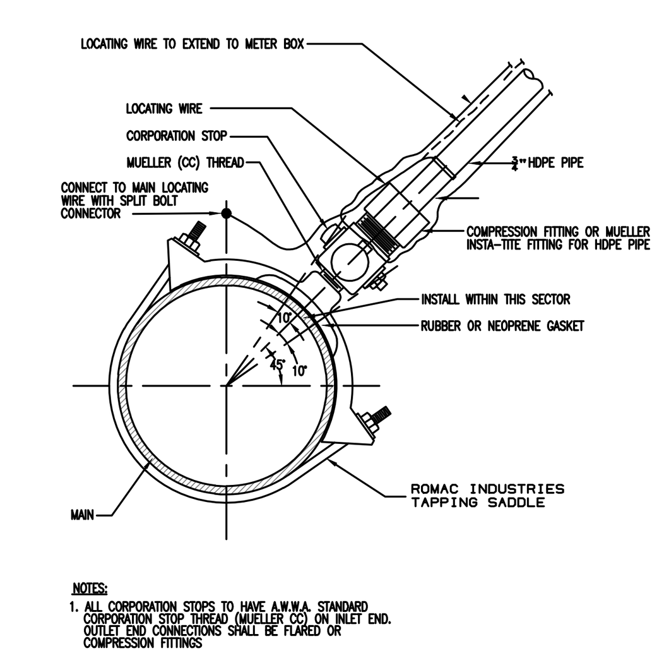
6 BACKFLOW PREVENTER AND METER BOX SET UP

2 HDPE SERVICE (NTS)





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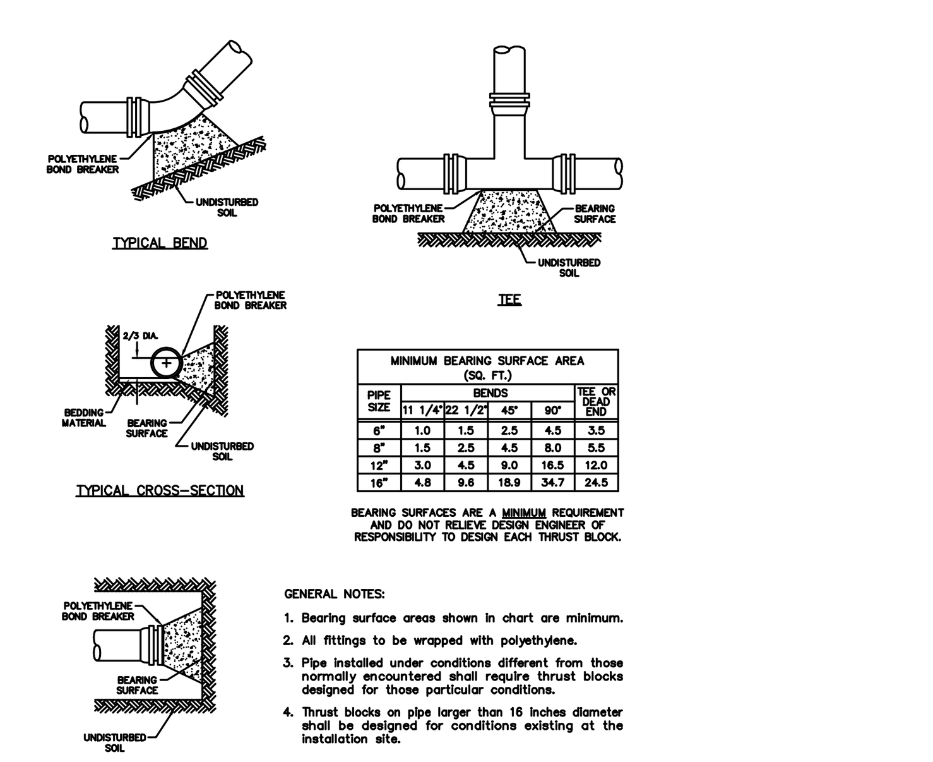
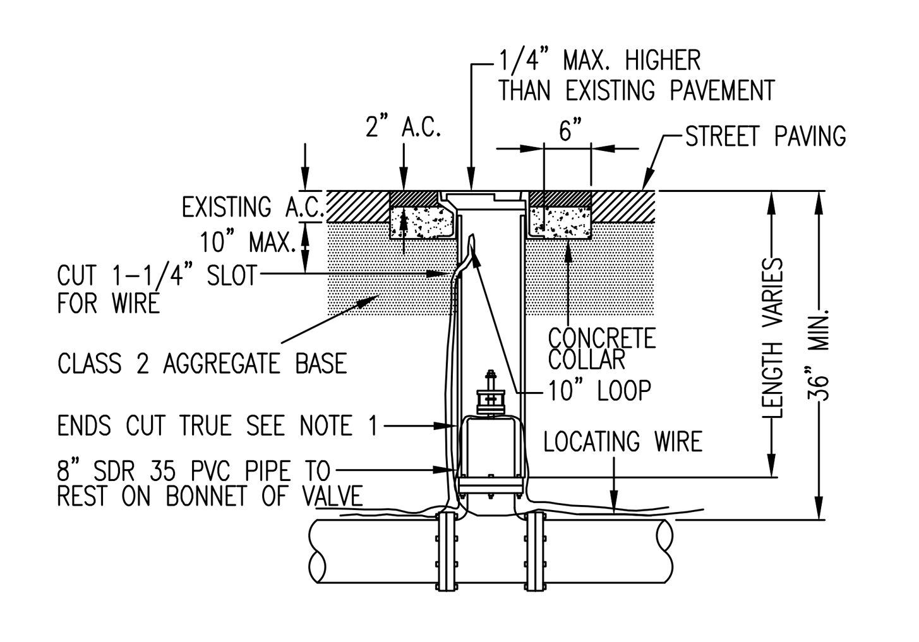
7 WATER MAIN TRENCH CROSS SECTION

3 MAIN TAPPING DETAIL (NTS)





NOTE:
1. ONE (1) CONTINUOUS PIECE
2. NUT EXTENSION REQUIRED WHEN VALVE NUT IS IN EXCESS OF 30 BELOW FINISH GRADE.

20

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8 THRUST BLOCK DETAIL

4 VALVE BOX IN PAVED STREET OR EASEMENT

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DETAIL SHEET

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EXHIBIT A
291 WATER CONNECTION

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