



WATER
STANDARD SPECIFICATIONS AND DETAILS

AUGUST 2024

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Section 1: General

These Standard Specifications and Details provide minimum Standards and guide the design and construction of water system improvements within Twain Harte Community Services District (District) that are to be dedicated to the public and accepted by the District for maintenance or operation. These Standard Specifications and Details shall apply to regulate and guide construction of water supply facilities and related public improvements within the jurisdiction of the District.

Work on public water distribution mains and on public water services shall be constructed by a licensed contractor, subject to inspection by the District, or by District personnel. The contractor shall follow all applicable District, County, State and Federal laws and regulations relating to construction of improvements.

Improvements for acceptance by the Twain Harte Community Services District shall be installed in accordance with the approved improvement plans and specifications and these Standard Specifications and Details. In addition, work within the County road right-of-way shall be done to Tuolumne County requirements.

1.1 Related Documents

These criteria and standards are in addition to the requirements of the following District documents:

- District Water Code.
- Policy and Procedure Manual:
 - Miscellaneous Fee Schedule
 - Encroachment Permits
 - Construction Code Enforcement
 - Other related District Policies

1.2 Definitions

Terms used in this document are as defined in District's Water Code.

1.3 Order of Precedence

Project specific conditions of approval, plans and specifications shall take precedence. The following order of precedence shall apply should conflicts arise between these Standard Specifications and Details and other project documents:

- Project-specific conditions of approval by the Twain Harte Community Services District shall take precedence over these Standard Specifications and Details.
- These Standard Specifications and Details shall take precedence over all other documents for materials, installation and testing of facilities to be dedicated to the Twain Harte Community Services District.
- All other public works shall comply with the standards of the local permitting jurisdiction.

1.4 Periodic Updates and Modifications

The District may from time to time update or otherwise modify these standards. The user is responsible to confirm with the District that they are using the current standards subject to all updates and modifications prior to proceeding with a design submittal or application to the District for plan check and review. Failure to obtain and use the current standards may result in the rejection of a submittal and necessitate resubmittal at additional cost to the applicant.

1.5 Rights-of-Way

The extension or improvement of District water facilities shall be located only on land owned by the District in fee, in streets with an acceptable encroachment permit, existing public utility easements, or in an easement granted to the District. The applicant shall convey or grant to the District without cost such land and/or easements the District determines necessary for the facilities. The District may also require an easement for future extensions. Land conveyed to the District shall be free and clear of liens or encumbrances except encumbrances of record that are acceptable to the District.

An easement shall be granted to the District along the entire length of the Applicant's parcel except in cul-de-sacs, dead-end roadways or other situations where the District determines that the pipeline may terminate and remote service be provided.

Public utility easements shall be continuously maintained by the County, property owners' associations or others where the utilities and easements are not located in a publicly maintained road right-of-way.

The minimum permanent easement width shall be 20 feet; 10-feet each side of water main. Any needed temporary construction easements shall be obtained and paid for by the Applicant. Under extraordinary circumstances, the District's General Manager, in his/her sole discretion, may allow a smaller easement width. In no case shall it be less than 12 feet.

Section 2: Design Criteria

Design to these criteria without consideration to the actual project conditions does not guarantee plan approval. These Standards shall be considered minimum design criteria. The actual design parameters shall be established by the designer based on site-specific conditions. Design of any water system components not specifically addressed within the design criteria below shall be closely coordinated with and approved by the District.

2.1 Applicable Standards

The most current pertinent requirement of the following agencies and standards shall apply to design of water system components:

- Environmental Protection Agency Drinking Water Regulations
- Laws, codes and standards of the State of California, Water Resources Control Board relating to domestic water supply.
- General Order No. 103 of the California Public Utilities Commission.
- Title 17, Chapter V, Sections 7583 – 7605, California Administrative Code regarding cross-connections and backflow prevention.
- California Fire Code.

In case of conflict between the requirements of these water system standards with the agencies and documents listed above, the District's standards shall govern unless otherwise approved in writing by the District or the District's Consulting Engineer.

2.2 Location of New Facilities

The location of new District facilities is subject to the District's approval of alignment, accessibility and safety of the facilities. All distribution main extensions shall extend to the far property line of the developed property and shall not dead-end unless specifically authorized by the District. Distribution mains shall abut all parcels served.

A public water service shall be installed for each proposed lot in any subdivision or tract. The District shall have final approval of location of water services relative to the property corners

2.3 Water Supply Pressure

Water distribution systems shall be designed in accordance with the District's Water Code. Normal operating pressures shall not be less than 20 pounds per square inch (psi) at the meter for each District customer. Water distribution systems shall also be designed to support and maintain existing normal operating systems that may range between 20 psi to 165 psi. During periods of maximum day plus fire flow demand and/or peak hour demand, the pressure shall not be less than 20 psi within the distribution system. Pressure regulators/reducers shall be installed at meters or locations where operating pressure is greater than 80 psi.

2.4 Design Flows

Water demand and flow determination shall be based upon the most recent zoning unless growth in the area has experienced trends toward population concentration greater than present zoning

allows. If the population trend exceeds present zoning, an estimate shall be made of the probable extent of such concentration and used as the basis for determining the water demand and pipeline flow rate.

2.4.1 Residential Demand

Water demand for residential units shall be determined from maximum potential build out of the tributary area and based on 2.5 persons per housing equivalent (HE) and 60 gallons per day (gpd) per person (equal to 150 gpd per HE).

- Average Day: Water use on average day shall be 150 gallons per day (gpd) per HE.
- Maximum Day: Water use on maximum day shall be 375 gpd per HE, based on a peaking factor of 2.5.
- Peak Hour: Water use for a maximum hour will be 600 gpd per HE, based on a peaking factor of 4.

2.4.2 Non-Residential Demands

Design flows for non-residential uses shall be determined based upon the fixture unit demand for the facility, in accordance with the Uniform Plumbing Code requirements.

2.4.3 Fire Flow Demands

Required fire flows shall be determined by the California Fire Code and the District Fire Code. Design shall assume fire flow demands to occur during maximum day flow conditions.

2.5 Distribution Mains

2.5.1 Size

Distribution mains shall be sized so that the minimum pressure requirements are met, and maximum velocities do not exceed 5 feet per second (fps) for the maximum day scenario, and 10 feet per second for maximum day plus fire flow and peak hour flow scenarios. Distribution mains shall be a minimum of 6-inch in diameter. A new water distribution main shall not be connected to an upstream pipeline of smaller diameter.

The District may require the Applicant to perform hydraulic analyses to verify distribution main size. The Hazen-Williams formula shall be used in the analyses, using “C” value of 130.

The District may require that distribution mains be oversized to provide adequate flow capacity for future development.

2.5.2 Location

Location Relative to Sewer Line – Water distribution mains shall be designed to maintain a minimum 10-foot horizontal clearance between water and sewer mains.

Water lines shall cross over sewer lines, with a minimum of one foot of clearance, as required by the California Code of Regulations, Section 64572, Title 22. Every attempt should be made to keep the bottom of the water main at a higher elevation than the sewer main.

Construction in Paved Street – Water distribution mains and laterals constructed in asphalt concrete paved streets will require trench patching or overlay as required by Tuolumne County Public Works Department or property owner, as applicable. New water mains shall be placed on the north side of the street for east to west running streets and west side of the street for streets running north to south wherever possible. The new water centerline shall be about 6 or 12 feet off the street centerline, outside vehicle tire wheel path to minimize trench settlement problems. In addition, this location will provide space for a sewer main in the streets.

Dead-End Alignments – Water distribution mains shall be looped wherever possible. Dead-end pipelines shall not be constructed except in cul-de-sacs, dead-end roadways or other situations where the District determines that the pipeline may terminate and remote service shall be provided. Dead-end pipelines shall be designed with fire hydrants located at the dead-end.

Minimum Cover – Water distribution mains shall be constructed with a minimum of 36-inches of cover. Mains installed with less than 36-inch cover shall use ductile iron pipe or other engineered alternatives and shall require the approval of the District. Each location not meeting the minimum cover and clearance requirements will require special pipe, bedding and/or backfill and shall be approved by the District.

2.6 Pipeline Appurtenances

2.6.1 Isolation Valves

A sufficient number of valves shall be provided to permit isolation of distribution main segments not more than 1,000 feet in length. A minimum of two (2) valves shall be installed at pipe tees and three (3) valves at pipe crosses.

2.6.2 Thrust Blocks and Restraints

Thrust blocks shall be provided at all pipeline fittings. The District may require restrained joints (in addition to thrust blocks) at critical locations.

2.6.3 Fire Hydrants

Fire hydrants shall be located so that each residential lot is within 500 feet of a hydrant or each commercial building is within 300 feet of a hydrant. A fire hydrant shall also be located at the end of a dead-end pipeline. The setback of hydrants shall be determined by the District upon plan review. Hydrants shall be supplied by pipelines no less than 6-inch in diameter.

The design of the water system shall provide the maximum fire flow and hydrant flow required by the California Fire Code.

2.6.4 Pipeline Low Points

A blow off hydrant or a fire hydrant shall be located at each low point of the distribution mains. Temporary blow offs may be used, subject to District approval, where the distribution main will be extended by the Applicant with the agreement period.

2.6.5 Pipeline High Points

An air/vacuum release valve shall be located at each high point in the distribution mains. If the distribution main is within a roadway, air release valve piping shall be piped off to the side of the roadway above the pipeline.

2.6.6 Sampling Stations

Depending on the size and location of the Applicant's proposed development, the Applicant may be required to provide one or more sampling stations. The location of sampling stations will be determined by the District on a case-by-case basis as part of the design review process.

2.6.7 Protective Bollards

Bollards are required adjacent to all above-ground backflow prevention devices and fire hydrants, unless otherwise directed by the District. Removable bollards shall be provided, as required, to the District.

2.7 Water Services

Water services shall include the main water-tap, corp stop, service water lin, angle curb stop and/or straight curb stop, meter box, but not the meter. Single- or double-meter boxes are allowed. The connection of the private water service into the public water service shall be made at the meter box.

2.7.1 Minimum Service Size

The size of the private water services shall be subject to the approval of the District. Under normal conditions the diameter shall be not less than three-quarter (3/4) inch unless approved by the District. For multifamily or commercial buildings, the size will be based on a determination by the District after its analysis. Fire system lines shall be 1 inch.

2.7.2 Customer Valves

An acceptable water shutoff valve and pressure regulating valve shall be installed on each private water service in a location acceptable to the District. Backflow prevention valves shall be installed on private water services if required by the District pursuant to the District Backflow and Cross Connection Ordinance. The property owner shall maintain valves on private water services.

2.8 New Pump Stations and Storage Tanks

When the estimated water delivery pressure to a newly proposed development project is less than 40 psi, the Applicant shall be required to provide, at the Applicant's expense and as determined necessary by the District, water pump station(s), water storage tank(s) and/or such other facilities to maintain adequate pressure and flow under high demand conditions. The District may require that these facilities include SCADA (Supervisory Control and Data Acquisition) systems. The district will either provide design or design oversight for pump stations and storage facilities.

Pump stations and storage tanks must be installed at locations predetermined by the District that represents the logical point of distribution that would serve the entire pressure zone. Site dimensions shall be sized to accommodate the ultimate reasonable development of the pressure zone in which the connection is located.

Pump stations shall be constructed to the minimum District pump station requirements or to the capacity needed to serve the ultimate reasonable development of the pressure zone in which the connections are located, whichever is greater. Minimum requirements shall include, but not be limited to, duplex pumps, backup power supply, and a building housing the control system.

To cover the increased cost for operation and maintenance of a pressurized system, an increased water rate or fee may apply to all customers within the pressure zone served by such a pressurized system.

Section 3: Materials

3.1 Earthwork

3.1.1 Sand

Caltrans Standard Specifications, Paragraph 19-3.02F(2)

3.1.3 Aggregate Base

Caltrans Standard Specifications for Class 2, 3/4-inch maximum aggregate base (Caltrans Paragraph 26-1.02B).

3.1.4 Suitable Native Material

Suitable native material shall be excavated soil processed such that 100% is less than 3-inches in greatest dimension, and free from organic material. Suitable native material shall be capable of meeting a compaction and R-value as shown on the Standard Details. If an adequate quantity of suitable native material cannot be processed that meets the compaction and R-value requirements as specified, import materials shall replace these materials at no cost to the District.

3.1.5 Import Backfill

Imported non-expansive soil with liquid limit no greater than 40% and a plasticity index no greater than 15%, free from clods or rocks larger than 2 inches in greatest dimension, and free from organic material. Import backfill requirement shall be suitable to meet a compaction and R-value as shown on the Standard Details.

3.1.6 Slurry Cement Backfill

Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, Portland cement and water, proportioned either by weight or by volume. Materials shall be machine-mixed in a pugmill, rotary drum or other approved mixer until the cement and water are thoroughly dispersed throughout the material. Slurry cement shall be placed within one hour after mixing. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed. Portland cement shall conform to the provisions of Caltrans Standard Specifications 90-2.01, "Portland Cement", except that testing will not be required. Not less than 188 pounds of cement shall be used for each cubic yard of slurry cement backfill produced. Grading of the aggregate shall be as follows:

U.S. Standard Sieve Size	Percentage Passing
1-1/2"	100
1"	80-100
3/4"	60-100
3/8"	50-100
No. 4	40-80
No. 100	10-40

3.1.7 Landscape Fill

Suitable native backfill free from chemicals, salts, or other materials harmful to plant growth. Material shall be loam type.

3.1.8 Trench Dam Concrete

Class A concrete conforming to the requirements of Caltrans.

3.1.9 Filter Fabric

Geotextile nonwoven polypropylene fabric with 5.0 oz. per square yard and 50 mil thickness. Manufacture Phillips Fibers Corp. Supac NP5 or equal.

3.2 Pipe and Fittings

Distribution main pipe material shall be as follows:

- 6-inch diameter (nominal) through 12-inch diameter (nominal):
 - Working pressure 180 psi or less – Polyvinyl chloride (PVC) or High-Density Polyethylene (HDPE) (if approved by District)
 - Working pressure over 180 psi – Ductile iron or HDPE (if approved by District)
- Larger than 12-inch diameter (nominal) – Ductile iron or HDPE (if approved by District)

3.2.1 Ductile Iron Pipelines

3.2.1.1 Pipe and Fittings

Pipe: Ductile iron, AWWA C151. Unless otherwise specified, provide push-on joints and minimum Pressure Class 250.

Fittings: Ductile iron only, AWWA C110 or AWWA C153. Gray cast iron fittings are not acceptable. Fittings shall be furnished by, or under the direct supervision of, the pipe manufacturer. Unless otherwise specified, provide push-on or mechanical joint fittings. Provide flanged joints only if a valve is adjacent to a fitting, or otherwise approved by the District.

Lining (pipe and fittings): Unless otherwise specified, cement mortar lining, AWWA C104, standard thickness, with seal coat.

3.2.1.2 Joint Restraint

- TR FLEX by United States Pipe & Foundry Company; Thrust-Lock by Pacific States Cast Iron Pipe Company; or equal.
- Connect pipe cut in the field, where necessary and when favorably reviewed by the Engineer, by TR FLEX Gripper Ring System by United States Pipe & Foundry Company; or equal.
- Mechanical joints: Restraining gland; EBAA Megalug Series 1100; or equal.

3.2.2 Polyvinyl Chloride (PVC) Pipelines

3.2.2.1 Pipe and Fittings

Pipe: Polyvinyl chloride, AWWA C900. Unless otherwise specified, provide push-on joints and Pressure Class 200.

Fittings: Ductile iron only, AWWA C110 or AWWA C153. Gray cast iron fittings are not acceptable. Fittings shall be furnished by, or under the direct supervision of, the pipe manufacturer. Unless otherwise specified, provide push-on or mechanical joint fittings.

3.2.2.2 Joint Restraint

- Ductile iron harness with ductile iron or cor-ten rods and bolts. Pressure rating of at least 200 psi. Series 1500 by EBBA Iron; equivalent by Uni-Flange; or equal for bell and spigot joints.
- Series 2000 by EBBA Iron; equivalent by Uni-Flange; or equal for restrained glands for mechanical joints.
- Restrained joint PVC couplings and mechanical gland adapters. Certa-Lok C900-RJ by CertainTeed; or equal.

3.2.3 High Density Polyethylene (HDPE) Pipelines

3.2.3.1 Pipe and Fittings

High Density Polyethylene (HDPE) pipe for water utility systems may also be installed when approved by the District. ASTM F714

Fittings; ASTM F714, ASTM F2206 Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipe, Fittings.

3.3 Valves

3.3.1 Gate Valves

Resilient wedge, non-rising stem, AWWA C509, fusion bonded epoxy lined and coated, equipped with a 2-inch operating nut; American Flow Control Series 2500.

3.3.2 Butterfly Valves

AWWA C504, with epoxy interior lining and standard black asphalt varnish exterior coating; Pratt Groundhog, Mueller Lineseal III or equal. Valves shall be cast iron body with cast or ductile iron disk. Disk shall have Ni-Chrome or Type 316 stainless steel edge. Shaft shall be stainless steel, connected to the disk with a stainless steel pin or torque plug, and shall be scribed on both ends to indicate valve position. Valve seat shall be Buna-N. Certification shall be provided by the valve manufacturer stating the epoxy lining is Holiday free.

3.3.3 Fire Hydrant

Components 5¼-inch dry barrel type, AWWA C502; American Darling B-62-B. Fire hydrants shall be painted with two coats safety yellow.

3.3.4 Air/Vacuum Release

Valves Combination air release valve; APCO Model 145C, equivalent by ValMatic, or equal. Air/vacuum valves shall be insulated.

3.3.5 Reduced Pressure Principle Backflow Preventers

Cla-Val Model RP-4, equivalent by Febco, Watts, or equal.

3.4 Appurtenances

3.4.1 Water Service

Components As shown in the Standard Details.

3.4.2 Warning Tape

2-inch-wide, detectable, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Tape shall be blue, imprinted with "CAUTION WATER MAIN BELOW"; Griffolyn Terra Tape; or equal.

3.4.3 Locating Wire

Provide #10 AWG, single-strand, soft drawn copper wire with 1/16-inch PVC insulation.

3.4.4 Copper Tubing

Copper tubing shall be seamless, annealed copper tube and shall conform to ASTM B88, Type K. Copper shall be grade UNS-C 122200. For diameters ranging from ¼" to 1", use Type K Roll Soft Copper. For diameters ranging from 1.25" to 2", use Type K Soft 20' Sticks. Tubing manufacturers includes: Cambridge-Lee, Mueller Streamline, or equal.

3.4.5 Valve Boxes

Valve boxes in street and other traffic areas shall be designed to H20 loading conditions. Valve boxes shall be precast concrete boxes with cast iron lids and shall be as manufactured by Christy, Brooks, or equal. Valve boxes shall be equipped with riser pipes securely installed directly over the center of the valve-operating nut.

3.4.6 Snow Poles

Snow poles shall be orange-colored, 0.375" X 1.25" composite fiberglass snow poles with high flexural strength and ultraviolet light resistance; Glasforms, Inc. (San Jose, CA) or equal.

3.4.7 Nuts and Bolts

Unless specified elsewhere in the Standard Specifications or Standard Details:

- Standard nuts and bolts that are included with fabricated pipeline fittings and appurtenances are generally acceptable; stainless steel nuts and bolts are not required.
- Steel bolts shall meet or exceed the requirements of ASTM A307 or ASTM F568; steel nuts shall meet or exceed the requirements of ASTM A563 or ASTM F563M..
- Iron bolts and nuts shall meet or exceed the requirements of ASTM A536, grade 65-45-12.

Section 4: Construction Standards

4.1 General

All work shall be performed in strict accordance with applicable law, including local ordinances, applicable OSHA, CALOSHA, California Civil Code, and California Department of Industrial Safety requirements. During construction, work shall be adequately guarded with barricades or lights so as to protect the public from hazards. If available, the District will provide water to the Applicant for construction and cleaning; the Applicant shall rent a hydrant meter and pay for said water in accordance with District Policy 1060. The Applicant will be responsible for providing proper valves and backflow prevention devices at location(s) designated by the District.

4.1.1 Field Staking

If requested by the District, proposed facilities shall be field staked, for review by the District, prior to installation.

4.1.2 Repair of Damage

Any damage to the public water system shall be repaired to the satisfaction of the District, at the cost of the applicant. Streets, sidewalks, parkways and other property disturbed in the course of the work shall be restored to their prior condition.

4.1.3 Inspection

All work performed during the water main installation shall be subject to inspection by the District. The Applicant shall provide the District at least 72 hours notice prior to beginning any portion of work requiring inspection. The Applicant shall provide, at no cost to the District, access to the work for inspection, including but not limited to removal of temporary plating or backfill, and re-excavation. The Applicant shall not proceed with any subsequent phase of work until the previous phase has been inspected and approved by the District. Inspection and approval by the District shall be obtained during and/or at the completion of the following portions of work, as determined by the District:

- Trench excavation and pipe bedding installation.
- Placing pipe, fittings and structures, including identification tape on all water main and service lines.
- Placing of all restraints.
- Placing and compacting the pipe zone backfill.
- Backfilling balance of trench to grade. Copies of compaction test results shall be given to the District by the Applicant before final acceptance of the work.
- Hydrostatic testing of all mains and services.
- Disinfecting and flushing of pipelines.

Improvements installed without proper inspection shall be exposed and inspected as required by the District Inspector. Cost associated with such inspections will be the responsibility of the Applicant.

4.2 Earthwork

All distribution mains, public water services and other public facilities shall be installed by open trench construction unless otherwise approved by the District. Due to local soil conditions, trenchless construction methods are not generally successful.

Compaction by jetting methods is not allowed.

4.2.1 Excavation

Trenches shall be in a reasonably dry condition when pipe is laid. Dewatering, if necessary, shall commence when groundwater is first encountered and shall be continuous until the excavation is backfilled. Dewatering shall take place in a way that will prevent contamination by trench water. Applicant shall obtain any required permit for discharge of water to the sewer or storm drain as required by Tuolumne County and the Regional Water Quality Control Board. All water taken from the system shall be de-chlorinated prior to discharge to the storm drain system.

During inclement weather, trenches shall be excavated only as far as pipe can be laid and backfilled during the course of the day. Where rocky, unyielding, or unsuitable foundation material is encountered, the subgrade shall be excavated a minimum of 12 inches below the pipe and the trench width shall be increased a minimum of 12 inches. The over-excavation shall be replaced with imported material.

Where the trench bottom is soft, yielding or unstable, the trench bottom shall be over-excavated.

4.2.2 Bedding

Bedding shall provide uniform and continuous support along the barrel of the pipe. Bell holes shall be excavated per manufacturer's recommendations. The minimum depth of bedding material shall be provided under the bell. Care shall be taken to ensure that the bell hole is no larger than necessary to accomplish proper joint assembly. Blocking of the pipe is not permitted. Bedding shall be sand at a depth of 12 inches.

4.2.3 Backfill

No backfill shall be placed until the work has been inspected and approved by the District. All trench backfill shall be mechanically compacted native soil, mechanically compacted imported fill, mechanically compacted aggregate base, or slurry material, as required by these Standard Specifications, the Standard Details, and by Tuolumne County.

Moisture content shall be controlled to obtain the optimum density for the native soil type encountered. All compaction testing shall conform to ASTM D1557-78 test methods. The quantity and location of compaction tests shall be determined by the District. Trench backfill compaction shall be tested and certified by the Applicant's licensed Geotechnical Engineer. Certification shall be provided to the District representative prior to the construction of surface improvements.

Compaction equipment shall be of a size and type satisfactory to the District. Impact-type pavement breakers or compactors (hydrahammers) shall not be used within 5 feet from the top of any type pipe. Material for mechanically compacted backfill shall be placed in horizontal lifts which, prior to compaction, shall not exceed eight (8) inches; this depth may be exceeded only upon

recommendation of a licensed Geotechnical Engineer. The Applicant shall be responsible for verifying compaction requirements in each lift.

Slurry cement backfill shall be placed in accordance with Caltrans Standard Specifications Section 19-3.03F.

Excess material and materials determined unsuitable for backfill by the District shall be removed from the project site.

4.3 Installation

Water facilities shall be installed in accordance with the requirements of applicable American Water Works Association (AWWA) standards, these Construction Standards and as recommended by the manufacture. The manufacturer's guidelines shall be present at the construction site at all times. Materials showing signs of physical damage or excessive ultraviolet exposure will be rejected and shall be immediately removed from the job site. Facilities subject to freezing, including but not limited to above-ground backflow prevention assemblies, shall be protected from freezing by a heated enclosure, insulation using heat tape, or other suitable means acceptable to the District.

4.3.1 Pipelines

Care shall be taken when lowering pipe into the trench to protect the pipe from damage. Chains are not permitted. The pipe shall be laid carefully to the lines and grades shown without grade breaks, unless designed with such, or to minimum depths shown on the approved plans. If field conditions exist such that the pipe may not be laid to the specified grade, the approved plans will require revisions prior to proceeding with construction.

Extreme care shall be taken when consolidating the backfill around the pipe zone. For pipe 12 inches in diameter and smaller, no more than one-half of the pipe shall be covered prior to shovel slicing the haunches of the pipe. For pipe greater than 12 inches in diameter, no more than the lesser of 6 inches or one-third of the pipe shall be covered prior to shovel slicing. Sufficient care shall be taken to prevent movement of the pipe during shovel slicing. Shovel slicing shall be witnessed by the District inspector prior to shading the pipe.

Valve riser and box shall be installed true and plumb over the valve to allow unrestricted valve operation from the surface. Valve box and riser shall be cleaned of any rocks, gravel, dirt of other materials possibly obstructing the valve operation.

4.3.2 Polyethylene Encasement

All underground metal (ductile iron, steel, copper, brass, etc.) shall be wrapped in 10 mils minimum thickness polyethylene encasement. Ductile iron pipe and fittings shall be polyethylene encased in accordance with AWWA C105. At the direction of the District, the Applicant shall repair damages to the polyethylene encasement as described within AWWA C-105 or shall replace all damaged polyethylene film sections.

4.3.3 Locating Wire and Warning Tape

A continuous locating wire shall be attached to mains, service lines and appurtenances as shown in the Standard Details and the following:

- Locating wire shall be continuous between main line valve boxes and fire hydrants.
- Locating wires through valve boxes shall be placed outside of riser, but inside the box.
- Locating wire in manholes and vaults shall be attached inside the facility within one foot of the rim.
- Splices in the locating wire is not recommended, and if needed, shall be made with splicing devices approved by the District.

Warning tape shall be placed in all mainline trenches, on top of the trench “bedding zone” as shown in the Standard Details.

4.3.4 Water Services

Water services shall be installed in accordance with manufacturer's recommendations, the Standard Details and the following provisions:

- Service laterals shall be continuous from the distribution main to the service box.
- Taps, service saddles and fittings attached to distribution mains shall be separated by a minimum of 24 inches.
- Service saddles shall be wrapped in 10-mils minimum thickness polyethylene taped securely to the pipe.

4.4 Hydrostatic Testing

Applicant shall hydrostatically test all new pipelines in accordance with AWWA C600, Section 5.2. Leakage is defined as the quantity of water that must be added to the section of pipeline being tested to maintain the required test pressure for the test duration. Maximum allowable leakage shall be as specified in AWWA C600. The District inspector will be present during the duration of the test. Applicant shall verify with the District inspector that all system valves are open prior to testing.

4.5 Disinfection

Applicant shall disinfect all water mains and interconnected piping after testing and before being placed into service to ensure their bacteriological safety. Disinfection shall be accomplished under the supervision of the Applicant by a person skilled and experienced in the operation of water systems. Following disinfection and flushing, the District will take water samples for bacteriological analysis of the water. If the specified bacteriological requirements are not satisfied, the disinfection procedure must be repeated until the requirements are met.

4.5.1 Distribution Mains

Distribution mains and other piping 3 inches in diameter and larger shall be disinfected in accordance with AWWA C651 as amended below:

- Forms of Chlorine: Sodium hypochlorite or calcium hypochlorite.
- Method: Continuous-Feed.

4.5.2 Small Pipelines

Pipelines less than 3 inches in diameter shall be disinfected as follows:

Preparation: Provide the system with a 1-inch minimum service cock or valve or other means to inject chlorine solution at a point within 2 or 3 feet of its junction with the supply source. When system is complete, thoroughly flush it by fully opening every outlet until clear water flows from all of them.

Disinfecting Agent: Sodium hypochlorite or calcium hypochlorite in sufficient quantities to produce chlorine concentration of at least 50 parts per million in the system.

Disinfecting Procedure:

- Connect a hand-operated pump, or other means of injecting the disinfecting agent, to 1-inch minimum service cock or valve or other injection device. Pump must provide a pressure greater than that of the supply system.
- With system completely full of water and supply valve open, proceed to adjust every outlet of system so that a trickle of water flows from each.
- Inject disinfectant slowly and continuously at an even rate, not in slugs, until a test at each outlet shows a free chlorine residual concentration of at least 50 parts per million.
- Close all outlets and valves, including valve connecting to supply line and 1-inch minimum service cock on solution injection connection. Maintain condition for 24 hours. After 24 hours test for residual chlorine at each outlet. The free residual chlorine concentration indicated should be not less than 10 ppm. If the indicated free chlorine concentration is less than 10 ppm, the disinfection procedure must be repeated until an approved result is obtained.

When the above procedure has been completed to the satisfaction of the Engineer, flush out entire system with fresh water until tests at all outlets show a residual of not more than 0.5 ppm.

4.5.3 Chlorine Residual Testing

Chlorine residual shall be tested in accordance with AWWA C651, Appendix A, DPD Drop Dilution Method.

4.5.4 Bacteriological Analyses of Water

After the completion of disinfecting procedures and final flushing, the District will obtain water samples for bacteriological analyses. Requirements for satisfactory disinfection of water supply are that bacteriological analyses (Heterotrophic plate count) indicate that water samples are negative for coliformnerogenes organisms, and that total plate count is less than 100 bacteria per cubic

centimeter. If bacteriological analyses do not satisfy the above requirements, then disinfection procedure must be repeated until these requirements are met.

4.5.5 Disposal of Disinfection Solution

Dechlorinate and dispose of disinfection solution in accordance with applicable regulations. Take care to assure that chlorinated water is not spilled in drains.

4.6 Connection to Existing Facilities

Connection to existing District water facilities shall be made only upon approval of the District. Tie-ins may take place only after the newly constructed water system has successfully passed hydrostatic testing and bacteriological testing and has been approved for service by the District. Under no circumstances shall anyone other than a representative of the District open or close valves in a District operated system. The Applicant shall tie-in new facilities to existing facilities:

- Care shall be taken to provide a clean, sanitary tie-in site.
- All tie-ins shall take place in the presence of the District inspector.
- Disinfection shall be in accordance with AWWA C651, Section 4.7

Section 5: Standard Details

The following is a list of Water Standard Details included in this section:

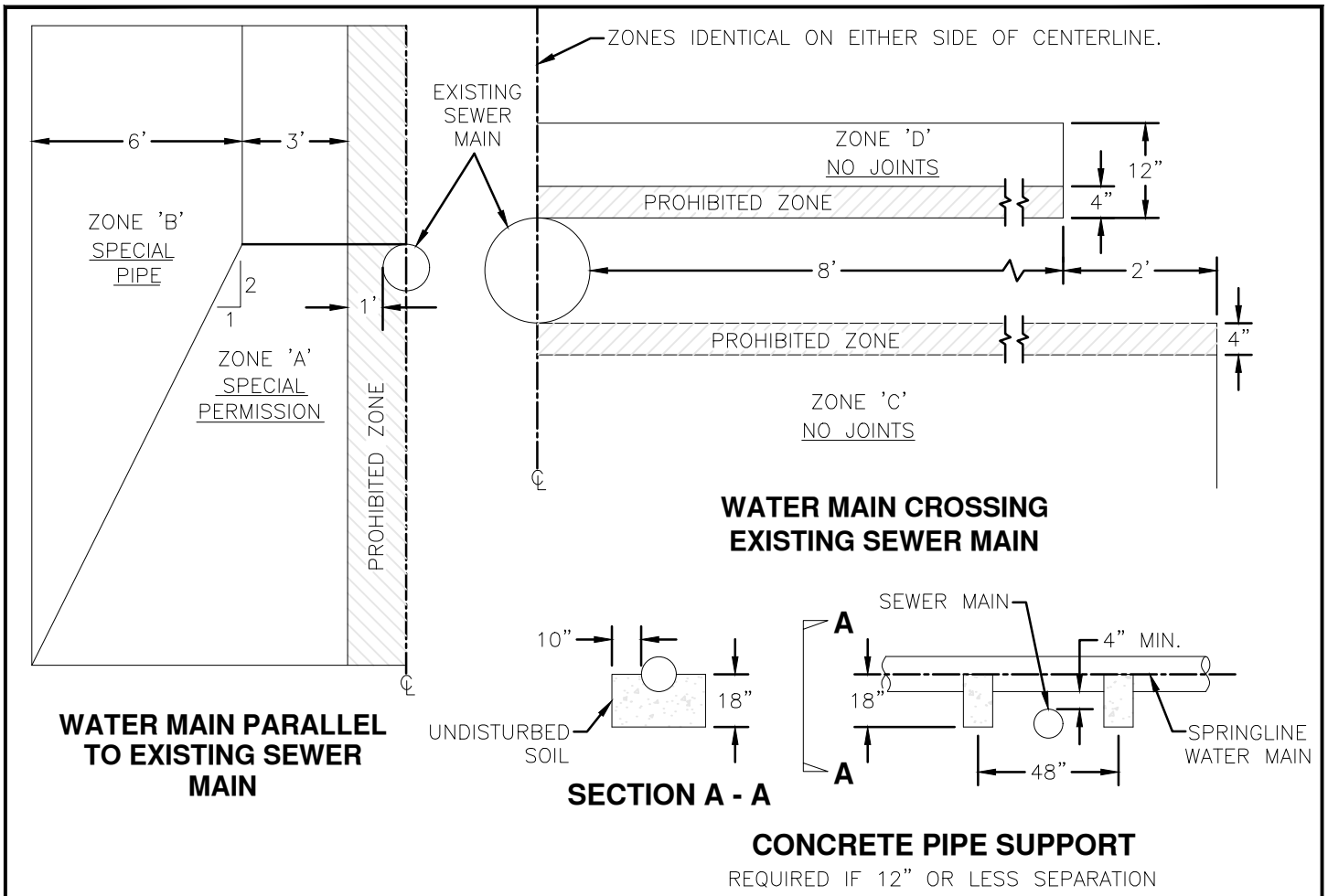
W-1	General Notes
W-2	Water Main Constructed Near Existing Sewer Main
W-3	Standard Trench for Water and Sewer
W-4	Creek Crossings for Water and Sewer and Bore/Jack Casing
W-5	Trench Dam
W-6	Water Valve Locations and Thrust Blocks
W-7	Locating Wire Typical Layout
W-8	Water Main Connection to Existing Water Main
W-9	Gate Valve Installation
W-10	Fire Hydrant Installation
W-11	4-inch Diameter Steel Bollard – Removable
W-12	Fire Hydrant Near Slope and Hydrant Bollards
W-13	In-Line Blowoff And Blowoff At End 4" Water Main
W-14	2-Inch Temporary Blow Off Assembly
W-15	Combination Air/Valve
W-16	Water Quality Sampling Station
W-17	Water Service Latera Connections
W-18	Water Service
W-19	Water Service And Pressure-Reducing Valve
W-20	Reduced Pressure Detector Assembly
W-21	Double Check Detector Assembly For Project Under Construction
W-22	Pressure Reducing Station For 6" & 4" Main W/ 2" Or 3" Bypass
W-23	Pressure Reducing Station Details
W-24	Reduced-Pressure Backflow Prevention Assembly
W-25	Master Water Meter On 8" Water Main

WATER SYSTEM GENERAL NOTES

NOTES:

1. APPLICANT SHALL NOT OPERATE EXISTING DISTRICT VALVES. ONLY DISTRICT STAFF SHALL CONDUCT PLANNED WATER SYSTEM SHUTDOWNS.
2. APPLICANT SHALL PROVIDE A MINIMUM OF 48 HOURS ADVANCE NOTICE OF A PLANNED WATER SHUTDOWN AND IS RESPONSIBLE TO REQUEST THE VALVE BE REOPENED FOLLOWING THE WORK.
3. PROVIDE THRUST RESTRAINT AT ALL BENDS, TEES, AND ENDS FOR BURIED PRESSURE PIPE.
4. APPLICANT SHALL LOCATE AND STAKE ALL PROPERTY CORNERS WHERE WATER SERVICES ARE TO BE INSTALLED.
5. APPLICANT SHALL PROVIDE ALL TESTING AND PAY FOR ALL DISTRICT INSPECTION COSTS.
6. EXISTING WATER AND SEWER LINES AND FACILITIES LOCATIONS PROVIDED BY THE DISTRICT ARE APPROXIMATE. APPLICANT IS RESPONSIBLE FOR DETERMINING THE EXACT FIELD LOCATIONS AND MAINTAINING THE FOLLOWING SEPARATIONS BETWEEN UTILITIES.
 - a. MINIMUM VERTICAL CLEARANCE BETWEEN A PRIVATE SEWER SERVICE AND A PRIVATE WATER SERVICE SHALL BE 12 INCHES AND THE WATER SERVICE SHALL BE ABOVE THE SEWER SERVICE.
 - b. MINIMUM VERTICAL CLEARANCE BETWEEN ALL NON-SEWER UTILITY CROSSINGS SHALL BE 12 INCHES.
 - c. MINIMUM HORIZONTAL CLEARANCE BETWEEN SANITARY AND STORM SEWER PIPELINES AND DISTRICT WATER LINES SHALL BE 10 FEET.
 - d. MINIMUM HORIZONTAL CLEARANCE SHALL BE 24 INCHES BETWEEN ALL NON-SEWER UTILITIES AND WATER.
 - e. MINIMUM COVER OVER WATER MAINS SHALL BE 36-INCHES UNLESS OTHERWISE DIRECTED BY THE DISTRICT.
7. WATER PIPELINES SHALL BE INSTALLED ON UNIFORM GRADES TO MINIMIZE HIGH SPOTS AND LOW SPOTS IN THE PIPE. THE DISTRICT MAY REQUIRE ADDITIONAL BURIAL DEPTH TO REDUCE THE USE OF AIR RELEASE VALVES AND BLOW-OFF ASSEMBLIES.
8. THE APPLICANT IS RESPONSIBLE FOR ALL TRAFFIC CONTROL. TRAFFIC CONTROL AND PAVEMENT CUTTING AND RESTORATION ARE UNDER THE JURISDICTION OF TUOLUMNE COUNTY.
9. THE APPLICANT SHALL NOTIFY UNDERGROUND SERVICES ALERT (USA) A MINIMUM OF 48 HOURS PRIOR TO START OF ANY EXCAVATION.
10. THE APPLICANT SHALL NOTIFY THE FIRE DEPARTMENT A MINIMUM OF 48 HOURS PRIOR TO ANY WATER SYSTEM SHUTDOWN THAT WILL SHUT OFF AN EXISTING FIRE HYDRANT.
11. NO SHUT DOWNS ARE TO BE SCHEDULED ON MONDAYS, WEEKENDS, OR HOLIDAYS.
12. SEE STANDARD SPECIFICATIONS FOR SAMPLING, FLUSHING AND TESTING REQUIREMENTS.

Twain Harte Community Services District	GENERAL NOTES		
22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	SCALE: NONE	APPROVED BY: SN	W-1
	DATE: NOVEMBER 2006	DRAWN BY: RN	



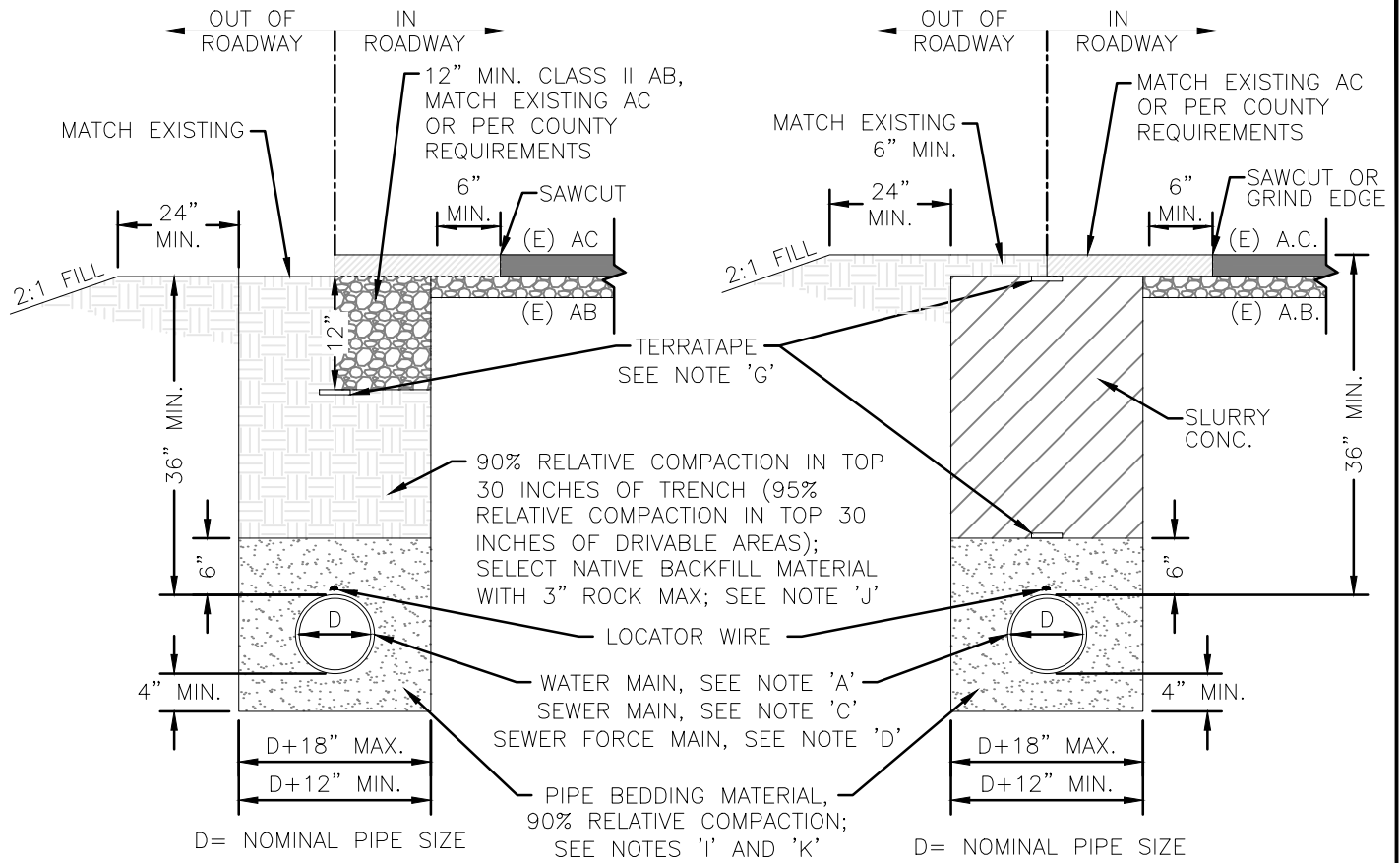
SPECIAL CONSTRUCTION REQUIRED FOR WATER MAIN

- ZONE A: WATER MAIN PARALLEL TO SEWER MAIN SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE CALIFORNIA STATE DEPARTMENT OF HEALTH SERVICES AND THCS D
- ZONE B: WATER MAIN PARALLEL TO SEWER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH INTERIOR CEMENT COATING OR C900 PIPE (DR14).
- ZONE C: WATER MAIN CROSSING UNDER SEWER MAIN SHALL HAVE NO JOINTS WITHIN 10 FEET AND SHALL BE CONSTRUCTED WITH ONE OF THE TWO MATERIALS LISTED UNDER ZONE B.
- ZONE D: WATER MAIN CROSSING OVER SEWER MAIN SHALL HAVE NO JOINTS WITHIN 8 FEET OF SEWER MAIN AND SHALL BE CONSTRUCTED OF ZONE 'B' MATERIALS.

NOTES

- A. WATER MAIN PARALLEL TO SEWER FORCE-MAIN SHALL HAVE A HORIZONTAL SEPARATION OF 10 FT. MIN.
- B. WATER MAIN CROSSING OVER SEWER FORCE-MAIN SHALL BE AS CLOSE TO PERPENDICULAR AS PRACTICAL AND AT LEAST ONE FOOT ABOVE FORCE-MAIN. WATER MAIN SHALL HAVE NO JOINTS WITHIN 10 FEET EITHER SIDE OF FORCE-MAIN AND BE CONSTRUCTED OF ZONE 'B' MATERIAL.
- C. WATER MAIN PARALLEL TO STORM DRAIN SHALL HAVE A HORIZONTAL SEPARATION OF 4 FEET AND A VERTICAL SEPARATION OF ONE FOOT. VERTICAL SEPARATION IS REQUIRED ONLY WHEN HORIZONTAL SEPARATION IS 10 FEET OR LESS.
- D. ALL DRY UTILITIES SHALL MAINTAIN 5 FEET HORIZONTAL SEPARATION WHEN PARALLEL, 1 FOOT VERTICAL SEPARATION WHEN CROSSING, AND SHALL BE LOCATED UNDER EXISTING WATER AND SEWER. DRY UTILITIES MAY ONLY BE LOCATED OVER EXISTING WATER AND SEWER WITH PRIOR DISTRICT APPROVAL AND SHALL MAINTAIN 6 INCHES OF VERTICAL SEPARATION. A PROTECTIVE CONCRETE OR 3 SACK SLURRY CAP (6" MIN. THICK) SHALL BE PLACED OVER ALL CONDUITS.

Twain Harte Community Service District	WATER MAIN CONSTRUCTED NEAR EXISTING SEWER MAIN		
22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383	SCALE: NTS	APPROVED BY:	INITIALS
	DATE: AUG 2024	DRAWN BY:	
			W2

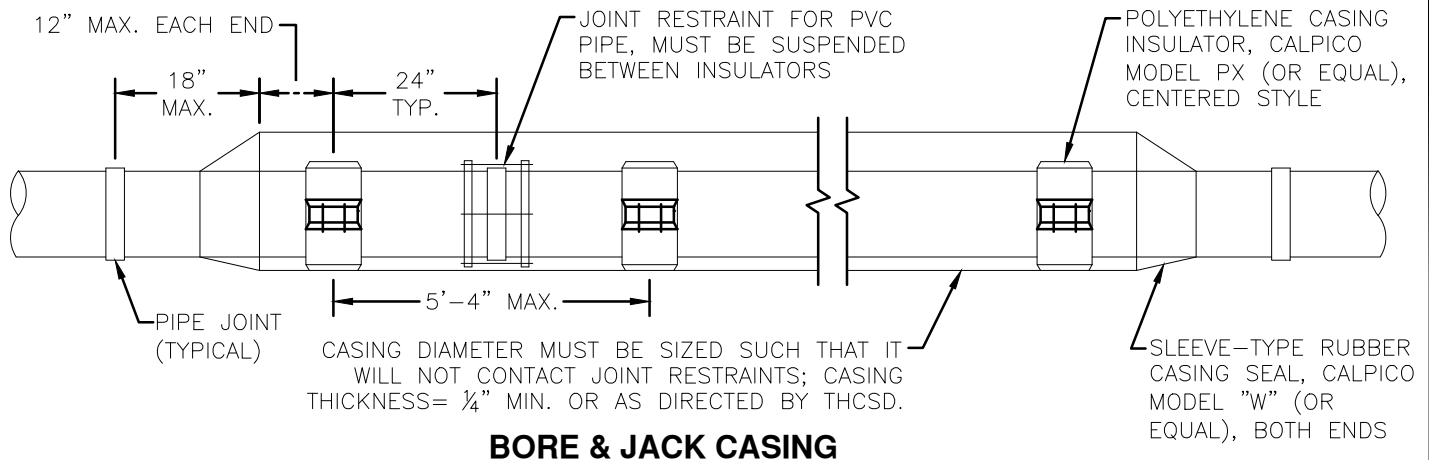


STANDARD TRENCH

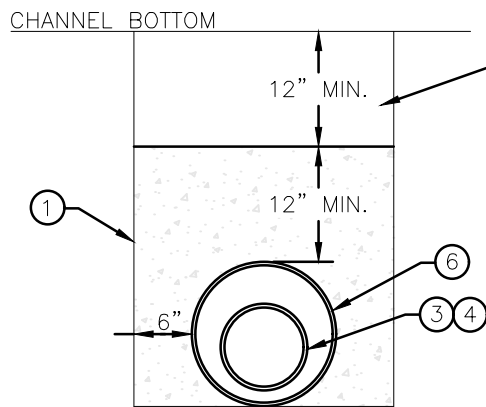
SLURRY TRENCH

- A. FOR WATER MAINS 4" DIA. OR GREATER, PIPE SHALL BE AWWA C900 AND C909 PVC PIPE; CLASS RATING SHALL BE APPROVED BY THCS D PRIOR TO INSTALLATION.
- B. WATER MAINS SHALL BE PRESSURE TESTED. PRESSURE TEST SHALL NOT BE LESS THAN 150 PSI AT THE HIGHEST ELEVATION OF THE TEST SECTION AND SHALL BE 200 PSI AT THE LOWEST ELEVATION OF THE TEST SECTION.
- C. FOR GRAVITY SEWER MAINS 4"-15" DIA., PIPE SHALL BE PVC SDR35 AND SHALL MEET ASTM D3034 STANDARDS. MAINS 18"-24" DIA., PIPE SHALL MEET ASTM F679 STANDARDS. RUBBER SEALANT RINGS SHALL MEET ASTM D3212 REQUIREMENTS. CAMERA INSPECTION BY THCS D STAFF (OR EQUAL) SHALL BE REQUIRED FOR ALL SEWER LINES.
- D. FOR SEWER FORCE MAINS 4" DIA. OR GREATER, PIPE SHALL BE AWWA C900 DR18 PVC PIPE; HIGHER CLASS RATING MAY BE REQUIRED BY THCS D. MAINS LESS THAN 4" DIA. ARE NOT PERMITTED.
- E. PRIOR TO INSTALLING GRAVITY SEWER PIPE, BOTTOM OF TRENCH SHALL BE COMPACTED AND INSPECTED.
- F. GRAVITY SEWER ELBOWS SHALL BE SDR35 PVC "SLOW-BANANA" BEND. OTHER ELBOWS MAY BE USED WITH PRIOR DISTRICT APPROVAL AND SHALL NOT EXCEED 22 1/2" IN ANY CASE. ALL OTHER SEWER FITTINGS SHALL BE CAST IRON.
- G. TERRATAPE (2" WIDE LOCATING TAPE) TO BE LABELED "BURIED WATERLINE [SEWER LINE] BELOW".
- H. ALL TRENCHES OVER 5 FT. DEEP SHALL BE SLOPED, SHORED, BRACED, OR OTHERWISE SUPPORTED IN ACCORDANCE WITH CAL-OSHA REQUIREMENTS. THCS D ASSUMES NO RESPONSIBILITY FOR THE DESIGN OF SUCH SUPPORT SYSTEMS. IN PAVED AREAS TRENCHES SHALL NOT BE SIDE-SLOPED.
- I. RELATIVE COMPACTION TO BE 90% OR GREATER IN THE HAUNCH AREA OF THE PIPE FROM THE SPRINGLINE TO THE BOTTOM OF THE PIPE.
- J. ALL NATIVE MATERIAL REQUIRES DISTRICT APPROVAL PRIOR TO USE. CONTRACTOR SHALL USE OTHER APPROVED MATERIAL IF NEEDED TO MEET COMPACTION REQUIREMENTS.
- K. REFER TO THCS D SPECIFICATIONS FOR BEDDING MATERIAL
- L. ALL IMPORTED MATERIAL FOR AREAS UNDER THCS D JURISDICTION SHALL BE ASBESTOS FREE. ALL IMPORTED MATERIAL FOR AREAS UNDER COUNTY JURISDICTION SHALL COMPLY WITH COUNTY AIR POLLUTION CONTROL REQUIREMENTS REGARDING ASBESTOS.

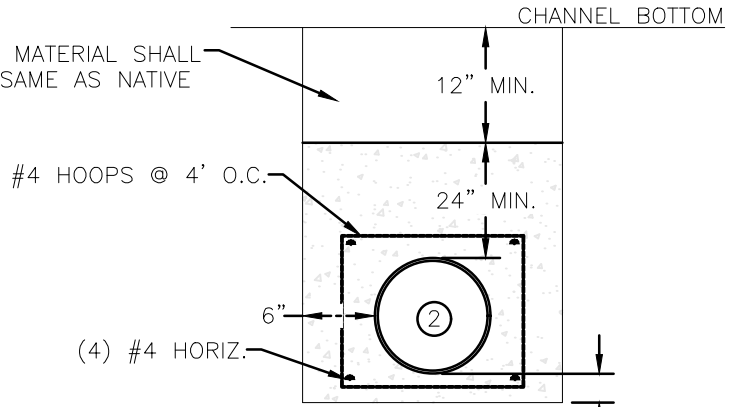
Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	STANDARD TRENCH FOR WATER AND SEWER		W3
	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:	



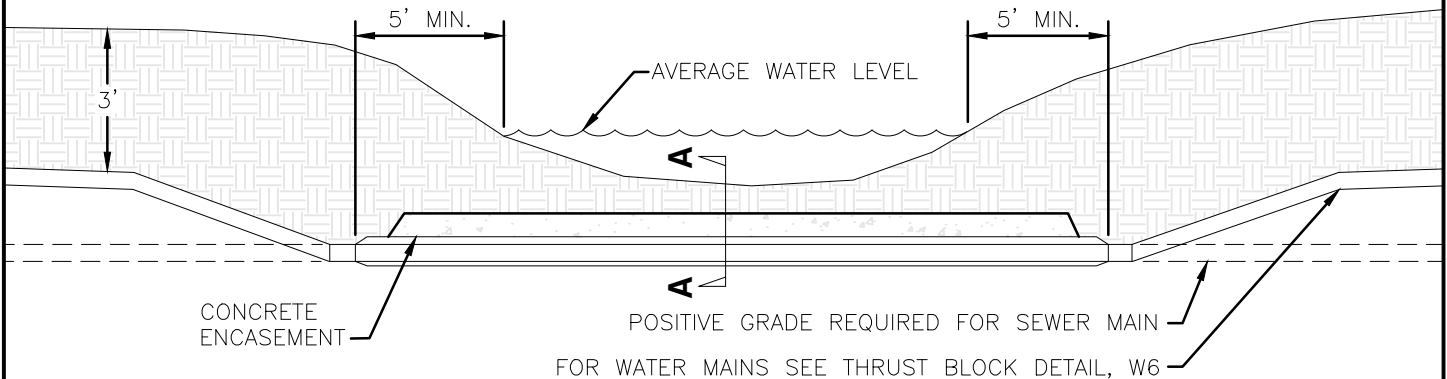
BORE & JACK CASING



SECTION A-A, SEE BORE & JACK CASING DETAIL



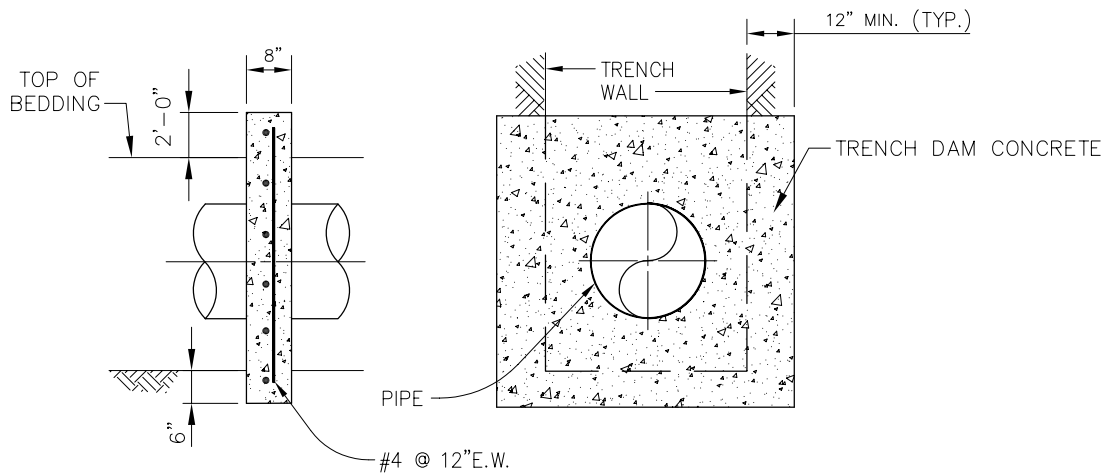
SECTION A-A ALTERNATE VERSION (REQUIRES THCS APPROVAL)



CREEK CROSSING FOR WATER AND SEWER MAINS

ITEM	QTY	DESCRIPTION	REMARKS
①	3	SACK SLURRY MIX	NO LOADS TO BE PLACED ON CONCRETE FOR 7 DAYS
②		DUCTILE IRON PIPE	CEMENT OR PVC LINED; USE CAST IRON FITTINGS AS NEEDED
③		PVC C900-DR18 FOR WATER	USE CAST IRON FITTINGS AS NEEDED
④		SDR35 FOR SEWER	USE CAST IRON FITTINGS AS NEEDED
⑤	6	SACK STRUCTURAL CONCRETE	USE CAST IRON FITTINGS AS NEEDED
⑥		CASING	

<p>Twain Harte Community Service District</p> <p>22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383</p>	<p>CREEK CROSSING FOR WATER AND SEWER MAINS AND BORE & JACK CASING</p>		<p>W4</p>
	<p>SCALE: NTS</p> <p>DATE: AUG 2024</p>	<p>APPROVED BY:</p> <p>DRAWN BY:</p>	



NOTES:

1. TRENCH DAMS PER SECTION 2.5.5.
2. TRENCH DAMS SHALL BE KEYED INTO UNDISTURBED SOIL 12" MINIMUM BEYOND TRENCH WALLS AND 6" BELOW TRENCH BOTTOM.

Twain Harte Community Services District	<h1 style="margin: 0;">TRENCH DAM</h1>		
22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	SCALE: NONE	APPROVED BY: SN	<h2 style="margin: 0;">W5</h2>
	DATE: NOVEMBER 2006	DRAWN BY: RN	

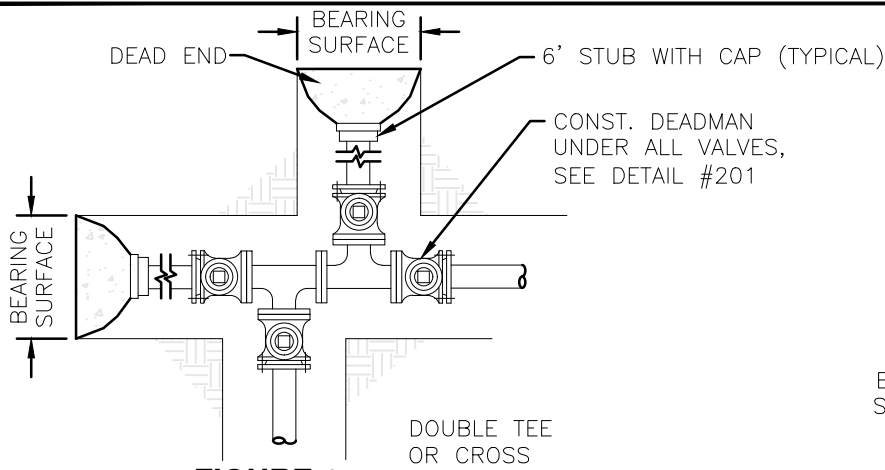


FIGURE 1

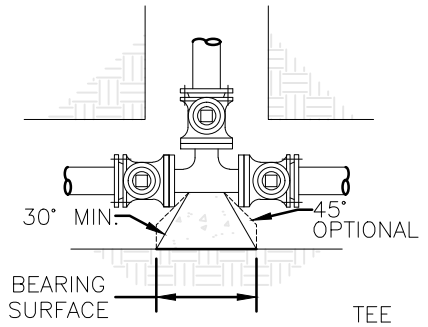


FIGURE 2

VALVE INSTALLATION NOTES

- A. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN., AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.
- B. ALL VALVES AND FITTINGS SHALL BE CAST IRON OR DUCTILE IRON AND SHALL HAVE A PRESSURE RATING EQUAL TO OR GREATER THAN THE WORKING PRESSURE RATING OF THE PIPE.
- C. ALL TEES & CROSSES SHALL BE FLANGED WITH FLxMJ VALVES UNLESS OTHERWISE APPROVED BY THCSO
- D. VALVES SHALL BE LOCATED IN-LINE, NOT TO EXCEED 1,320 FEET APART, AND AT ALL TEES AND CROSSES.

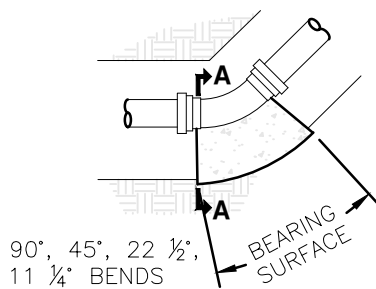
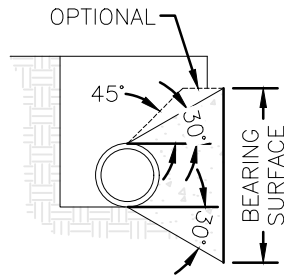


FIGURE 3



SECTION A-A

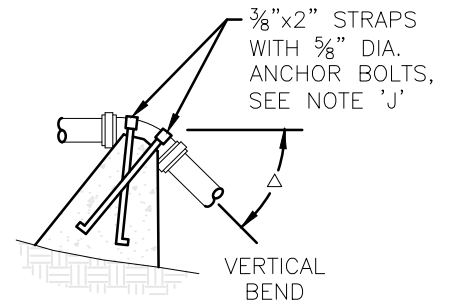


FIGURE 4

THRUST BLOCKS FOR HORIZONTAL AND VERTICAL BENDS AT UNRESTRAINED JOINTS, 4" TO 12" FITTINGS

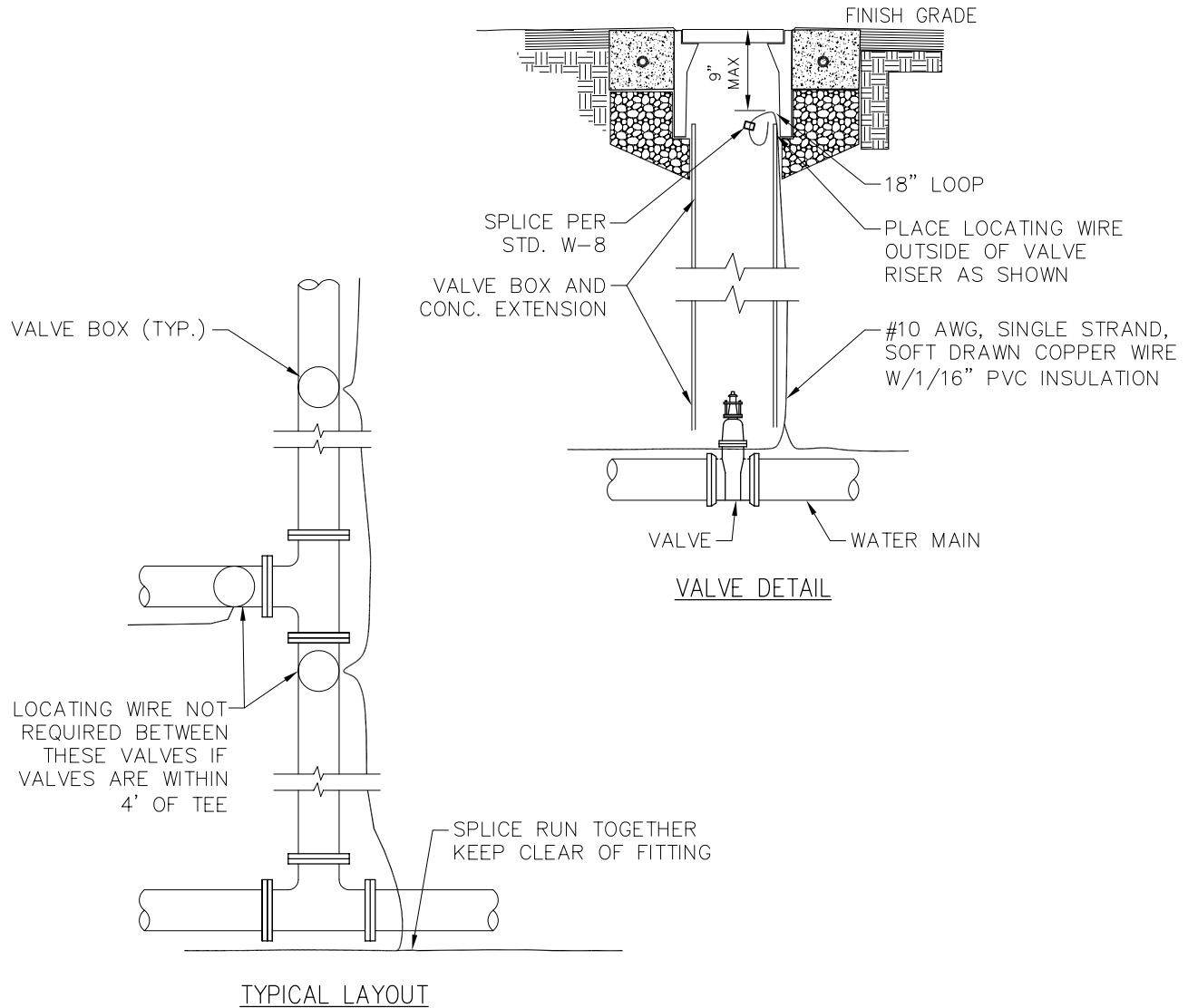
SIZE OF PIPE	MIN. BEARING AREA IN SQUARE FEET						CUBIC FEET OF CONCRETE		
	FIG. 1		FIGURE 3				FIGURE 4		
	DEAD END	TEE	90°	45°	22 1/2°	11 1/4°	45°	22 1/2°	11 1/4°
4"	2	2	2	1	1	1	19	19	5
6"	3	3	4	3	2	2	20	20	10
8"	5	5	7	4	2	2	SPECIAL DESIGN REQUIRED		13
10"	8	8	12	6	3	3			30
12"	12	12	16	9	5	5			

GENERALLY, THE BEARING AREA WIDTH TO HEIGHT RATIO SHOULD NOT EXCEED 2 TO 1

THRUST BLOCK NOTES

- E. THRUST BLOCKS ARE TO BE CONSTRUCTED OF 2500 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE. AREAS GIVEN ARE THE MINIMUM REQUIREMENT FOR C900-DR18 PIPE AT TEST PRESSURES OF 235 PSI IN SOIL WITH 2000 PSF BEARING CAPACITY. WITH DIFFERENT PIPE TYPES, WORKING PRESSURES AND/OR SOIL TYPES, ADJUST ACCORDINGLY. VARIANCES ARE SUBJECT TO THCSO APPROVAL.
- F. BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.
- G. THRUST BLOCKS SHALL HAVE A 5-DAY MINIMUM CURE PRIOR TO PRESSURIZATION OF MAINS.
- H. RESTRAINED JOINTS ARE REQUIRED ON AT LEAST 3 JOINTS IN EACH DIRECTION WHEN SITE LIMITATIONS PREVENT STRICT ADHERENCE TO THESE STANDARDS (SUBJECT TO DISTRICT APPROVAL.)
- I. ANCHOR BOLTS TO EXTEND TO 90% OF DEPTH OF BLOCK; COAT ALL EXPOSED METAL WITH BITUMASTIC COATING AFTER INSTALLATION. SPECIAL DESIGN IN FIELD MAY BE REQUIRED FOR 8", 10" AND 12" PIPE.

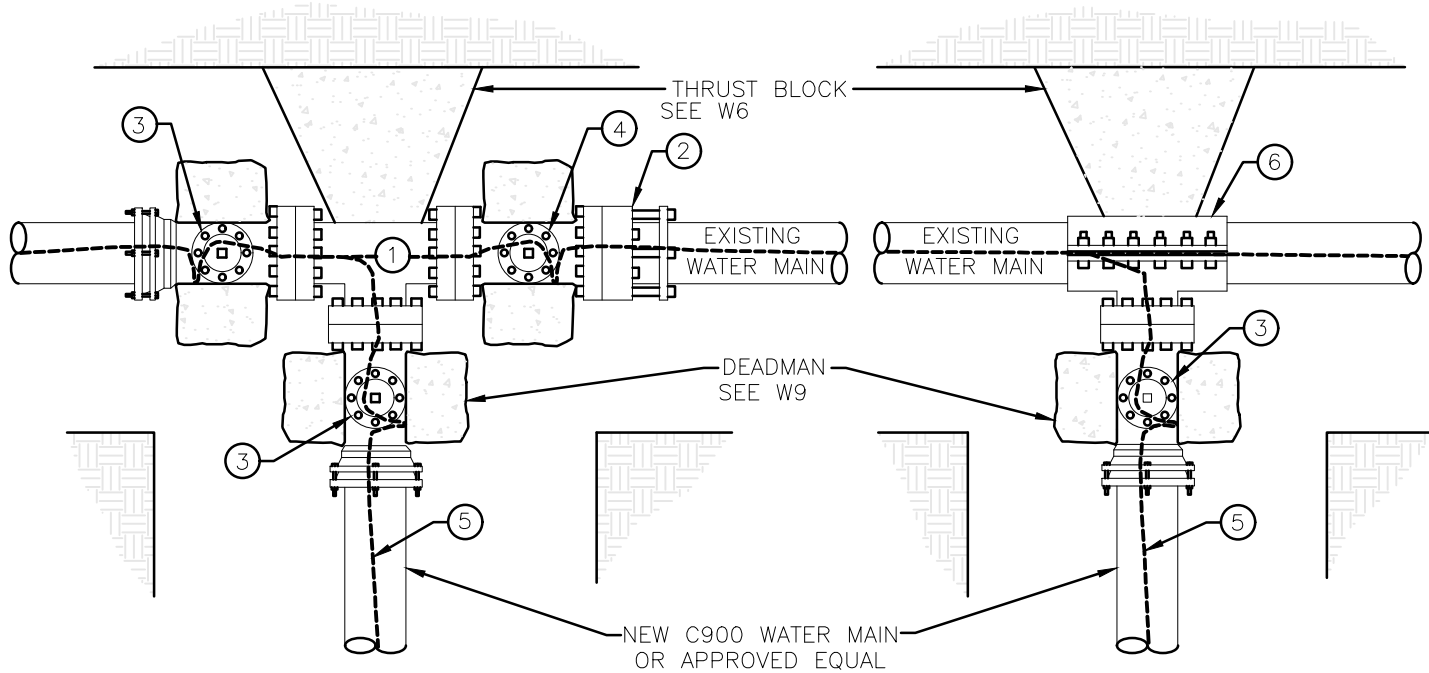
Twain Harte Community Service District	WATER MAIN VALVE LOCATIONS AND THRUST BLOCKS		
	22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:



NOTES:

1. WIRE SHALL BE CONTINUOUS BETWEEN VALVE BOXES, EXCEPT AS NOTED.
2. LOCATING WIRE SHALL BE LAID ON TOP OF THE WATER MAIN, AND SHALL BE TAPED TO IT OR THE POLYETHYLENE ENCASEMENT (IF APPLICABLE) AT 10' INTERVALS AND TAPED AT ALL FITTINGS. TAPE SHALL BE 10 MIL POLYETHYLENE.
3. CONTRACTOR SHALL CONDUCT A CONTINUITY TEST ON ALL LOCATING WIRE SPLICES.

Twain Harte Community Services District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	LOCATING WIRE TYPICAL LAYOUT		W7
	SCALE: NONE	APPROVED BY: SN	
	DATE: NOVEMBER 2006	DRAWN BY: RN	



CUT-IN-TEE

THCSD APPROVAL REQUIRED.
MAIN LINE SHUTDOWN REQUIRED.

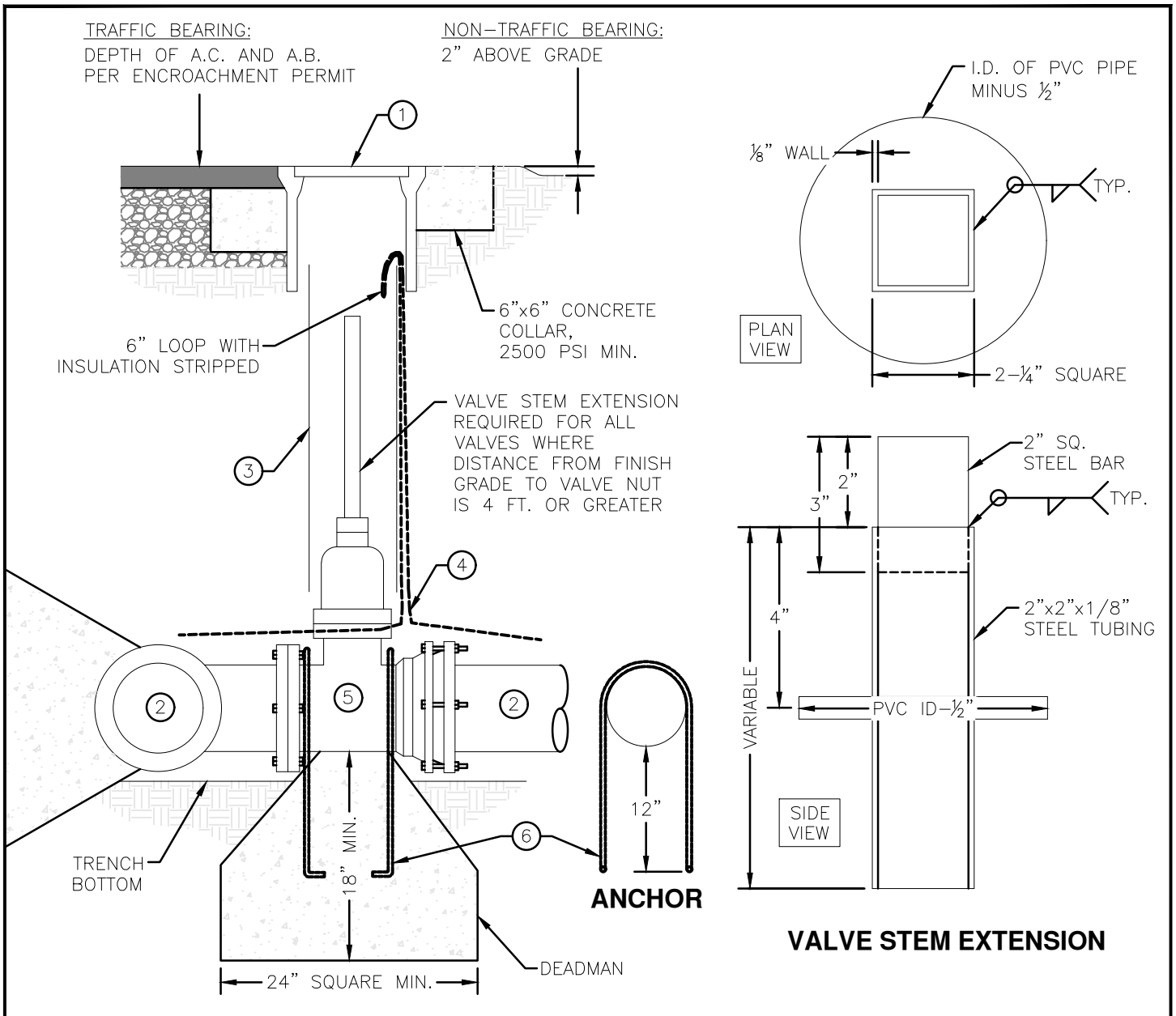
HOT-TAP

NOTES

- A. UNLESS OTHERWISE APPROVED, ALL CONNECTIONS TO EXISTING THCSD MAINS SHALL BE BY "HOT-TAP" WITH APPROVED TAPPING SLEEVE.
- B. WATER AND FIRE PROTECTION SERVICE SHALL NOT BE INTERRUPTED WITHOUT PRIOR APPROVAL BY THCSD
- C. NOTIFICATION TO CUSTOMERS OF WATER OUTAGE SHALL FIRST BE MADE BY THCSD; 48 HOURS NOTICE IS REQUIRED PRIOR TO WORK BEING PERFORMED BY THE CONTRACTOR.
- D. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DRAIN AND DISPOSE OF WATER FROM THE EXISTING MAIN UNDER THE SUPERVISION OF THCSD
- E. THCSD IS RESPONSIBLE FOR FLUSHING AND PURGING THE EXISTING MAIN AFTER THE CONNECTION HAS BEEN MADE.
- F. VALVES ARE TO REMAIN CLOSED FOR A MINIMUM OF 5 DAYS TO ALLOW THE CONCRETE THRUST BLOCK TO CURE.
- G. ALL FITTINGS INSTALLED ON EXISTING WATER MAIN SHALL BE 3 FT. MIN. FROM JOINTS, FITTINGS OR TAPS.
- H. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	FLANGED TEE	
②	1	FLANGED COUPLING ADAPTER	FORD STYLE FFCA OR APPROVED EQUAL
③	3	RESILIENT WEDGE VALVE	FLANGE x MJ UNLESS OTHERWISE APPROVED, SEE W9
④	1	RESILIENT WEDGE VALVE	FLANGE x FLANGE
⑤		#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑥	1	STAINLESS STEEL TAPPING SLEEVE	ROMAC "SST", JCM432, FORD "FAST" OR APPROVED EQUAL

<p>Twain Harte Community Service District</p> <p>22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383</p>	<p>WATER MAIN CONNECTION TO EXISTING WATER MAIN</p>		<p>W8</p>
	<p>SCALE: NTS</p> <p>DATE: AUG 2024</p>	<p>APPROVED BY:</p> <p>DRAWN BY:</p>	

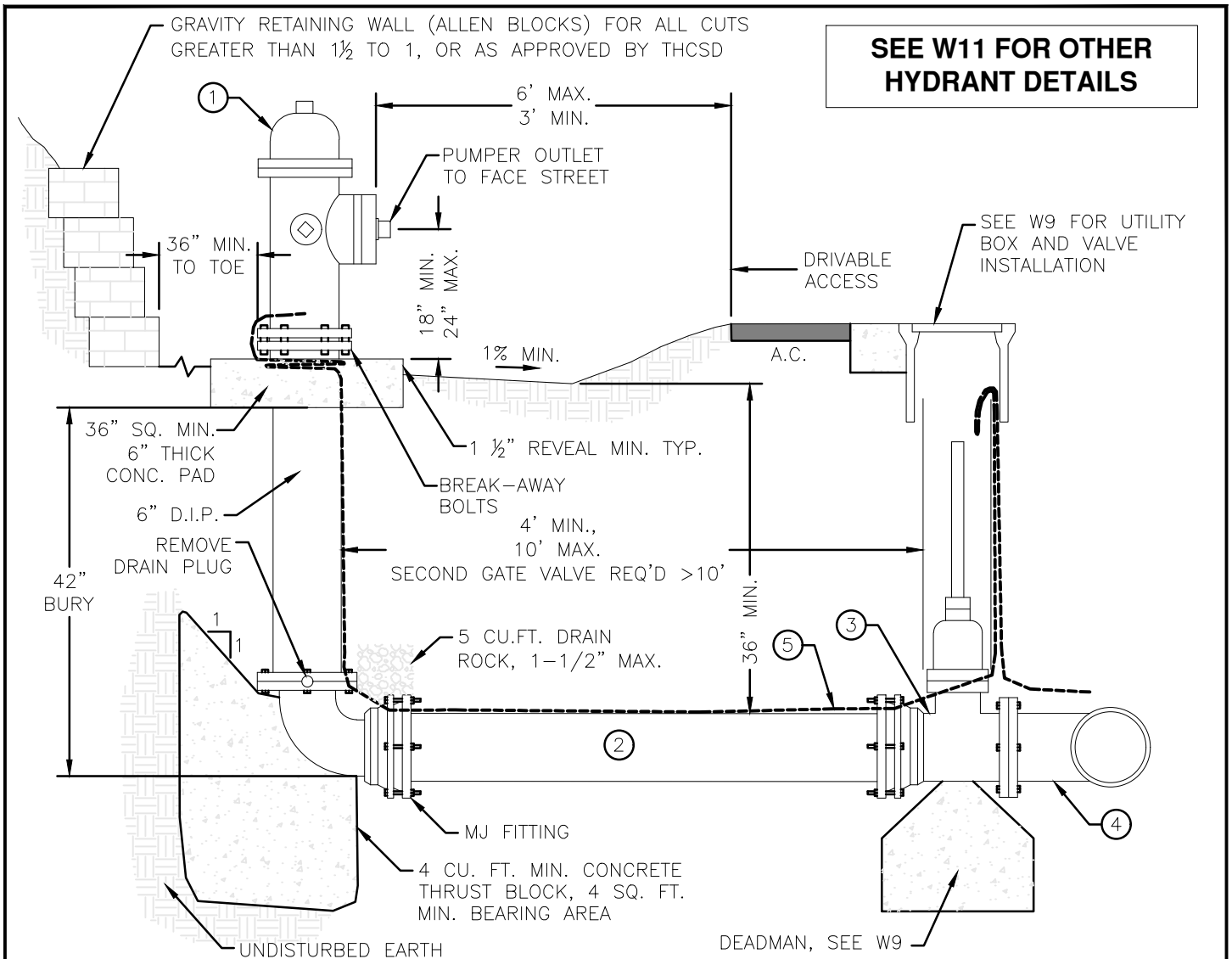


NOTES

- A. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN., AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.
- B. VALVES SHALL BE INSTALLED ON FITTINGS UNLESS OTHERWISE APPROVED BY THCS

ITEM	QTY	DESCRIPTION	REMARKS
①	1	TRAFFIC VALVE BOX WITH LID MARKED "WATER"	CHRISTY G5 W/ G5C LID OR APPROVED EQUAL
②		FLANGED TEE	
③	1	6" OR 8" PVC PIPE	SDR35, PR160, C900 AND C909 ARE ACCEPTABLE
④	1	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑤	1	RESILIENT WEDGE GATE VALVE, EPOXY-COATED, NON-RISING STEM, 2" SQUARE NUT FOR ALL VALVES 2" AND LARGER	FLxMJ UNLESS OTHERWISE APPROVED, CLOW, MUELLER, AMERICAN DARLING OR APPROVED EQUAL, SUITABLE CLASS FOR SERVICE PRESSURE
⑥	2	#4 REINFORCING BAR ANCHOR	GRADE 60

Twain Harte Community Service District	GATE VALVE INSTALLATION		
22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	
			W9

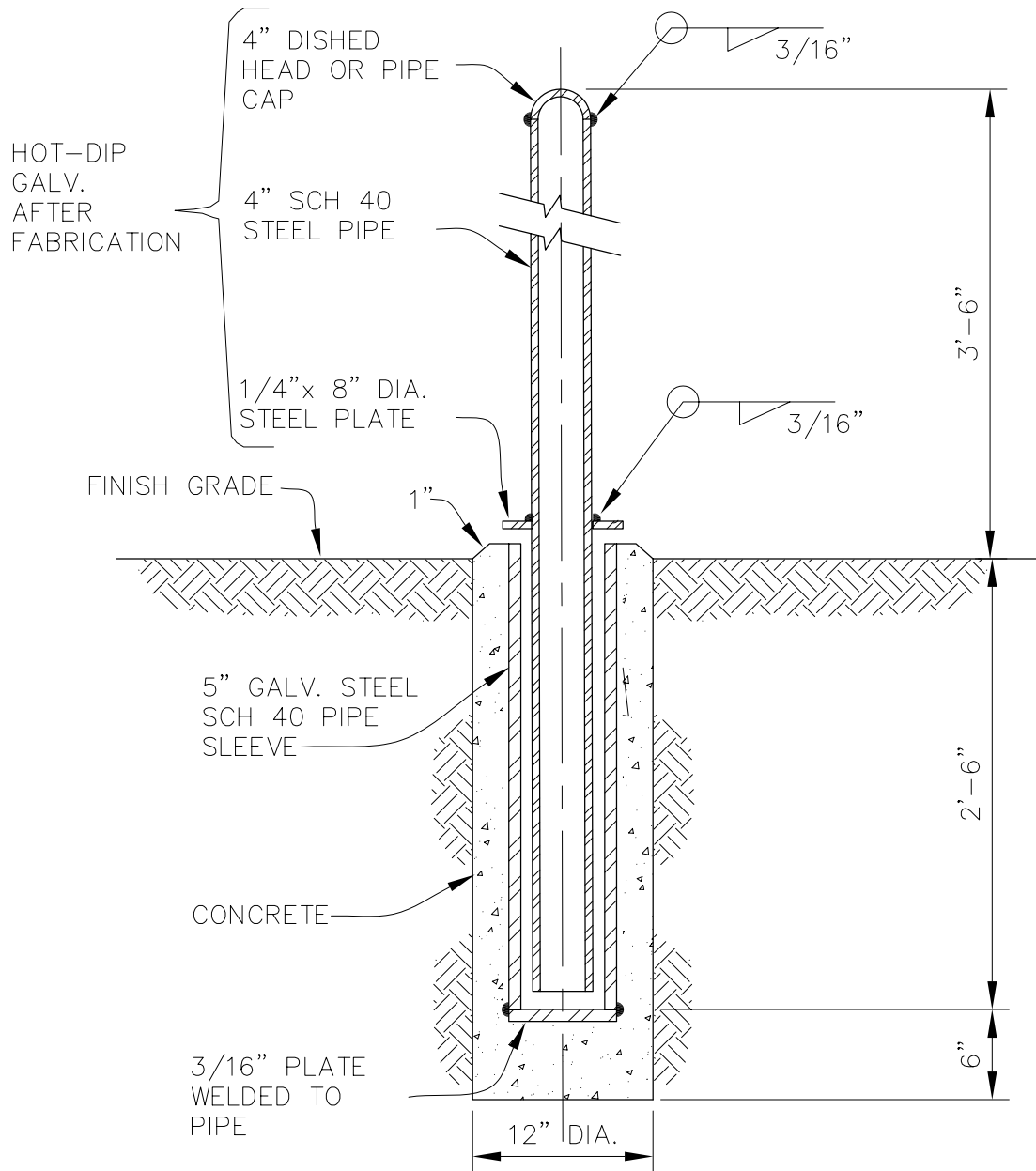


NOTES

- A. MAXIMUM OPERATING PRESSURE SHALL NOT EXCEED 200 PSI WITHOUT PRIOR THCS D APPROVAL.
- B. FIRE HYDRANTS SHALL BE LOCATED NEAR CUT SLOPE WHENEVER POSSIBLE.
- C. CUT SLOPE TO BE STABILIZED IN VICINITY OF HYDRANT.
- D. DRIVABLE ACCESS SHALL NOT BE MORE THAN 6 FT. FROM HYDRANT.
- E. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC #50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN.
- F. FITTINGS, JOINTS, BOLTS AND NUTS ARE TO BE COVERED WITH PLASTIC SHEETING (4 MIL THICK MIN.) PRIOR TO PLACEMENT OF CONCRETE. NO CONCRETE TO BE ALLOWED ON BOLTS.
- G. HYDRANTS MUST HAVE 3' CLEAR MIN. FROM DRIVABLE SPACE OR BOLLARDS ARE REQUIRED; SEE W13.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	6" DRY BARREL, TRAFFIC MODEL HYDRANT WITH (2) 2½" NST HOSE OUTLETS, ONE 4½" NST PUMPER OUTLET, AND A 5¼" SEAT OPENING; BASE CONNECTION IS MECHANICAL JOINT, OPEN COUNTERCLOCKWISE	AMERICAN DARLING B62B OR APPROVED EQUAL; PAINT BODY TWO-COATS SAFETY YELLOW
②		6" C900 OR C909 PVC PIPE	SUITABLE CLASS FOR SERVICE PRESSURE
③	1	6" RESILIENT WEDGE GATE VALVE (MJxFL), NON-RISING STEM, 2" SQUARE NUT	CLOW, MUELLER, AMERICAN DARLING
④	1	FLANGED TEE	SIZE TO SUIT WATER MAIN (6" MIN.)
⑤	1	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	FIRE HYDRANT INSTALLATION		W10
	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	



Twain Harte Community Services District

22912 VANTAGE POINTE DRIVE
PO BOX 649
TWIN HARTE, CA 95383

4 INCH DIAMETER STEEL BOLLARD REMOVABLE

SCALE: NONE

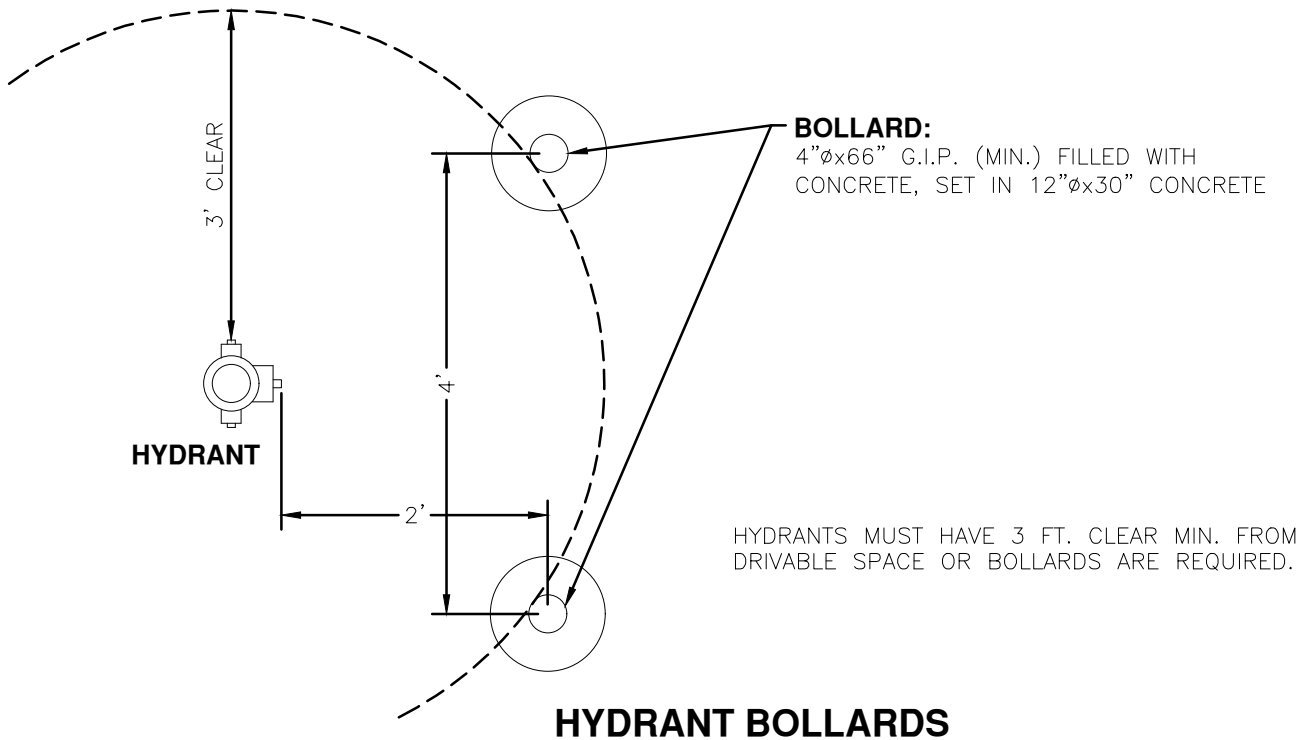
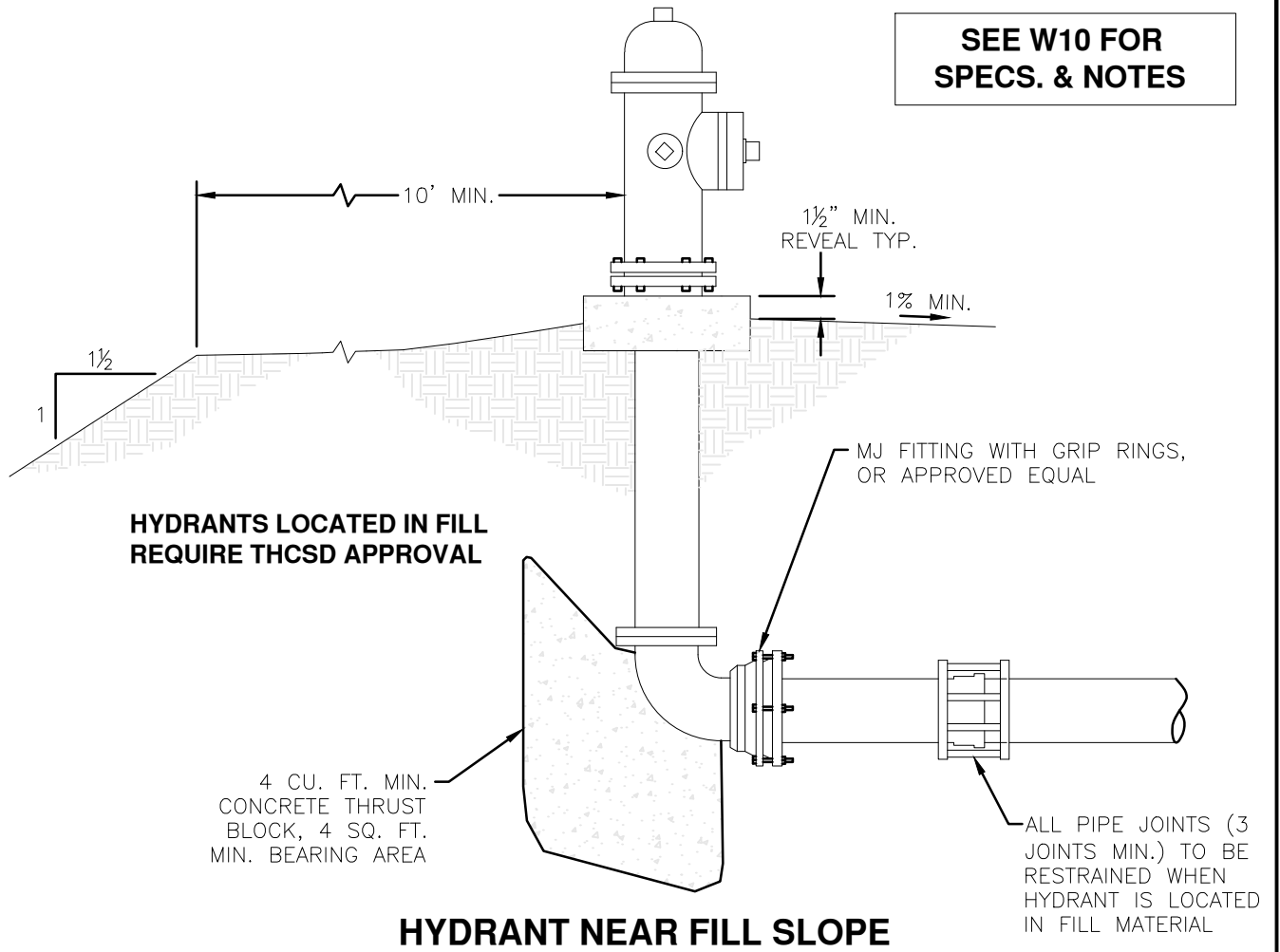
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DATE: NOVEMBER 2006

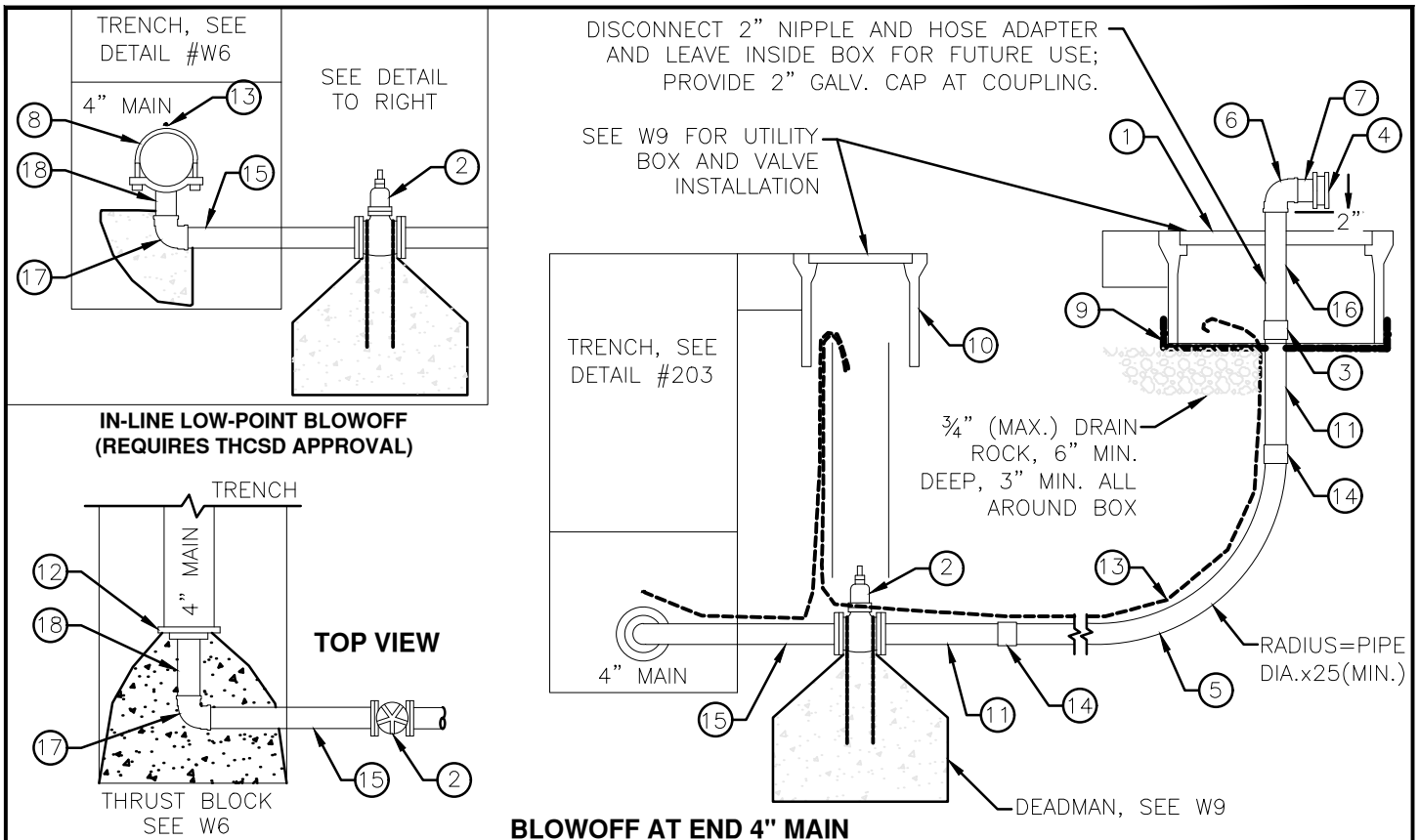
DRAWN BY: RN

W11

**SEE W10 FOR
SPECS. & NOTES**



<p>Twain Harte Community Service District</p>	<p>FIRE HYDRANT NEAR SLOPE AND HYDRANT BOLLARDS</p>		
<p>22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383</p>	<p>SCALE: NTS</p>	<p>APPROVED BY:</p>	<p>W12</p>
<p>DATE: AUG 2024</p>	<p>DRAWN BY:</p>		

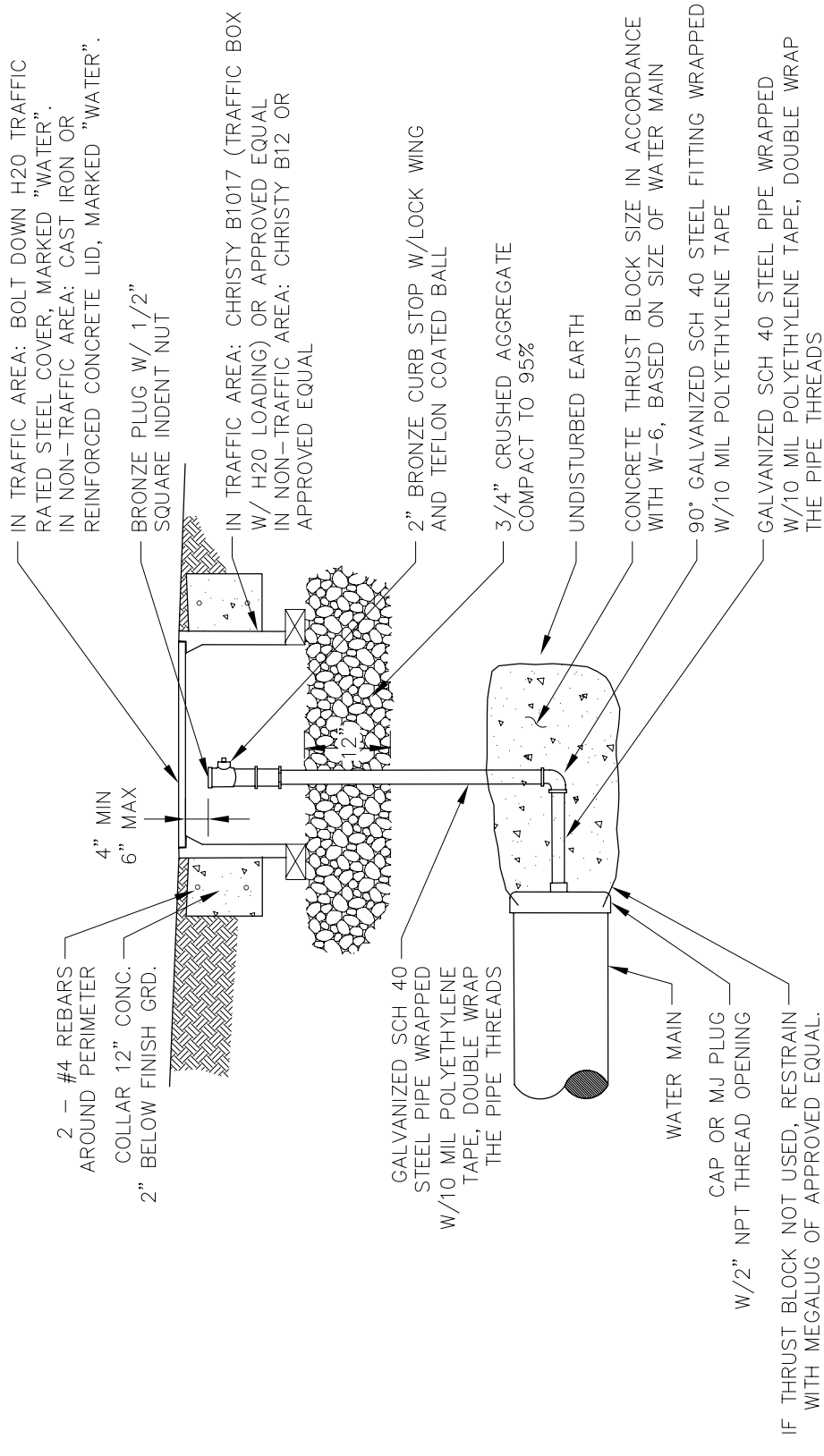


NOTES

- A. THIS BLOWOFF CONSTRUCTION ALLOWED AT END 6" MAIN WITH PRIOR THCS D APPROVAL. BLOWOFF TO BE INSTALLED AT THE END OF ALL DEAD-END WATER MAINS UNLESS HYDRANT IS WITHIN 20 FT. OF END OF MAIN.
- B. DO NOT LOCATE BLOWOFF IN TRAFFIC AREAS.
- C. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.
- D. FITTINGS, JOINTS, BOLTS AND NUTS ARE TO BE COVERED WITH PLASTIC SHEETING (4 MIL. THICK MIN.) PRIOR TO PLACEMENT OF CONCRETE. NO CONCRETE TO BE ALLOWED ON BOLTS.
- E. FOR WATER MAINS 6" OR GREATER, INSTALL FIRE HYDRANT PER W10.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	ARMORCAST-ROTOCAST BOX	#P6000492X18-1 W/#A6000489T LID OR APPROVED EQUAL
②	1	2" RESILIENT WEDGE GATE VALVE, EPOXY COATED	AMERICAN AVK45 OR APPROVED EQUAL
③	1	2" COUPLING WITH 2" PLUG	BRASS
④	1	2"x2½" BRASS FIRE HOSE ADAPTER	NH THREAD, PROVIDE W/PROTECTIVE CAP
⑤	1	2" POLYETHYLENE TUBING, "CTS", 200 PSI	CENTENNIAL CENFLOW OR APPROVED EQUAL
⑥	3	2" 90° ELBOW	SCH40 MIP, GALV.
⑦	2	2" SHORT NIPPLE	SCH40, GALV.
⑧	1	2" SERVICE SADDLE WITH DOUBLE-WIDE STRAP	FORD FS202 (FOR C900 PVC)
⑨	1	¼" HARDWARE CLOTH (GALV.)	MUST COVER ALL ACCESS HOLES
⑩	1	TRAFFIC VALVE BOX WITH LID MARKED "WATER"	CHRISTY G5 W/G5C LID OR APPROVED EQUAL
⑪	3	2"x12" NIPPLE	BRASS
⑫	1	CAST IRON CAP, 2" TAP	MECHANICAL JOINT W/GRIP RINGS
⑬	1	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑭	2	2" FIP x CTS ADAPTER, BRASS	
⑮	1	2"x18" BRASS NIPPLE	⑰ 90° BRASS ELBOW
⑯	1	2"x12" NIPPLE, SCH40, GALV. WITH 2" CAP	⑱ 2"x6" BRASS NIPPLE

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	IN-LINE BLOWOFF AND BLOWOFF AT END 4" WATER MAIN		W13
	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:	



NOTE: THIS DETAIL IS FOR TEMPORARY INSTALLATIONS ONLY, AS APPROVED BY THE DISTRICT.

Twain Harte Community Services District

22912 VANTAGE POINTE DRIVE
PO BOX 649
TWIN HARTE, CA 95383

2 INCH TEMPORARY BLOW OFF ASSEMBLY

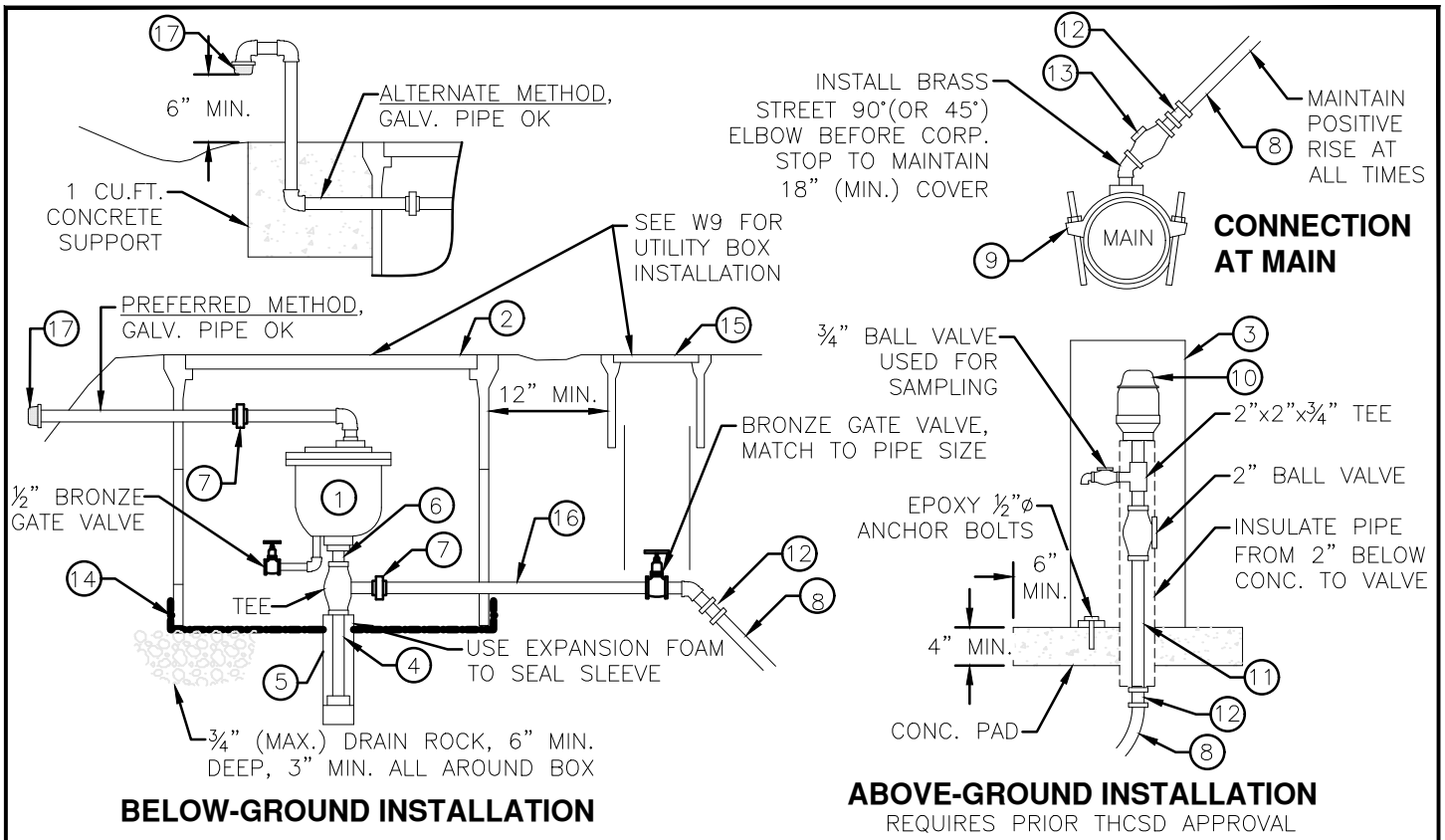
SCALE: NONE

APPROVED BY: SN

DATE: NOVEMBER 2006

DRAWN BY: RN

W14



BELOW-GROUND INSTALLATION

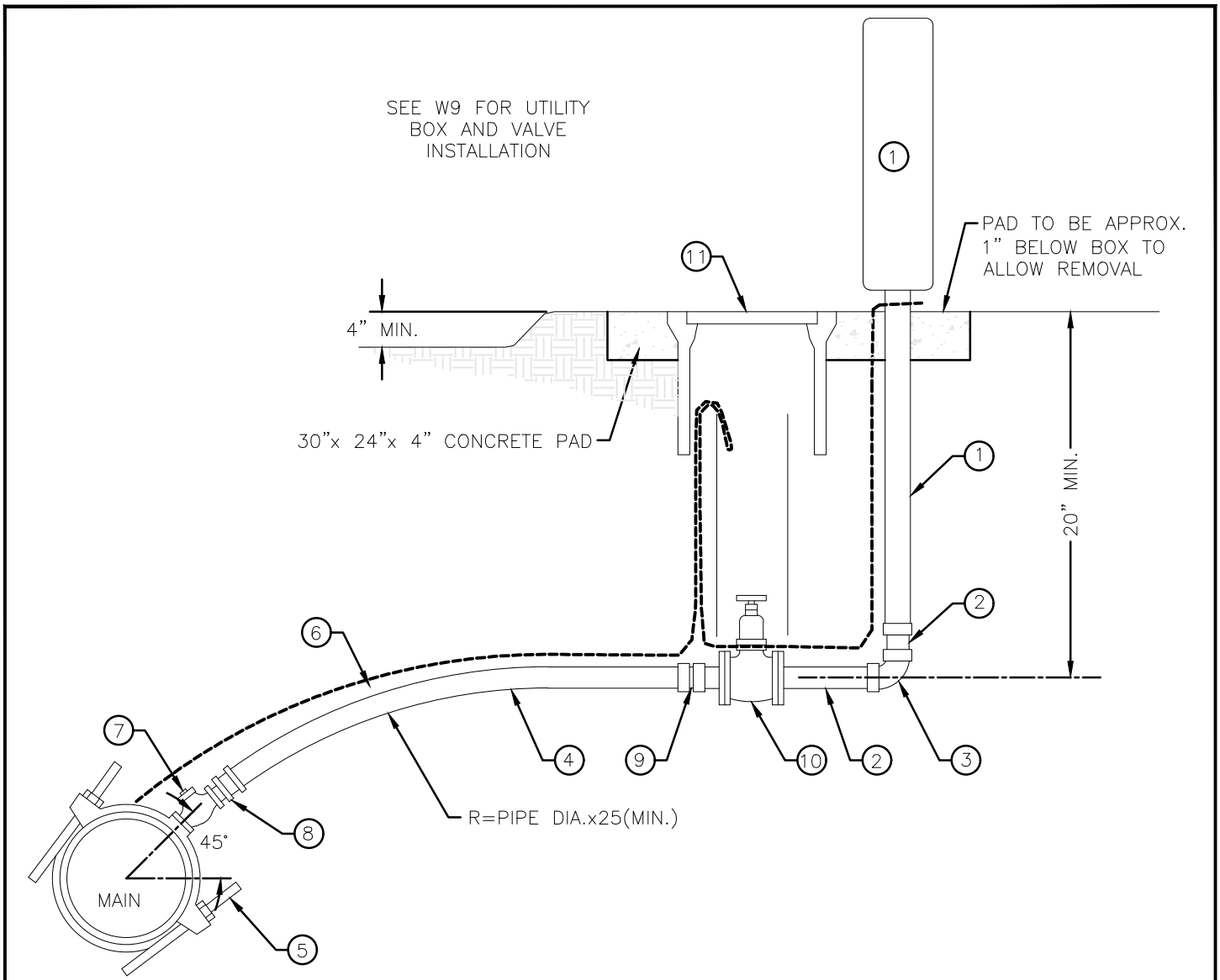
ABOVE-GROUND INSTALLATION
REQUIRES PRIOR THCSO APPROVAL

NOTES

- A. GATE VALVES, BRASS UNIONS AND TEES WILL BE A SPECIFIC SIZE ACCORDING TO THE C.A.V. USED.
- B. ALL CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH OF 2500 PSI IN ALL AREAS SHOWN.
- C. ALL COMBINATION AIR VALVES TO BE LOCATED OUT OF TRAFFIC AREAS.
- D. ABOVE-GROUND COMB. AIR VALVES MUST BE PROTECTED FROM TRAFFIC WITH BOLLARDS OR LARGE BOULDERS.
- E. ALL FITTINGS SHALL BE BRASS UNLESS OTHERWISE NOTED.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	COMBINATION AIR VALVE	1" APCO 143C FOR 6" & 8" MAINS, 2" APCO 145C FOR 10" & 12" MAINS, OR APPROVED EQUAL
②	1	UTILITY BOX AND LID, USE EXTENSION(S)	CHRISTY B36 FOR 1" VALVE, CHRISTY B40 FOR 2" VALVE, 61D LID, OR APPROVED EQUAL
③	1	VALVE PEDESTAL, 12"x12"x30"	PLACER WATER WORKS #PW/SJARV-2 OR APPROVED EQUAL
④	1	1"x 8" BRASS NIPPLE WITH BRASS CAP	USE 1"x 2" REDUCER WITH NIPPLE FOR 2" C.A.V.
⑤	1	2"x12" PVC NIPPLE WITH 2" CAP	SCH. 40 PVC
⑥	1	3" LONG BRASS NIPPLE	SIZE PER PIPE
⑦		BRASS UNION	SIZE PER PIPE
⑧	1	1" POLYETHYLENE TUBING FOR 6" & 8" MAINS, 2" TUBING FOR 10" & 12" MAINS	WESTFLEX SP200 PSI (OR APPROVED EQUAL)
⑨	1	1" OR 2" SERVICE SADDLE	FORD FS202 FOR C900 OR C909 PVC, OR APPROVED EQUAL
⑩	1	1" OR 2" COMBINATION AIR VALVE	BERMAD MODEL #4415 OR APPROVED EQUAL
⑪	1	1" OR 2" BRASS NIPPLE, 12" MIN.	EXTEND 6" MIN. BELOW GRADE
⑫	1	FEMALExCTS PACK JOINT COUPLING	FORD C14-44(1"), C14-77(2"), OR APPROVED EQUAL
⑬	1	CORPORATION STOP (MIPxMIP)	FORD FB500-4-NL(1"), FB500-7-NL(2") OR APPROVED EQUAL
⑭		¼" HARDWARE CLOTH (GALV.)	MUST COVER ALL ACCESS HOLES
⑮	1	TRAFFIC VALVE BOX W/ LID MARKED "WATER"	CHRISTY G5 BOX WITH G5C LID, OR APPROVED EQUAL
⑯	1	36" LONG BRASS NIPPLE	SIZE PER PIPE
⑰	1	AIR VENT CAP #10 MESH	T. CHRISTY #VCI FOR 1" AIR/VAC; #VC2 FOR 2" AIR/VAC

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	COMBINATION AIR VALVE ("AIR/VAC")		W15
	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	

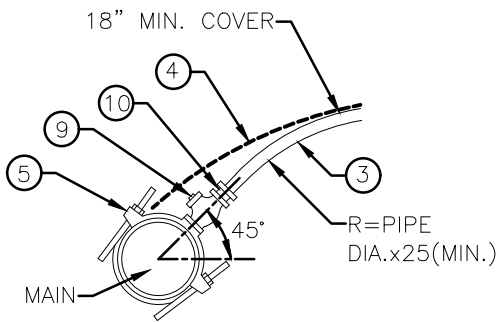


NOTES

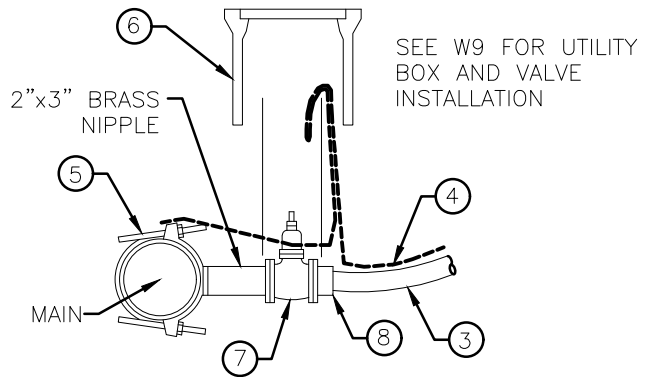
- A. SAMPLE STATION SHALL BE LOCATED NEAR THE PROPERTY LINE OR EASEMENT IN AN EASILY ACCESSIBLE AREA THAT IS NOT SUBJECT TO TRAFFIC. BOLLARDS MAY BE REQUIRED.
- B. SERVICE SADDLES SHALL BE 3 FEET MIN. FROM PIPE FITTINGS, JOINTS AND TAPS.
- C. INSULATE ABOVE-GROUND PIPE WITH 3/8" THICK FOAM PIPE INSULATION.

①	1	PREFABRICATED SAMPLE STATION	AMERICAN MACHINE AND CONVEYOR MODEL EZ-02FCW, 24"-44" HIGH, COLOR GREEN OR APPROVED EQUAL
②	1	3/4" BRASS NIPPLE	
③	1	3/4" BRASS 90° ELBOW	
④	1	3/4" POLYETHYLENE SERVICE TUBING	WESTFLEX, OR APPROVED EQUAL, 200 PSI MIN.
⑤	1	3/4" SERVICE SADDLE	FORD FS202 STAINLESS STEEL BAND
⑥	1	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑦	1	CORPORATION STOP (MALExMALE)	FORD F500-4/C14-44-3/4"
⑧	1	3/4" FIP x CTS PACK JOINT	
⑨	1	3/4" MIP x CTS PACK JOINT	
⑩	1	3/4" GATE VALVE	RED & WHITE WITH HAND WHEEL
⑪	1	TRAFFIC VALVE BOX WITH LID MARKED "WATER"	CHRISTY G5 W/ G5C LID OR APPROVED EQUAL

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	WATER QUALITY SAMPLE STATION		W16
	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	



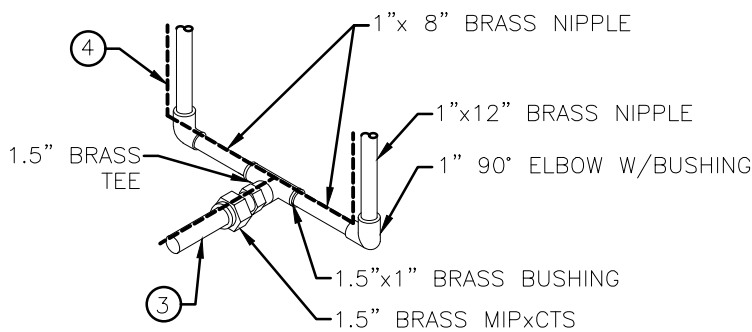
SINGLE OR DOUBLE SERVICE



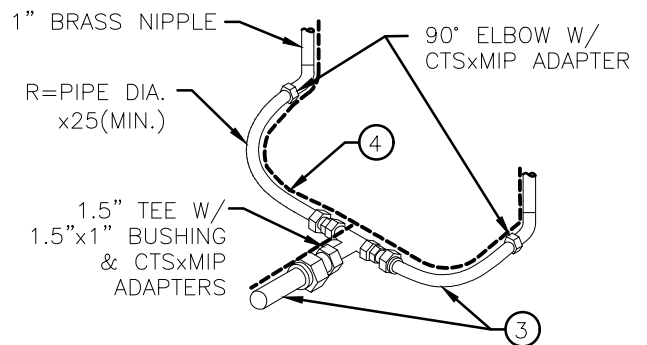
TRIPLE OR QUADRUPLE SERVICE

CONNECTION AT MAIN SHALL BE 3 FT. FROM ALL FITTINGS AND JOINTS

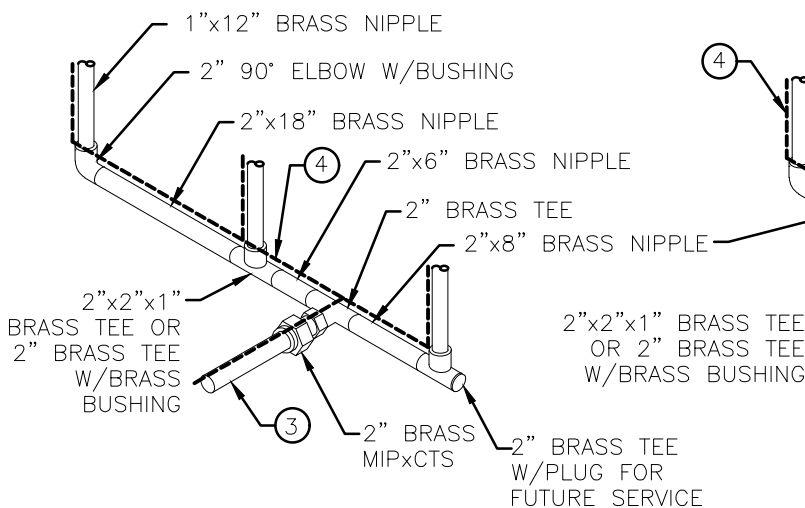
CONNECTION AT MAIN



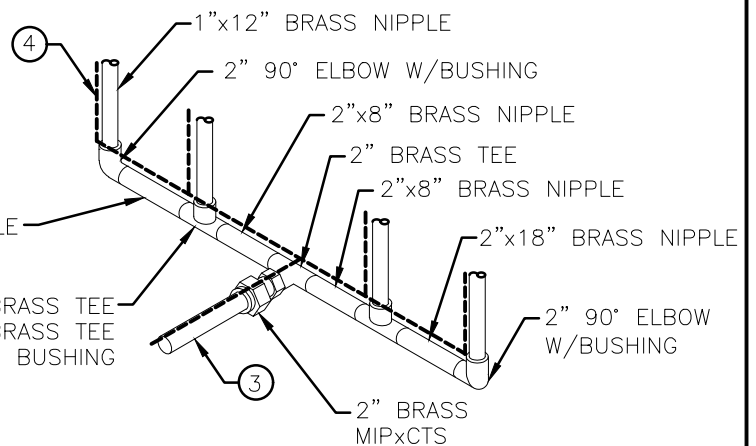
DOUBLE SERVICE



**DOUBLE SERVICE
ALTERNATE INSTALLATION
WITH THCSD APPROVAL**



TRIPLE SERVICE

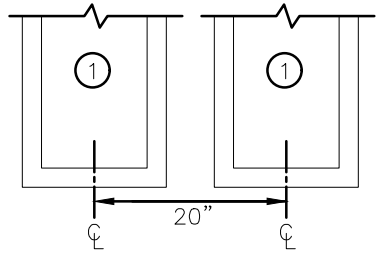
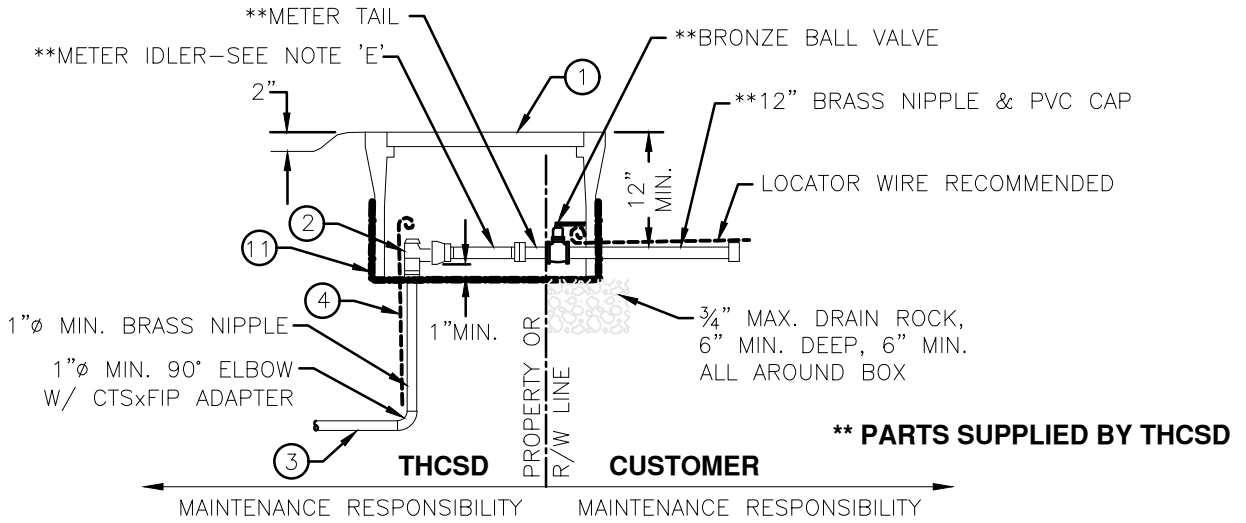


QUADRUPLE SERVICE

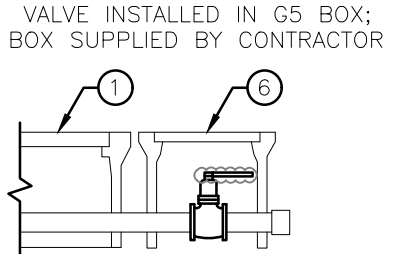
CONNECTION AT METER

SEE W18 FOR NOTES, PARTS LIST & WATER SERVICE BOX DETAIL

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	WATER SERVICE LATERAL CONNECTIONS		W17
	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	



WATER SERVICE BOX SEPARATION



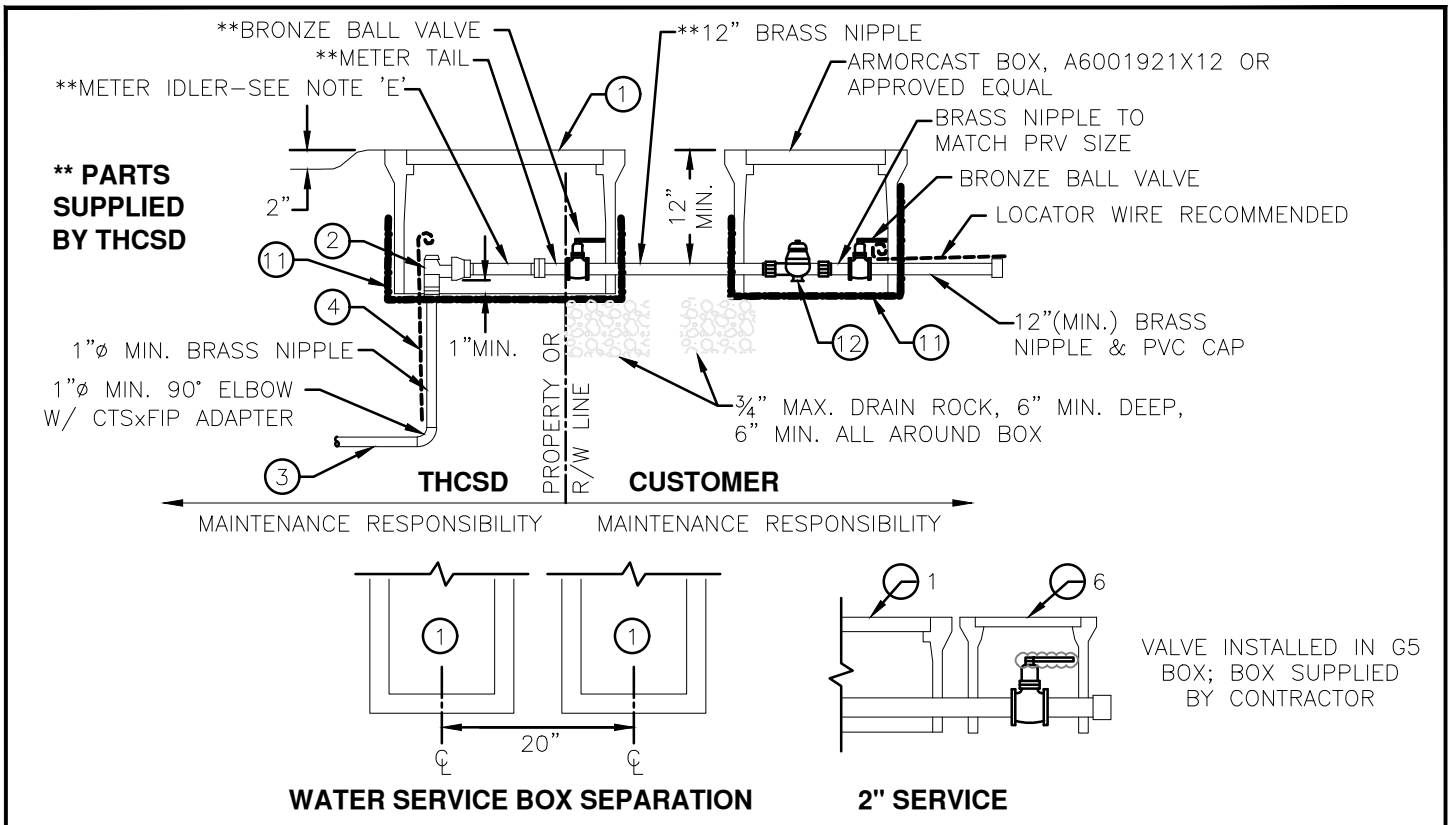
2" SERVICE

NOTES

- A. SERVICES SHALL BE LOCATED OUT OF TRAVELED WAY (INCLUDING SHOULDERS) UNLESS APPROVED BY THCS D
- B. SERVICES LOCATED WITHIN THE TRAVELED WAY SHALL HAVE A 6" WIDE BY 6" DEEP CONCRETE COLLAR.
- C. ONE METER PER BOX ONLY.
- D. FOR DOUBLE, TRIPLE, OR QUADRUPLE SERVICE, USE BRASS PIPE FOR MANIFOLD BELOW ANGLE STOPS, SAME SIZE AS SERVICE PIPE.
- E. METERS WILL BE SET BY THCS D AFTER APPLICATION IS SIGNED AND FEES ARE PAID.
- F. USE POLYETHYLENE SERVICE TUBING CONTINUOUS FROM MAIN TO ANGLE STOP OR GATE VALVE, 1"Ø FOR SINGLE SERVICE, 1½"Ø FOR DOUBLE SERVICE, AND 2"Ø FOR TRIPLE & QUADRUPLE SERVICE.
- G. SERVICE SADDLES SHALL BE 3 FT. MIN. FROM PIPE FITTINGS, JOINTS AND TAPS.
- H. PER SECTION 64591 OF THE CALIFORNIA WATERWORKS STANDARDS, ALL ITEMS IN CONTACT WITH POTABLE WATER SHALL BE CERTIFIED AS MEETING THE SPECIFICATIONS OF NSF61-2005.
- I. CONTRACTOR SHALL BE RESPONSIBLE TO PRESSURE TEST ALL PIPE, VALVES & FITTINGS UP TO THE ANGLE STOP.

ITEM	DESCRIPTION	REMARKS
①	¾" OR 1" METER: ARMORCAST-ROTOCAST BOX P6000492X12 W/ARMORCAST LID #A6000489T-CVTY 1½" OR 2" METER: ARMORCAST-ROTOCAST BOX P6001534TX12 W/ARMORCAST LID #A6000947T-CVTY	
②	LOCKABLE ANGLE STOP FOR ¾" OR 1" METERS: LOCKABLE ANGLE STOP FOR 1½" OR 2" METERS:	FORD BA13-444W-NL FORD BFA13-666W-NL OR BFA13-777W-NL
③	POLYETHYLENE SERVICE TUBING,"CTS" 200 PSI MIN.	CENTENNIAL CENFLOW, OR APPROVED EQUAL, SEE NOTE 'F'
④	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE DWG. W3
⑤	SERVICE SADDLE, MATCH TUBING SIZE, NOTE 'F'	FORD FCD202, JCM404 OR APPROVED EQUAL
⑥	TRAFFIC VALVE BOX MARKED "WATER"	CHRISTY G5 BOX W/G5C LID OR APPROVED EQUAL
⑦	2" RESILIENT WEDGE GATE VALVE, EPOXY COATED	AMERICAN AVK45 OR APPROVED EQUAL (2" SERVICE)
⑧	2" MIP x CTS ADAPTER (BRASS)	MULTIPLE SERVICES ONLY
⑨	CORPORATION STOP, 1"Ø MIN. MATCH TUBING SIZE (MALExMALE)	1" SERVICE: FORD FB500-4-NL OR APPROVED EQUAL 1.5" SERVICE: FORD FB500-6-NL OR APPROVED EQUAL
⑩	FEMALExCTS PACK JOINT COUPLING	1" SERVICE: FORD C14-44 OR APPROVED EQUAL 1.5" SERVICE: FORD C14-66 OR APPROVED EQUAL
⑪	¼" HARDWARE CLOTH (GALV.)	MUST COVER ALL ACCESS HOLES

Twain Harte Community Service District	WATER SERVICE		
	22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:

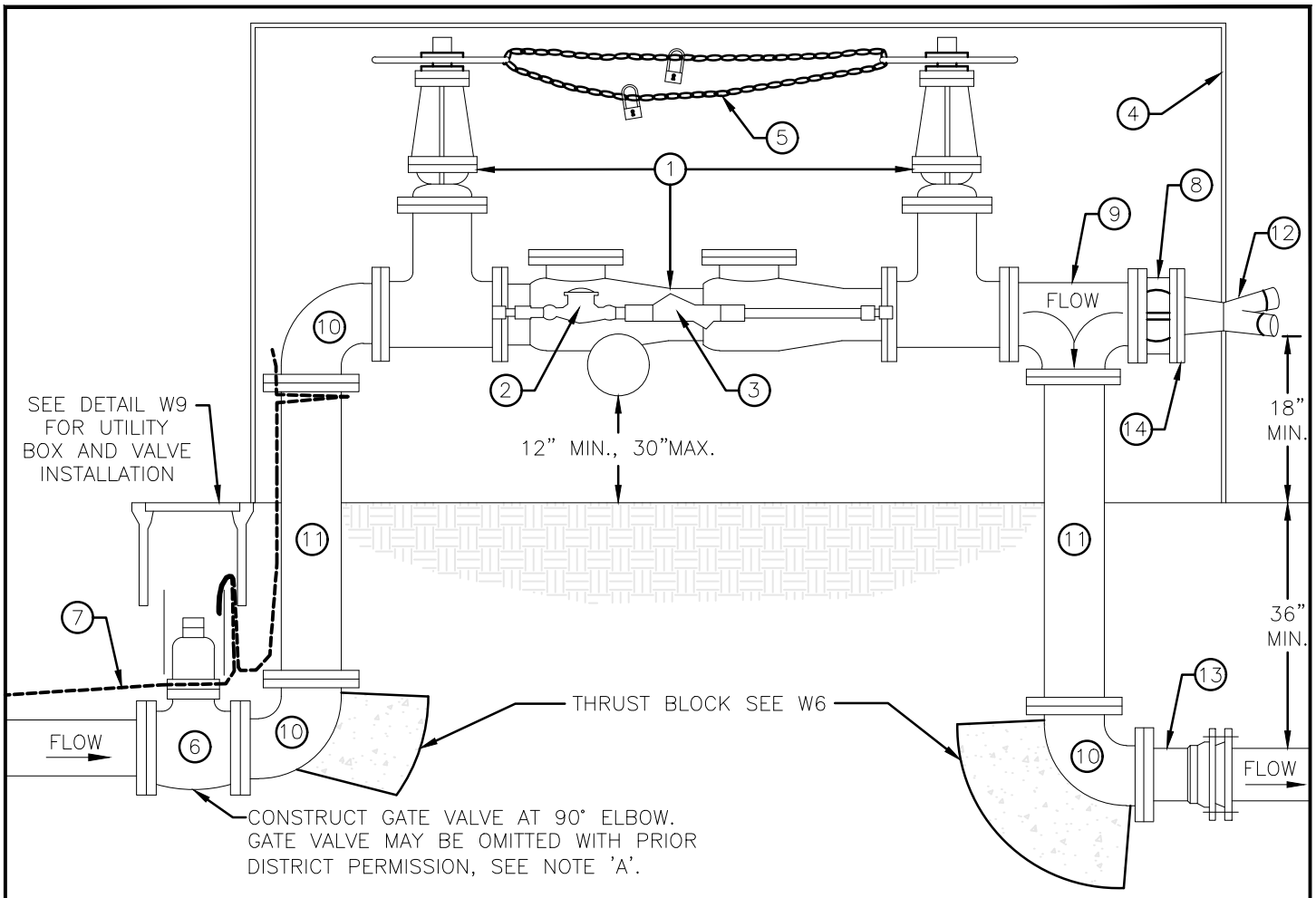


NOTES

- A. SERVICES SHALL BE LOCATED OUT OF TRAVELED WAY (INCLUDING SHOULDERS) UNLESS APPROVED BY THCS D
- B. SERVICES LOCATED WITHIN THE TRAVELED WAY SHALL HAVE A 6" WIDE (MIN.) BY 15" DEEP CONCRETE COLLAR.
- C. ONE METER PER BOX ONLY.
- D. FOR DOUBLE, TRIPLE, OR QUADRUPLE SERVICE, USE BRASS PIPE FOR MANIFOLD BELOW ANGLE STOPS, SAME SIZE AS SERVICE PIPE.
- E. METERS WILL BE SET BY THCS D AFTER APPLICATION IS SIGNED AND FEES ARE PAID.
- F. USE POLYETHYLENE SERVICE TUBING CONTINUOUS FROM MAIN TO ANGLE STOP OR GATE VALVE, 1"Ø FOR SINGLE SERVICE, 1½"Ø FOR DOUBLE SERVICE, AND 2"Ø FOR TRIPLE & QUADRUPLE SERVICE.
- G. SERVICE SADDLES SHALL BE 3 FT. MIN. FROM PIPE FITTINGS, JOINTS AND TAPS.
- H. PER SECTION 64591 OF THE CALIFORNIA WATERWORKS STANDARDS, ALL ITEMS IN CONTACT WITH POTABLE WATER SHALL BE CERTIFIED AS MEETING THE SPECIFICATIONS OF NSF61-2005.
- I. CONTRACTOR SHALL BE RESPONSIBLE TO PRESSURE TEST ALL PIPE, VALVES & FITTINGS UP TO THE ANGLE STOP.

ITEM	DESCRIPTION	REMARKS
①	¾" OR 1" METER: ARMORCAST-ROTOCAST BOX P6000492X12 W/ARMORCAST LID #A6000489T-CVTY 1½" OR 2" METER: ARMORCAST-ROTOCAST BOX P6001534TX12 W/ARMORCAST LID #A6000947T-CVTY	
②	LOCKABLE ANGLE STOP FOR ¾" OR 1" METER: LOCKABLE ANGLE STOP FOR 1½" OR 2" METER:	FORD BA13-444W-NL FORD BFA13-666W-NL OR BFA13-777W-NL
③	POLYETHYLENE SERVICE TUBING,"CTS" 200 PSI MIN.	CENTENNIAL CENFLOW, OR APPROVED EQUAL, SEE NOTE 'F'
④	#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑤	SERVICE SADDLE, MATCH TUBING SIZE, NOTE 'F'	FORD FCD202, JCM404 OR APPROVED EQUAL
⑥	TRAFFIC VALVE BOX MARKED "WATER"	CHRISTY G5 BOX W/G5C LID OR APPROVED EQUAL
⑦	2" RESILIENT WEDGE GATE VALVE, EPOXY COATED	AMERICAN AVK45 OR APPROVED EQUAL (2" SERVICE)
⑧	2" MIP x CTS ADAPTER (BRASS)	MULTIPLE SERVICES ONLY
⑨	CORPORATION STOP, 1"Ø MIN. MATCH TUBING SIZE (MALExMALE)	1" SERVICE: FORD FB500-4-NL OR APPROVED EQUAL 1.5" SERVICE: FORD FB500-6-NL OR APPROVED EQUAL
⑩	FEMALExCTS PACK JOINT COUPLING	1" SERVICE: FORD C14-44 OR APPROVED EQUAL 1.5" SERVICE: FORD C14-66 OR APPROVED EQUAL
⑪	¼" HARDWARE CLOTH (GALV.)	MUST COVER ALL ACCESS HOLES
⑫	PRV W/DOUBLE UNION, SIZE TO MATCH METER, 1" MIN.	1" PRV: WATTS #LFX65BDU OR EQUAL 1.5" OR 2" PRV: WATTS #LFX65BDU OR EQUAL

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	WATER SERVICE AND PRESSURE-REDUCING VALVE (WHERE CALCULATED STATIC INLET PRESSURE IS 80 PSI OR GREATER)		W19
	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:	



SEE DETAIL W9 FOR UTILITY BOX AND VALVE INSTALLATION

12" MIN., 30" MAX.

18" MIN.

36" MIN.

THRUST BLOCK SEE W6

CONSTRUCT GATE VALVE AT 90° ELBOW. GATE VALVE MAY BE OMITTED WITH PRIOR DISTRICT PERMISSION, SEE NOTE 'A'.

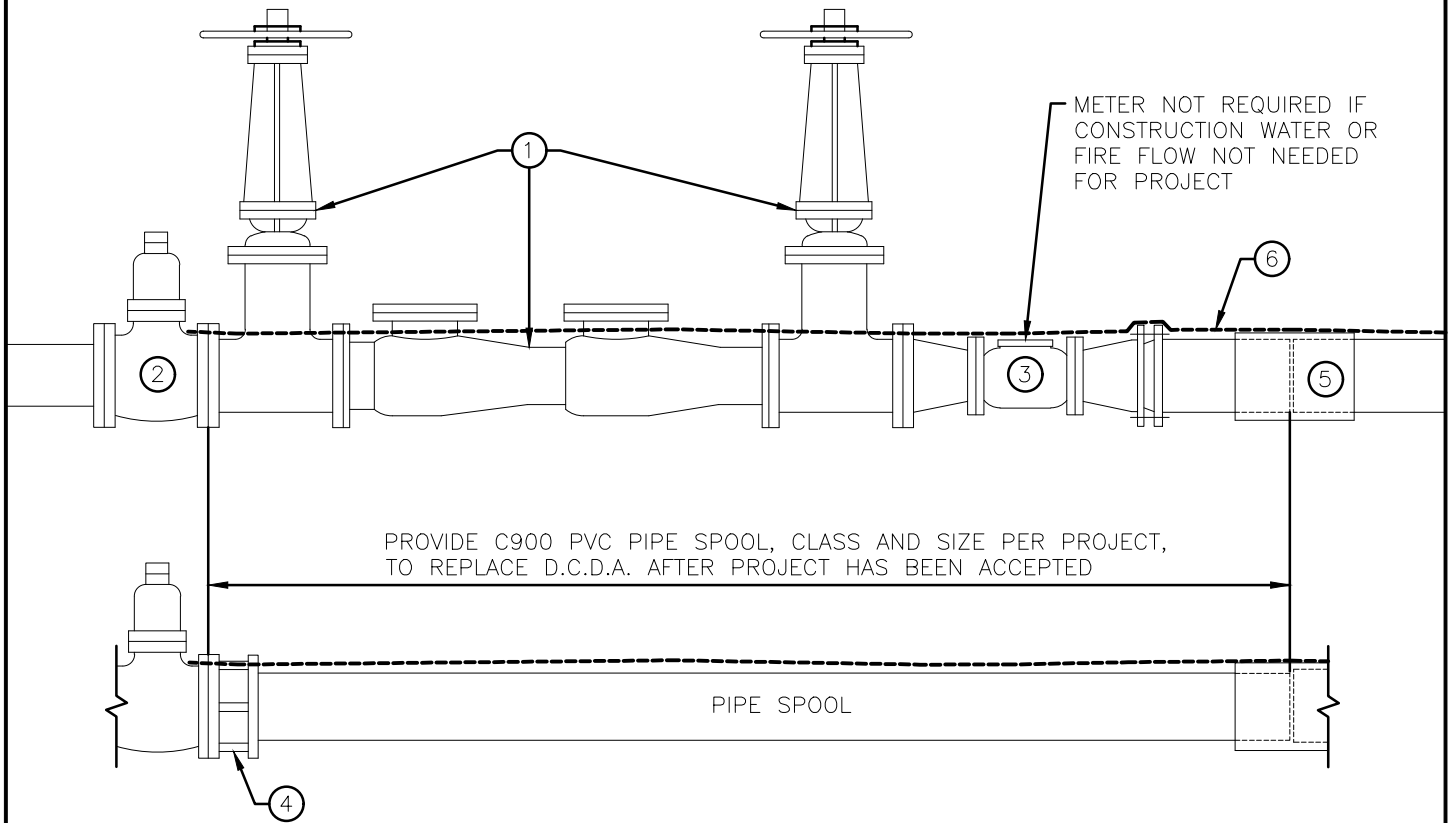
NOTES

- A. ALL MAINTENANCE, LIABILITY AND TESTING OF THE REDUCED PRESSURE DETECTOR ASSEMBLY (R.P.D.A.) SHALL BE SOLELY BY CUSTOMER, PER THCSO REGULATIONS, STARTING AT THE VALVE CLOSEST TO THE R.P.D.A.
- B. EXPOSED MAIN AND BYPASS PIPE ABOVE GROUND SHALL BE WRAPPED WITH INSULATION WHEREVER IT DOES NOT INTERFERE WITH OPERATION OF THE R.P.D.A.
- C. R.P.D.A. SHALL BE ON THE CURRENT STATE APPROVED LIST.
- D. CHECK WITH THE APPROPRIATE FIRE DEPARTMENT FOR SPECIFIC ADDITIONAL REQUIREMENTS.
- E. FIRE DEPARTMENT CONNECTION SHALL BE LOCATED SO THAT HOSE LINES CAN BE READILY ATTACHED WITHOUT INTERFERENCE FROM NEARBY OBJECTS INCLUDING BUILDINGS, FENCES OR OTHER FIRE DEPT. CONNECTIONS.
- F. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.

ITEM	QTY	DESCRIPTION			
①	1	REDUCED PRESSURE DETECTOR ASSEMBLY WITH OS & Y VALVES OUTSIDE STEM AND YOLK. SEE NOTE 'C'.			
②	1	BYPASS METER MUST READ IN GALLONS.			
③	1	REDUCED PRESSURE BACKFLOW PREVENTER			
④	1	WEATHERGUARD BLANKET (OR EQUAL) OR APPROVED ENCLOSURE			
⑤	1	¼" GALV. STEEL CHAIN W/2 KEYED PADLOCKS: ONE FOR THCSO AND ONE FOR FIRE DEPT./CDF			
⑥	1	RESILIENT WEDGE GATE VALVE, SEE W9			
⑦	1	#12 AWG INSULATED LOCATOR WIRE, SINGLE STRAND COPPER, SEE W3			
⑧	1	WAFER CHECK VALVE, VAL-MATIC SERIES 1400, FLOMATIC #888, OR APPROVED EQUAL			
⑨	1	DUCTILE IRON FLANGED TEE	⑫	1	FIRE DEPARTMENT CONNECTION (THREADED)
⑩	3	DUCTILE IRON 90° FLANGED ELBOW	⑬	2	FLANGExMJ FITTING
⑪	2	DUCTILE IRON FLANGED RISER	⑭	1	THREADED COMPANION FLANGE

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	REDUCED PRESSURE DETECTOR ASSEMBLY		W20
	SCALE: NTS	APPROVED BY:	
	DATE: AUG 2024	DRAWN BY:	

INSTALLATION OF TEMPORARY DOUBLE CHECK DETECTOR ASSEMBLY REQUIRED PRIOR TO CONSTRUCTION OF NEW WATER FACILITIES

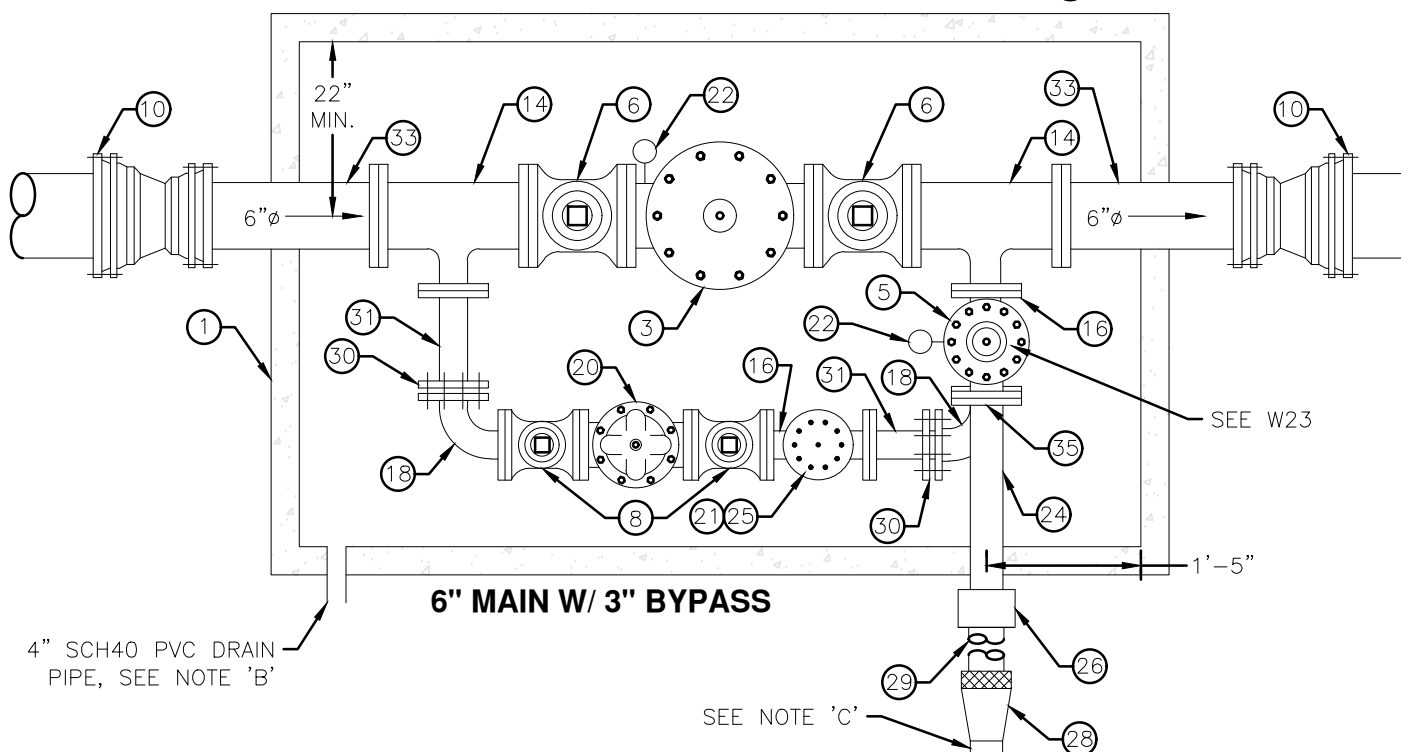
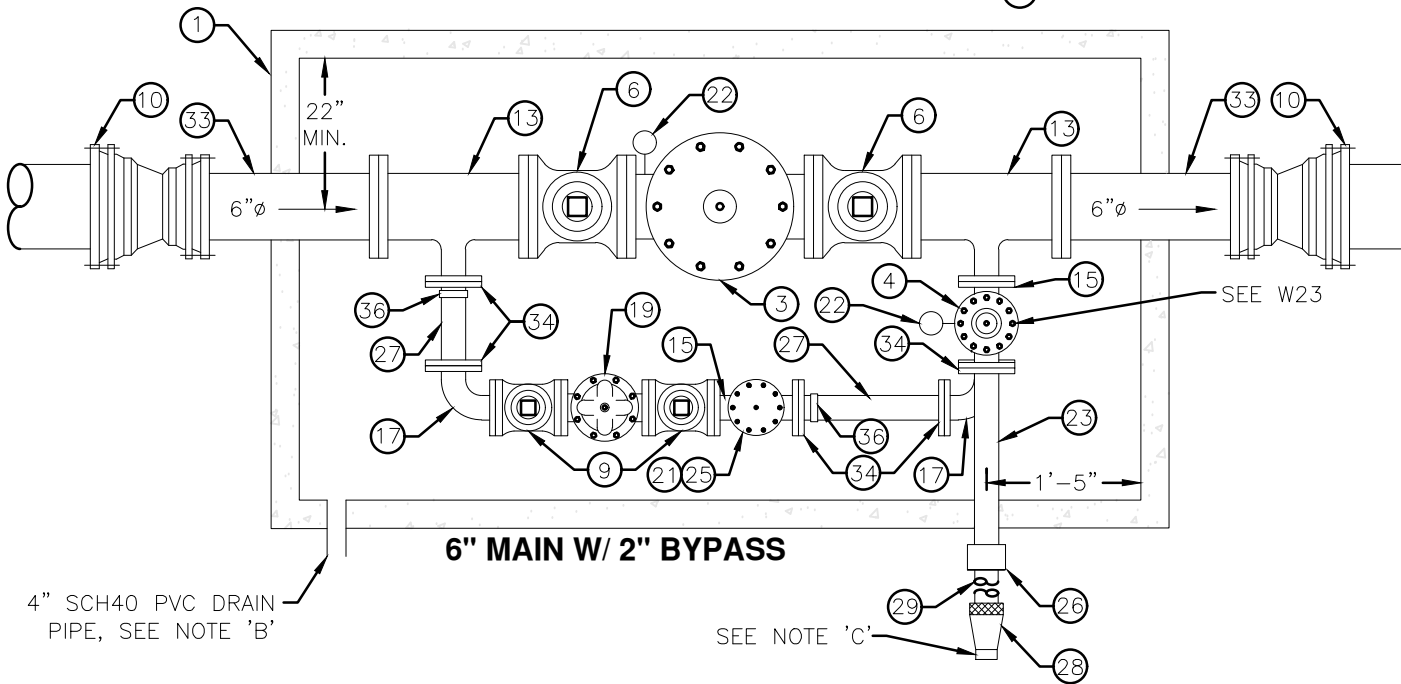
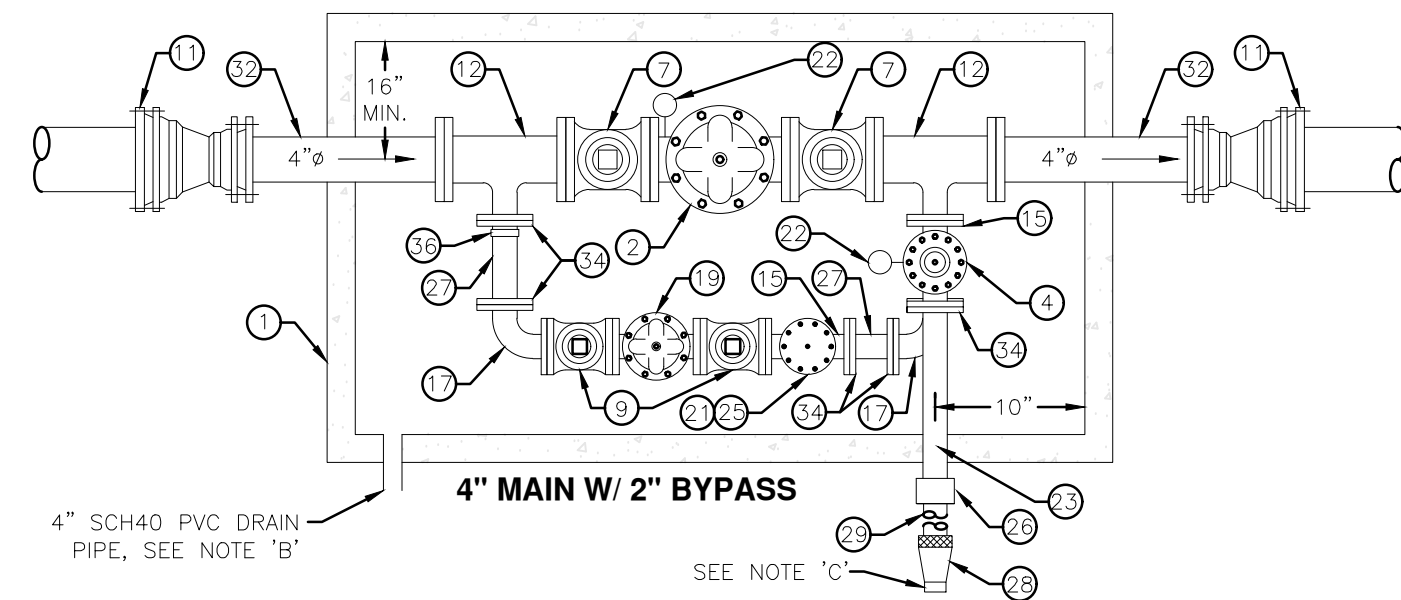


NOTES

- A. DETECTOR CHECK DETECTOR ASSEMBLY (D.C.D.A.) SHALL BE ON THE CURRENT STATE-APPROVED LIST. SEE THCSO FOR LIST.
- B. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.
- C. CONTRACTOR IS RESPONSIBLE FOR SUPPORTING AND PROTECTING D.C.D.A. AND METER UNTIL PROJECT HAS BEEN COMPLETED AND ACCEPTED BY THCSO

ITEM	QTY	DESCRIPTION
①	1	APPROVED DOUBLE CHECK DETECTOR ASSEMBLY
②	1	RESILIENT WEDGE GATE VALVE, SEE W9
③	1	4" TURBINE METER WITH 6"x4" FLxFL REDUCER & 4"x8" FLxMJ REDUCER
④	1	FLANGExCOUPLING ADAPTER
⑤	1	C900 COUPLING
⑥		#12 AWG INSULATED LOCATOR WIRE, SINGLE STRAND COPPER, SEE W3

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	DOUBLE CHECK DETECTOR ASSEMBLY FOR PROJECT UNDER CONSTRUCTION		W21
	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:	



① VAULT: "COOK CONCRETE PRODUCTS" OR EQUAL: 2500 PSI MIN.

IN TRAFFIC AREAS

OUT OF TRAFFIC AREAS

- 4" MAIN W/2" BYPASS: 4'x7'x4'DEEP*** CHRISTY R37-52HT OR EQUAL* USF MODEL AHD 48"x42" CLR. OPNG. OR EQ.**
 6" MAIN W/2" BYPASS: 5'x8'x4'DEEP*** PER DISTRICT ENGINEER USF MODEL AHD 48"x60" CLR. OPNG. OR EQ.**
 6" MAIN W/3" BYPASS: 5'x8'x4'DEEP*** PER DISTRICT ENGINEER USF MODEL AHD 48"x60" CLR. OPNG. OR EQ.**
 * SET HATCH ON VAULT AND DRY PACK TO ALLOW FOR FUTURE GRADE ADJUSTMENT.
 ** HATCH TO BE CAST INTO TOP CONCRETE SLAB BY VAULT MANUFACTURER.
 *** CLEAR INSIDE DIMENSIONS

CONSTRUCT VAULT ON 6" OF 3/4" A.B. (COMPACTED). IF REQUIRED BY THCS, BOLLARDS SHALL BE INSTALLED PER DETAIL, SEE W23.

QTY	ITEM	NOTES
②	1 4" P.R.V. W/STAINLESS STEEL TRIM (FL)	CLA-VAL 90-01AB OR EQ., SELECT SPRING BASED ON PRESSURE
③	1 6" P.R.V. W/STAINLESS STEEL TRIM (FL)	CLA-VAL 90-01AB OR EQ., SELECT SPRING BASED ON PRESSURE
④	1 2" PRESSURE RELIEF VALVE W/ STAINLESS STEEL TRIM, ANGLE STYLE (FL)	CLA-VAL 50-01 OR EQ., SELECT SPRING BASED ON PRESSURE, CAN ROTATE 90° AS NEEDED, SEE W23.
⑤	1 3" PRESSURE RELIEF VALVE W/ STAINLESS STEEL TRIM, ANGLE STYLE (FL)	CLA-VAL 50-01 OR EQ., SELECT SPRING BASED ON PRESSURE, CAN ROTATE 90° AS NEEDED, SEE W23.
⑥	2 6" GATE VALVE, (FL)	
⑦	2 4" GATE VALVE, (FL)	
⑧	3 3" GATE VALVE, (FL)	SEE W23
⑨	3 2" GATE VALVE, (FL)	SEE W23
⑩	2 _"x6" MJxMJ REDUCER	
⑪	2 _"x4" MJxMJ REDUCER	
⑫	2 4"x4"x2" TEE, DUCTILE IRON, (FL)	
⑬	2 6"x6"x2" TEE, DUCTILE IRON, (FL)	
⑭	2 6"x6"x3" TEE, DUCTILE IRON, (FL)	
⑮	2 2"x2"x2" TEE, DUCTILE IRON, (FL)	SEE W23
⑯	2 3"x3"x3" TEE, DUCTILE IRON, (FL)	SEE W23
⑰	2 2" 90° ELBOW, (FL)	
⑱	2 3" 90° ELBOW, (FL)	
⑲	1 2" P.R.V. W/SS TRIM & KO KIT (FL)	CLA-VAL 90-01AS OR EQ.
⑳	1 3" P.R.V. W/SS TRIM & KO KIT (FL)	CLA-VAL 90-01AS OR EQ.
㉑	1 COMBINATION AIR VALVE, (AS NEEDED), SEE DWG. #203	1" APCO 143C FOR 6" & 8" MAINS, 2" APCO 145C FOR 10" & 12" MAINS, OR EQ.
㉒	2 PRESSURE GAUGE, OIL FILLED (1/4" MPT)	SEE DWG. #214-B
㉓	1 2"x30" BRASS NIPPLE	
㉔	1 3"x36" BRASS NIPPLE	
㉕	1 _" BLIND FLANGE	TAP AS NEEDED FOR PRESSURE GAUGE, CAVV, SAMPLE POINTS
㉖	1 _" PVC ADAPTER	
㉗	2 2" BRASS NIPPLE, THREADED x _	FIELD FIT
㉘	1 _" RUBBER CHECK VALVE (SLIP)	PROCO MDL 730 OR EQ.
㉙	1 _" PVC SCH40	FIELD FIT LENGTH
㉚	2 3" UNIFLANGE ADAPTER	
㉛	2 3"x_" DUCTILE IRON SPOOL (FLxPE)	FIELD FIT LENGTH
㉜	2 4"x30"LONG MIN. DUCTILE IRON SPOOL (FLxPE)	FIELD FIT LENGTH
㉝	2 6"x30"LONG MIN. DUCTILE IRON SPOOL (FLxPE)	FIELD FIT LENGTH
㉞	5 2" THREADED COMPANION FLANGE	
㉟	1 3" THREADED COMPANION FLANGE	
㊱	1-2 2" MIPxPACK JOINT	FORD C85-77 OR EQ.

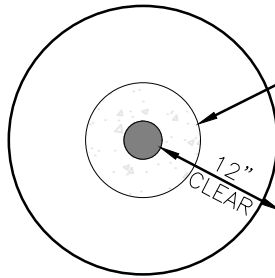
- A. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.
 B. DRAIN TO DAYLIGHT; FIELD LOCATE PENETRATION; LENGTH AND ORIENTATION OF DRAIN PIPE TO BE DETERMINED IN FIELD; ATTACH RODENT SCREEN TO END OF PIPE.
 C. RELIEF PIPELINE, DRAIN TO DAYLIGHT, PLACE MIN. 3'x6' RIPRAP APRON AT DISCHARGE POINT.

PRESSURE REDUCING STATION FOR 6" & 4" MAIN W/ 2" OR 3" BYPASS

Twain Harte Community Service District

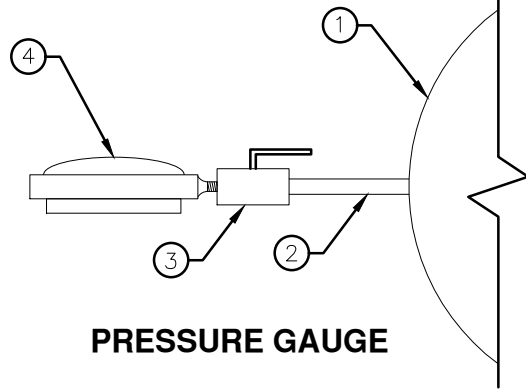
22933 TWAIN HARTE DRIVE
 PO BOX 649
 TWAIN HARTE, CA 95383

W22

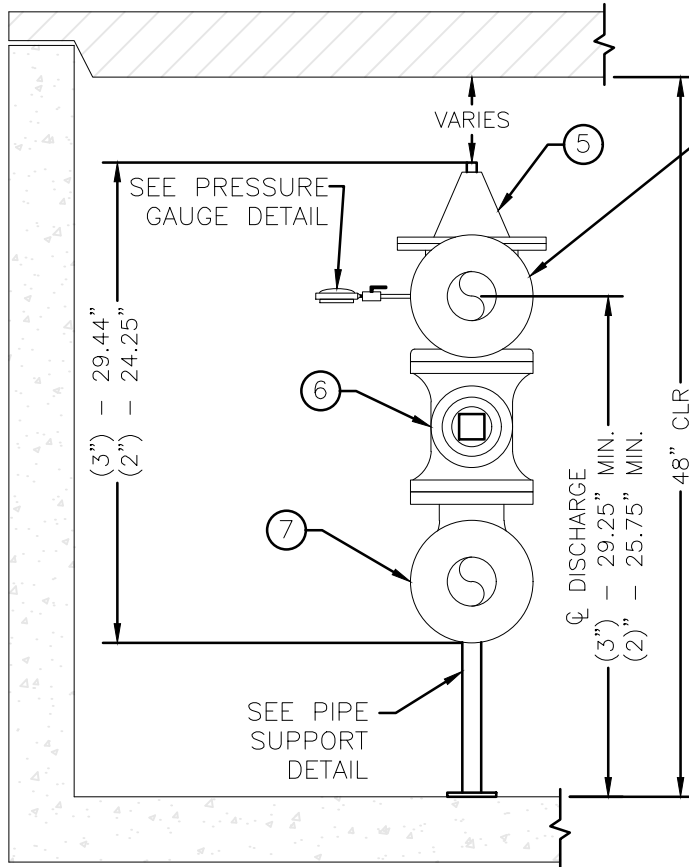


BOLLARD:
 4"Øx66" G.I.P. MIN. FILLED
 WITH CONCRETE, SET IN
 12"Øx30" CONCRETE

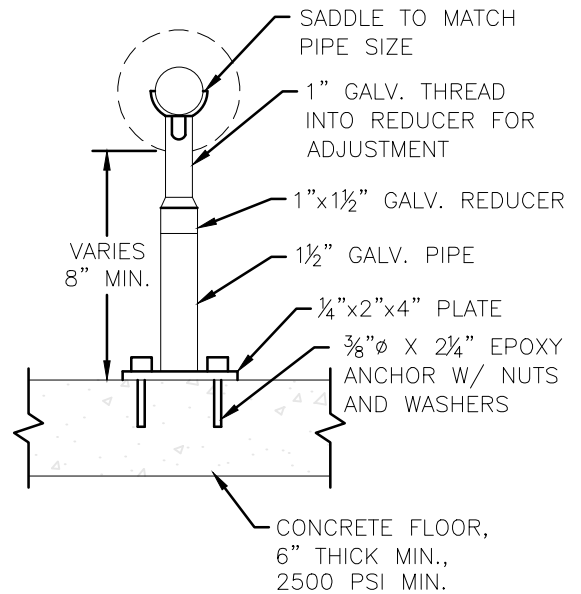
VAULT



PRESSURE GAUGE



NOTE: FIELD FIT PILOT SYSTEM TO
 PROVIDE CLEARANCE FROM VAULT LID.
 VALVE DISCHARGE CAN ROTATE 90° IF
 FIELD CONDITIONS REQUIRE.



PRESSURE RELIEF DETAIL

PIPE SUPPORT

* QUANTITIES LISTED ON STD. W22

A. RELIEF PIPELINE, DRAIN TO DAYLIGHT, PLACE MIN. 3'x6' RIPRAP APRON AT DISCHARGE POINT.
 B. EPOXY SET PIPE SUPPORT ANCHORS.

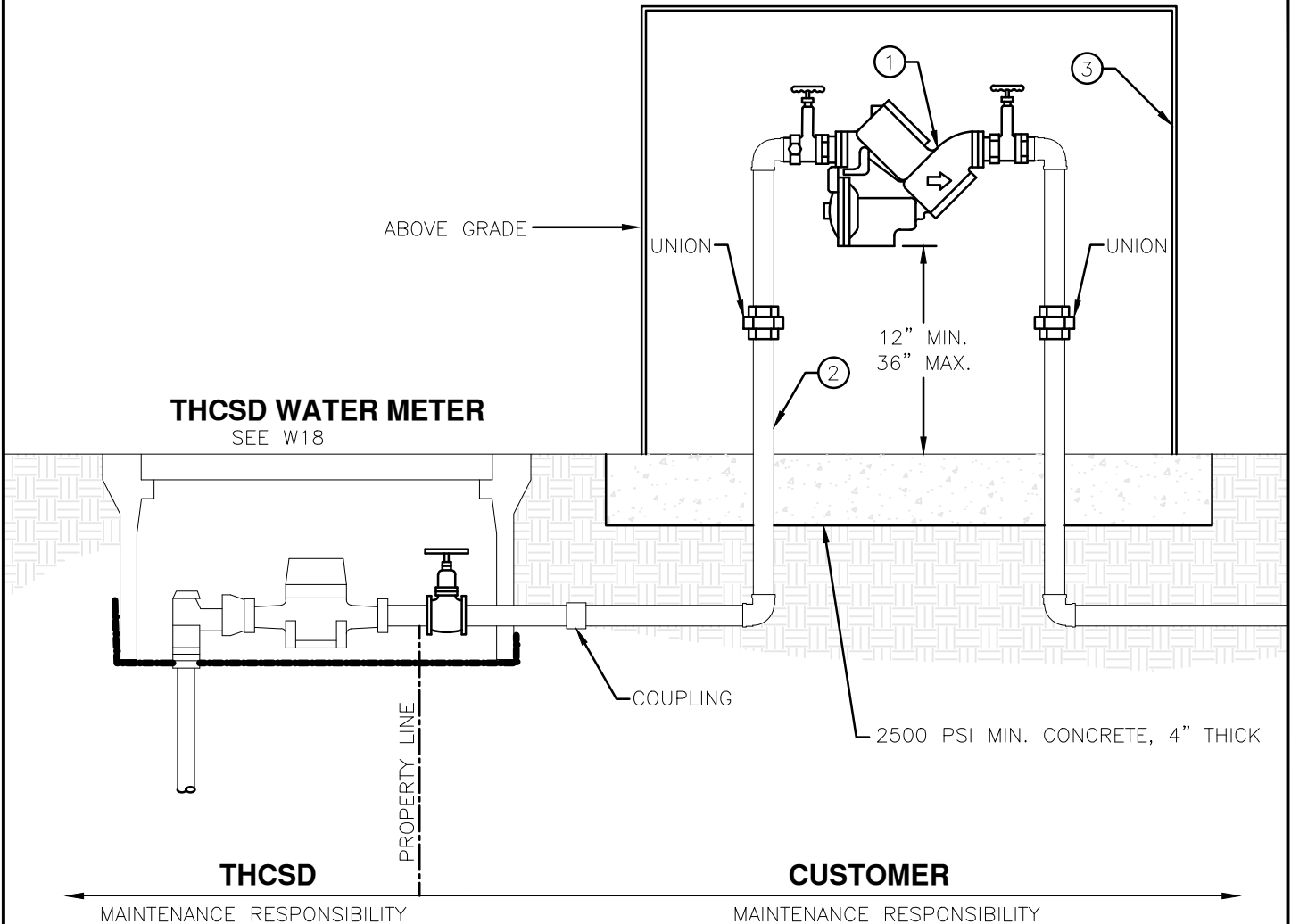
- ① * FACTORY TAP ON VALVE BODY
- ② * 1/4" BRASS NIPPLE
- ③ * 1/4" BALL VALVE
- ④ * PRESSURE GAUGE (OIL FILLED)
- ⑤ * _" PRESSURE RELIEF VALVE, CLA-VAL 50A-01BKC
- ⑥ * _" GATE VALVE, (FL)
- ⑦ * _"x_"x_" TEE

Twain Harte Community Service District	PRESSURE REDUCING STATION DETAILS		W23
	22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383	SCALE: NTS DATE: AUG 2024	

COMMON REDUCED-PRESSURE BACKFLOW DEVICES
(MUST BE CERTIFIED LEAD FREE):

FEBCO-825Y
WATTS-LF009 SERIES
WILKINS-975XL

REDUCED-PRESSURE BACKFLOW DEVICE

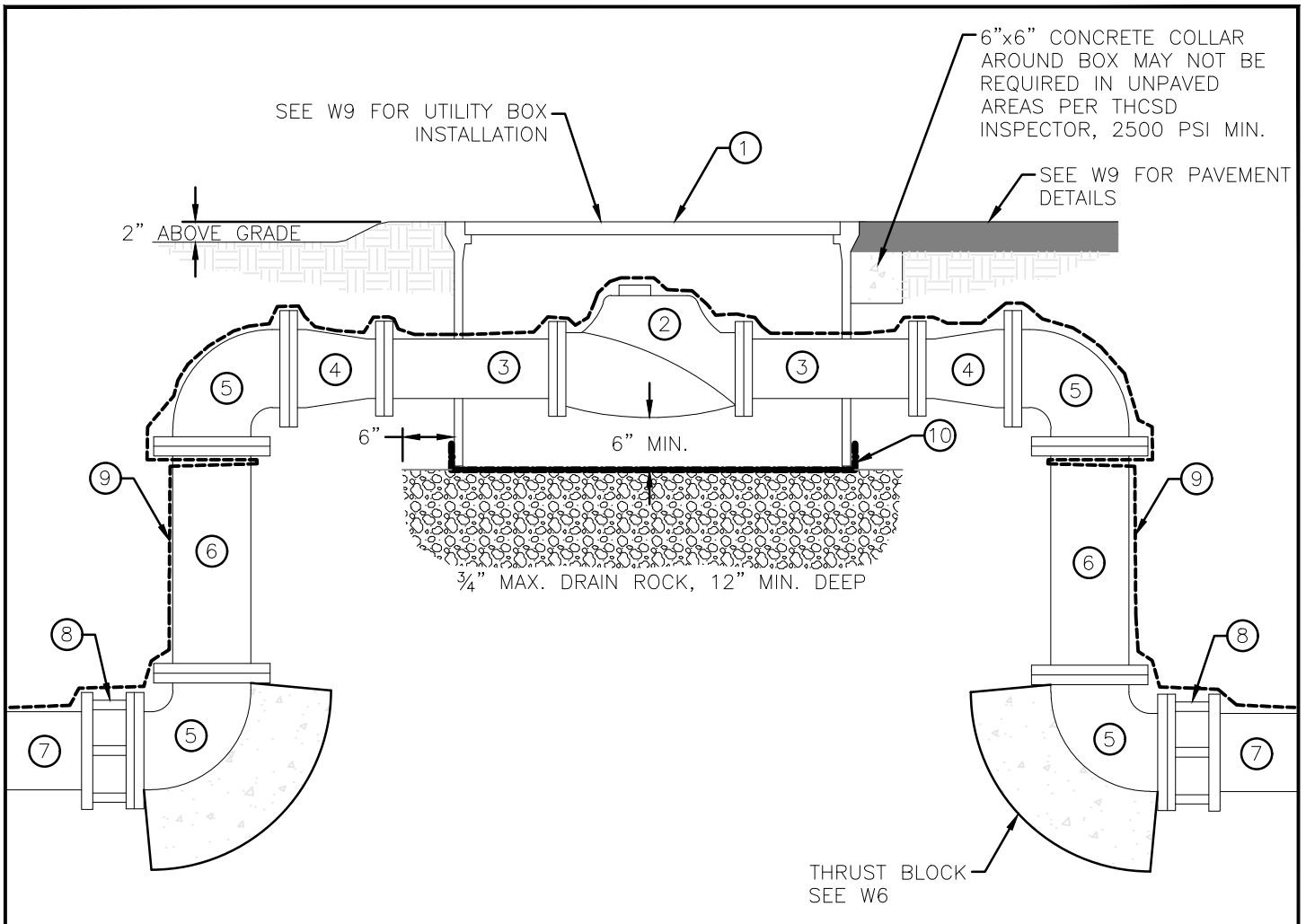


NOTES

- A. REDUCED-PRESSURE BACKFLOW ASSEMBLY SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE THCS D WATER METER WITH NO TEES OR CONNECTIONS BETWEEN THEM.
- B. FITTINGS, JOINTS, BOLTS AND NUTS ARE TO BE COVERED WITH PLASTIC SHEETING (4 MIL THICK MIN.) OR 10 MIL. TAPE PRIOR TO PLACEMENT OF CONCRETE. NO CONCRETE TO BE ALLOWED ON BOLTS OR PIPE.
- C. WRAP ALL UNDERGROUND GALVANIZED PIPE WITH 10 MIL. TAPE.
- D. IF SOLID ENCLOSURE IS USED, MAINTAIN 12" MIN. CLEARANCE AROUND TEST-COCKS.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	REDUCED-PRESSURE BACKFLOW PREVENTION ASSEMBLY	BRAND/MODEL PER STATE WATER BOARD SPECIFICATIONS
②	1	BRASS OR GALVANIZED IRON PIPE	SIZE VARIES, SEE NOTE 'C'
③	1	INSULATED PROTECTIVE ENCLOSURE	WEATHERGUARD BLANKET OR EQUAL, SEE NOTE 'D'

<p>Twain Harte Community Service District</p> <p>22912 VANTAGE POINTE DRIVE PO BOX 649 TWIN HARTE, CA 95383</p>	<p>REDUCED-PRESSURE BACKFLOW PREVENTION ASSEMBLY</p>		<p>W24</p>
	<p>SCALE: NTS</p> <p>DATE: AUG 2024</p>	<p>APPROVED BY:</p> <p>DRAWN BY:</p>	



NOTES

A. COAT BURIED NUTS & BOLTS WITH KOPPERS BITUMASTIC NO. 50, NAPA #MAC8400 RUBBERIZED UNDERCOAT, OR TAPE WITH 10 MILS PVC TAPE, 3 WRAPS MIN. AND COVER WITH PLASTIC SHEETING, 4 MIL THICK MIN. BOLTS MUST BE ACCESSIBLE.

ITEM	QTY	DESCRIPTION	REMARKS
①	1	B48 BOX	W/ TRAFFIC RATED STEEL LID
②	1	6" TURBINE OR MAG METER	AS DIRECTED BY THCSO
③	2	6" DUCTILE IRON SPOOL	FLANGE x FLANGE
④	2	6"x8" DUCTILE IRON REDUCER	FLANGE x FLANGE
⑤	4	8" DUCTILE IRON 90° ELBOW	FLANGE x FLANGE
⑥	2	8" DUCTILE IRON RISER	FLANGE x FLANGE, LENGTH AS NECESSARY
⑦		8" C900 WATERLINE	
⑧	2	FLANGE x MJ ADAPTER	
⑨		#12 AWG INSULATED LOCATOR WIRE	SINGLE STRAND COPPER, SEE W3
⑩		1/4" HARDWARE CLOTH (GALV.)	MUST COVER ALL ACCESS HOLES
⑪			
⑫			
⑬			
⑭			

Twain Harte Community Service District 22912 VANTAGE POINTE DRIVE PO BOX 649 TWAIN HARTE, CA 95383	MASTER WATER METER ON 8" WATER MAIN		W25
	SCALE: NTS DATE: AUG 2024	APPROVED BY: DRAWN BY:	