

**WATER SYSTEM IMPROVEMENTS AND  
CONSTRUCTION  
STANDARDS AND SPECIFICATIONS**



**APPROVED**  
October 14, 2024

**GREENFIELD COUNTY WATER DISTRICT  
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**Table of Contents**

***SECTION 1 - GENERAL* ..... 1**

1.1 - Scope ..... 1

1.2 - Definitions ..... 1

***SECTION 2 - REQUIREMENTS for WATER SYSTEM and IMPROVEMENTS* ..... 1**

2.1 - Preparation of Plans ..... 1

2.2 - Fees ..... 1

2.3 - Plan Requirements ..... 2

2.4 - Signature Block ..... 3

2.5 - Plans Submittal ..... 3

2.6 - Permits ..... 4

2.7 - Insurance Requirements ..... 4

    2.7.1 - Comprehensive General Liability Insurance ..... 4

    2.7.2 - Workers' Compensation Insurance ..... 4

    2.7.3 - Automobile Liability Insurance ..... 4

    2.7.4 - Additional Named Insured ..... 5

2.8 - Indemnity ..... 5

2.9 - Final Acceptance of Water System Improvements or Construction ..... 5

***SECTION 3 - WATER SYSTEM DESIGN* ..... 5**

3.1 - Introduction ..... 5

3.2 - Water Utility Easements ..... 5

3.3 - Water Mains ..... 5

3.4 - Water Services ..... 6

3.5 - Fire Protection Services ..... 6

3.6 - Landscape Services ..... 6

3.7 - Location of Water Meter/Box ..... 6

3.8 - Pipeline Separation ..... 6

3.9 - Fire Hydrants ..... 6

3.10 - Isolation Valves: (Gate and Butterfly Valves) ..... 7

3.11 - Dead End Blowoffs ..... 7

3.12 - System Looping Requirements ..... 7

3.13 - Water Main Casing and Boring ..... 7

3.14 - Air Release and Vacuum Valves ..... 7

3.15 - Thrust Blocks ..... 7

***SECTION 4 - Water System Materials* ..... 8**

4.1 - Introduction ..... 8

4.2 - Installation ..... 8

4.3 - Water Mains ..... 8

4.3.1 - Pipe .....	8
4.3.2 - Joints .....	8
4.3.3 - Fittings.....	8
4.3.4 - Joint Deflection.....	8
4.4 - Waterline Casing .....	8
4.4.1 - Casing Pipe.....	8
4.4.2 - Carrier Pipe.....	8
4.4.3 - Pipe Restrainers.....	9
4.4.4 - Casing Spacer/Insulator .....	9
4.4.5 - Casing End Seal .....	9
4.5 - Large Valves .....	9
4.5.1 - Gate Valves.....	9
4.5.2 - Butterfly Valves.....	9
4.5.3 - Check Valves.....	9
4.5.4 - Air Release and Vacuum Valves.....	9
4.6 - Fittings.....	9
4.6.1 - Ductile Iron (DI) Fittings/Piping .....	9
4.6.2 - Brass Fittings/Piping .....	9
4.7 - Fire Hydrants.....	9
4.8 - Dead End Blow-offs .....	10
4.8.1 - Above Ground Blowoff at Dead End Streets .....	10
4.8.2 - Below Ground Blowoff at Dead End Streets. ....	10
4.9 - Warning Tape & Tracer Wire .....	10
4.9.1 - Detectable Warning Tape.....	10
4.9.2 - Tracer Wire.....	10
4.10 - Service Line Connections (1" to 2") .....	10
4.10.1 - Service Saddle.....	10
4.10.2 - Corporation Valves .....	10
4.10.3 - Water Services .....	10
4.10.4 - Meter Valves (Angle Valve) .....	10
4.10.5 - Meter Valves (Straight Valve).....	10
4.10.6 - Meter Box.....	11
4.10.7 - Meter Box Lid .....	11
4.11 - Services Line Connections (3" and Larger) .....	11
4.11.1 - Tapping Sleeve.....	11
4.11.2 - Piping .....	11
4.11.3 - Services Less than 15' of Piping.....	11
4.11.4 - Fittings.....	11
4.11.5 - Gate Valves .....	11
4.11.6 - Meter Box/Lid.....	11
4.12 - Meter Equipment.....	11
4.12.1 - Residential Meters .....	11
4.12.2 - Commercial Meters.....	11
4.12.3 - Irrigation Meters.....	12
4.12.4 - All meters shall include .....	12
4.13 - Isolation Valve Boxes .....	12

4.13.1 - Riser.....	12
4.13.2 - Valve Box/Lid.....	12
<b>SECTION 5 - Water System Construction .....</b>	<b>12</b>
5.1 - Introduction .....	12
5.2 - Waterline Placement .....	12
5.3 - Trenching .....	12
5.3.1 - Trench Width.....	12
5.3.2 - Trench Depth.....	13
5.3.3 - Trench Bottom .....	13
5.3.4 - Trench Sheeting, Shoring & Bracing.....	13
5.3.5 - Trench Maintenance .....	13
5.4 - Storage, Handling, and Installation .....	13
5.5 - Water Infrastructure Installation .....	13
5.5.1 - Pipe .....	13
5.5.2 - Gate and Butterfly Valves.....	13
5.5.3 - Valve Riser & Box.....	13
5.5.4 - Concrete Valve Pad.....	13
5.5.5 - Fire Hydrants.....	14
5.5.6 - Dead End Blowoffs.....	14
5.5.7 - Boring and Casing .....	14
5.5.8 - Water Line Vertical Offsets.....	14
5.5.9 - Service Lines (1" to 2") .....	14
5.6 - Service Lines (3" and Larger).....	15
5.6.1 - Tapping Sleeve .....	15
5.6.2 - Piping .....	15
5.6.3 - Service Lines Less Than 15 Linear Feet .....	15
5.6.4 - Fittings.....	15
5.7 - Meters Equipment .....	15
5.7.1 - Air Relief and Vacuum Valves.....	15
5.7.2 - Thrust Blocks.....	15
5.7.3 - Tracer Wire.....	15
5.7.4 - Warning Tape .....	16
5.7.5 - Backfill .....	16
5.7.6 - Disinfection, Hydrostatic Testing and Bacteriological Testing .....	16
5.7.7 - Tie-In to Existing System.....	17
5.7.8 - Fire Flow Test.....	17
5.7.9 - Testing Cost .....	17

## **SECTION 1 - GENERAL**

### **1.1 - Scope**

These Standards and Specifications establish minimum standards for water supply requirements, water system design, water system materials, water system construction, water system testing, and water system disinfection within Greenfield County Water District's service area.

### **1.2 - Definitions**

The following definitions apply:

**District:** Greenfield County Water District.

**Board of Directors or Board:** The Board of Directors of the Greenfield County Water District.

**Engineer:** The District's consulting Engineer, or it's duly authorized representatives acting under the direction and authority of the Board of the District.

**Inspector:** Person employed or contracted by the District to perform the inspection of water system improvements.

**Contractor:** Person or entity constructing water system improvements.

**Developer:** Person or entity responsible for developing land or seeking water services from the District.

**Owner:** Person(s) or entity holding legal title to property.

## **SECTION 2 - REQUIREMENTS FOR WATER SYSTEM AND IMPROVEMENTS**

### **2.1 - Preparation of Plans**

Developer and/or owner shall prepare water system plans under direct supervision of a Civil Engineer licensed by the State of California in accordance with these Standards and Specifications.

### **2.2 - Fees**

Developer or Owner shall provide a deposit to cover all fees to be incurred by the District including, but not limited to, engineering fees, legal fees, plan check fees, inspection fees and filing fees. Any unused portion of the deposit will be refunded.

## **2.3 - Plan Requirements**

Water system construction plans shall contain all notes, details and specifications necessary to complete the proposed work. Plan sheet size shall be 24"x36". Project information shall include, but not be limited to, the following:

### **Cover Sheet**

- Project Title
- Vicinity Map
- Key Map with scale no larger than 1" =200'
- California Civil Engineer seal and signature
- General Notes W14.1 and W14.2
- Special Notes – note specific to the project
- Legend
- Benchmark
- Sheet Index
- Total number of sheets
- Materials List – Engineer's estimate of quantities
- GCWD Approval/Signature block
- Developer's name and address
- Engineer's name and address
- Owner's name and address
- Legal Description

### **Plan and Profile Sheets**

- Horizontal and Vertical scale on each sheet (1" =50' max horizontal scale). Same scale used on all sheets
- North Arrow
- Street centerline stationing – south to north and east to west, show 50' interval ticks
- Water line location relative to centerline or property line
- Pipe size, length, fittings, valves and services with station and offset labels
- Relationship to existing and proposed utilities, horizontal and vertical
- Fire hydrant locations, existing and proposed
- Connections to existing water lines
- Construction phasing limits
- Easements – shown dimensions & relations to property lines, street centerlines and pipe, and record data

## Detail Sheets

Provide Details as Applicable

- W-1 Standard Service Installation
- W-2 Typical Thrust Blocks
- W-3 Fire Hydrant Installation
- W-4 Valve Installation and Trench Backfill
- W-5.1 Above Ground Blowoff at Dead End Streets
- W-5.2 Below Ground Blowoff at Dead End Streets
- W-6 Typical Pipe Encasement
- W-7 Standards Large Service Installations
- W-8 Water Pipeline Under Sewer or Storm Drain
- W-9 Air/Vacuum Valve
- W-10 Air Release Valve Cover
- W-11 Sample Station Installation
- W-12 Hot Tapping Water Main
- W-13 Typical Fire Service Detail
- W-14.1 General Notes
- W-14.2 General Notes

Review and approval of water system plans regarding fire flows, minimum main sizes, fire hydrant locations will be required by the Kern County Fire Department, or City of Bakersfield Fire Department. Documentation of this approval shall be provided to the District prior to District approval of plans. A certificate of approval shall be placed on the plans and/or a separate letter provided stating that the plans meet minimum Kern County or City of Bakersfield Standards.

### **2.4 - Signature Block**

Greenfield County Water District

Approved by:

---

Nick Cooper, General Manager

Date

Approved by:

---

Catherine S. Williams, District Engineer - RCE 75489 Date

### **2.5 - Plans Submittal**

Developer or Owner shall submit two sets of plans and a pdf copy for the District to review. The District will review, provide comments, and return the plans to the developer or owner. The developer or owner shall address comments and resubmit the plans to the District. If approved, the District General Manager and District Engineer shall sign the plans and return the plans to the Developer or Owner.

## **2.6 - Permits**

The approved Contractor, prior to construction, shall procure all permits necessary for the completion of the work.

## **2.7 - Insurance Requirements**

Contractor shall maintain full Comprehensive General Liability Insurance coverage, Workers' Compensation Insurance, and Automobile Liability Insurance.

### **2.7.1 - Comprehensive General Liability Insurance**

The Contractor shall maintain full Comprehensive General Liability Insurance coverage. The coverage will provide for both bodily injury and property damage. The bodily injury portion will include coverage for injury, sickness or disease and death, arising directly or indirectly out of, or in connection with, the performance of work under this contract and will provide for a limit of not less than One Million Dollars (\$1,000,000) for all damages arising out of bodily injury, sickness or disease to or death of one person and a total limit of One Million Dollars (\$1,000,000) for damages arising out of bodily injury, sickness or disease and death of two or more persons in any one occurrence.

The property damage portion will provide for a limit of not less than One Million Dollars (\$1,000,000) for damages arising out of injury to or destruction of property of others arising directly or indirectly out of or in connection with the performance of work under this contract and in any one occurrence including explosion, collapse and underground exposure.

### **2.7.2 - Workers' Compensation Insurance**

The Contractor shall obtain full Workmen's Compensation Insurance coverage for all persons employed in carrying out the work. This insurance will be in strict accordance with the requirements of the most current and applicable State Workmen's Compensation Insurance Law.

### **2.7.3 - Automobile Liability Insurance**

Bodily injury coverage shall be for not less than One Million Dollars (\$1,000,000) for each person and not less than One Million Dollars (\$1,000,000) for each occurrence.

Property damage coverage shall be for not less than One Million Dollars (\$1,000,000) for each occurrence.

Or

Bodily injury and property damage shall be in a combined single limit of not less than Two Million Dollars (\$2,000,000) for each occurrence and Two Million Dollars (\$2,000,000) aggregate.



#### **2.7.4 - Additional Named Insured**

Such insurance (Bodily Injury and Property Damage) shall include as additional named insured: "The District, the Engineer, and his consultants and each of their officers, employees and agents, and any other persons with an insurable interest designated by the owner as an additional named insured." The contractor shall submit certificates of insurance showing such additional named insured before commencement of the work. This certificate shall also state "it is the primary insurance for the additional insured."

#### **2.8 - Indemnity**

The Contractor will hold harmless, indemnify, and defend the District, the Engineer, its consultants, each of their officers, employees, and agents, from all liability claims, losses or damage arising or alleged to arise from the performance of the work, but not including the sole negligence of the District, the Engineer, and their consultants, each of their officers, employees, and agents.

#### **2.9 - Final Acceptance of Water System Improvements or Construction**

The District shall accept water systems improvements or construction upon satisfaction of all Standards and Specifications and per the recommendation of the General Manager.

### **SECTION 3 - WATER SYSTEM DESIGN**

#### **3.1 - Introduction**

The District has specified minimum design standards and may modify these standards for plans under review. The water system shall be designed according to the latest revisions of the American Water Works Association (AWWA) Standards.

#### **3.2 - Water Utility Easements**

A water utility easement or public utility easement is required when a water main or service is not within street right-of-way or on District property.

When a utility easement is required, the dedicated water utility easement or public utility easement must be reviewed and approved by the District prior recordation and construction.

#### **3.3 - Water Mains**

Water mains shall be located in the street five (5) feet from the flowline.

Pipes with diameters less than twelve (12) inches shall have a minimum coverage of forty-two (42) inches.

Pipes with diameters twelve (12) inches or larger shall have a minimum coverage of forty-eight (48) inches.

### **3.4 - Water Services**

Water Services shall be located in the street right-of-way, public utility easement, or waterline easement and have a minimum coverage of thirty (30) inches.

Residential water service size shall be a minimum of one (1) inch per Sheet W-1.

Commercial water services shall be per Sheet W-7.

### **3.5 - Fire Protection Services**

Fire protection services shall have a double detector check backflow assembly, including but not limited to, automatic fire sprinkler systems, standpipes, and booster pump systems.

Fire protection services must be a separate service connection and inspected by the serving Fire Department. See Sheet W-13.

### **3.6 - Landscape Services**

Landscape Services shall be a separate service connection, have a meter and reduced pressure principle backflow assembly. (Does not apply to a single-family resident)

### **3.7 - Location of Water Meter/Box**

All water meters shall be located two and a half (2.5) feet from the property line within the right of way.

### **3.8 - Pipeline Separation**

Water mains shall be installed at least four (4) feet horizontally from, and one foot vertically above any parallel pipeline conveying storm drainage or disinfected tertiary recycled water.

Water mains shall be installed at least ten (10) feet horizontally from, and one foot vertically above any parallel sewer main.

Water mains that pass under sewer or storm mains, special construction will be necessary. See Sheet W-8.

Water lines shall not share common trench with any other utility.

### **3.9 - Fire Hydrants:**

Location: All fire hydrants shall be reviewed and approved by serving Fire Department. See Sheet W-3

Barricades shall be installed to protect fire hydrants where necessary and shall be in accordance with the requirements of serving Fire Department.

Prior to approval of improvement plans, a copy of the fire hydrant location plans shall be approved and signed by the serving Fire Department.

### **3.10 - Isolation Valves: (Gate and Butterfly Valves)**

Location: Valves shall be located at tees and crosses. Valves must not be installed in curb or gutter. See Sheet W-4.

Spacing: Valve spacing shall not exceed five hundred (500) feet.

### **3.11 - Dead End Blowoffs**

Aboveground blowoffs shall be installed where water main terminates location of non-paved areas. See Sheet W-5.1.

Belowground blowoffs shall be installed where water main and street terminate and located within a paved street, such as a cul-de-sac. See Sheet W-5.2.

### **3.12 - System Looping Requirements**

Water system must be designed with minimal dead ends. Each development shall have a minimum of two (2) separate water main connection points to existing water mains to create an adequate looped water system.

### **3.13 - Water Main Casing and Boring**

When open-cut trenching isn't possible, a water main shall be bored. See sheet W-6 for typical pipe encasement. See Sheet W-6.

### **3.14 - Air Release and Vacuum Valves**

Air release and vacuum valves shall be installed where air can be trapped in a line, such as vertical offsets. See Sheets W-10 and W-11.

### **3.15 - Thrust Blocks**

Concrete thrust blocks shall be used whenever the water main changes direction, such as tees, crosses, bends and reducers. See Sheet W-2.

## **SECTION 4 - WATER SYSTEM MATERIALS**

### **4.1 - Introduction**

The District has specified minimum requirements for materials used in construction. The District may modify these materials, if necessary. The water system shall be designed according to the latest revisions of the American Water Works Association (AWWA) Standards. (All deviations from the materials listed below shall be pre-approved by the District)

### **4.2 - Installation**

All materials shall be installed in accordance with the manufacturer's specifications.

### **4.3 - Water Mains**

#### **4.3.1 - Pipe**

Polyvinyl Chloride (PVC) Class 235 (DR18) and comply with AWWA C900. All Pipe shall be from the same manufacturer.

#### **4.3.2 - Joints**

PVC pipe shall have elastomeric gasket joints, either gasket bell and spigot type or plain end with gasket coupling type.

#### **4.3.3 - Fittings**

Fittings shall be push-on or mechanical joint and shall be made of ductile iron in accordance with AWWA.

#### **4.3.4 - Joint Deflection**

Pipe and joint deflection shall not exceed pipe manufactures standards.

### **4.4 - Waterline Casing**

#### **4.4.1 - Casing Pipe**

Casing pipe shall be spiral welded ASTM A-36 steel with a 3/8" minimum wall thickness.

#### **4.4.2 - Carrier Pipe**

Polyvinyl Chloride (PVC) Class 235 (DR18) and comply with AWWA C900. All Pipe shall be from the same manufacturer.

#### **4.4.3 - Pipe Restrainers**

Start Pipe Products pipe restrainers series 1100 for AWWA C900 PVC pipe. Carrier Pipe Joints must be restrained.

#### **4.4.4 - Casing Spacer/Insulator**

Must be stainless steel with heavy duty polymer liner. Calpico PX-SS or approved equal.

#### **4.4.5 - Casing End Seal**

Flexible tar reinforced fiberglass type. Calpico Model W or approved equal.

### **4.5 - Large Valves**

#### **4.5.1 - Gate Valves**

Mueller Resilient Wedge Gate Valves. All gate valves to isolate a fire hydrant must be flanged.

#### **4.5.2 - Butterfly Valves**

Mueller or approved equal.

#### **4.5.3 - Check Valves**

Val-Matic Globe Style Check or approved equal.

#### **4.5.4 - Air Release and Vacuum Valves**

A.R.I D-040 or approved equal.

### **4.6 - Fittings**

#### **4.6.1 - Ductile Iron (DI) Fittings/Piping**

All fittings and piping shall conform to AWWA standards.

#### **4.6.2 - Brass Fittings/Piping**

All fittings and piping shall conform to AWWA standards.

### **4.7 - Fire Hydrants**

Fire Hydrants (Wet Barrel) shall be Jones 4048 or Clow 850 or approved equal within the City of Bakersfield limits.

Wet barrel fire hydrants shall be installed with break-off spool and break away bolts.

Fire Hydrants (Dry Barrel) shall be Mueller Super Centurion Model A421 or approved equal within Kern County limits.

#### **4.8 - Dead End Blow-offs**

##### **4.8.1 - Above Ground Blowoff at Dead End Streets**

Jones four (4) inch, Jones two (2) inch or approved equal.

##### **4.8.2 - Below Ground Blowoff at Dead End Streets.**

Mueller Straight Valve or approved equal.

#### **4.9 - Warning Tape & Tracer Wire**

##### **4.9.1 - Detectable Warning Tape**

Three (3) inch detectable warning tape (Caution Buried Waterline Below).

##### **4.9.2 - Tracer Wire**

All tracer wire shall be 12-AWG Solid THHN with blue nylon jacket.

#### **4.10 - Service Line Connections (1" to 2")**

##### **4.10.1 - Service Saddle**

All service saddles shall be designed for the pipe to be installed with IP Thread.

##### **4.10.2 - Corporation Valves**

All corporation valves shall be ball style with IP thread and CTS connection.

##### **4.10.3 - Water Services**

Type-K Soft Copper. One piece only, no couplings allowed.

##### **4.10.4 - Meter Valves (Angle Valve)**

All angle valves shall be ball style with CTS connection.

##### **4.10.5 - Meter Valves (Straight Valve)**

All straight valves shall be ball style with CTS connection.

#### **4.10.6 - Meter Box**

All meter boxes shall be a B-12 concrete.

#### **4.10.7 - Meter Box Lid**

All meter lids shall be concrete with a two (2) inch AMR hole.

### **4.11 - Services Line Connections (3" and Larger)**

#### **4.11.1 - Tapping Sleeve**

JCM 432 All Stainless-Steel Full Circle Type Tapping Sleeve or approved equal.

#### **4.11.2 - Piping**

Polyvinyl Chloride (PVC) Class 235 (DR18) and comply with AWWA C900. All Pipe shall be from the same manufacturer.

#### **4.11.3 - Services Less than 15' of Piping**

Ductile iron with flanged fittings.

#### **4.11.4 - Fittings**

Fittings shall be ductile iron with shall be restrained – flanged or Mechanical Joint.

#### **4.11.5 - Gate Valves**

Mueller Resilient Wedge Gate Valves or approved equal.

#### **4.11.6 - Meter Box/Lid**

Meter box/lid shall be concrete with two (2) inch AMR hole.

### **4.12 - Meter Equipment**

Contact GCWD to verify final meter requirements.

#### **4.12.1 - Residential Meters**

One (1) inch to two (2) inch shall be a Badger E-Series Residential Ultrasonic Flow Meter.

#### **4.12.2 - Commercial Meters**

Three (3) inch and larger shall be Badger E-Series Commercial Ultrasonic Flow Meter.

### **4.12.3 - Irrigation Meters**

Two (2) inch and larger shall be Badger E-Series Commercial Ultrasonic Flow Meter.

### **4.12.4 - All meters shall include**

AMR gopher proof braded cable with Itron connection.

Itron Water Endpoint (Radio Read Transmitter).

All meters shall be fire rated when applicable.

### **4.13 - Isolation Valve Boxes**

#### **4.13.1 - Riser**

Polyvinyl Chloride (PVC) SDR 35- 8 inch

#### **4.13.2 - Valve Box/Lid**

Christy's G5 Concrete box and lid or approved equal. All concrete valve boxes shall be traffic rated with cast iron lid, marked "WATER".

## **SECTION 5 - WATER SYSTEM CONSTRUCTION**

### **5.1 - Introduction**

All materials shall be installed per the manufacturer's recommendations. All materials will be inspected by a District inspector and/or District Designee. Damaged or defective materials will be rejected. Water system construction shall comply with the latest revision of the American Water Works Association (AWWA) Standards. The District may alter these requirements for plans if deemed necessary.

### **5.2 - Waterline Placement**

The location of the waterline shall be in accordance with the approved plans. Prior to construction, staking shall be installed with location of water facility.

### **5.3 - Trenching**

#### **5.3.1 - Trench Width**

Pipe with a diameter less than twelve (12) inches shall have a minimum clearance of six (6) inches per side of pipe.

Pipe with a diameter more than twelve (12) inches shall have a minimum clearance of twelve (12) inches per side of pipe.



### **5.3.2 - Trench Depth**

Pipe with a diameter less than twelve (12) inches shall have a minimum coverage of forty-two (42) inches.

Pipe with a diameter more than twelve (12) inches shall have a minimum coverage of forty-eight (48) inches.

### **5.3.3 - Trench Bottom**

The trench bottom shall be smooth, even and clear of rocks for the entire width of the trench.

Six (6) inches of sand material shall be used for bedding.

### **5.3.4 - Trench Sheeting, Shoring & Bracing**

Shoring, sloping or a protective system is required when excavation of any trench is five (5) feet or more in depth.

### **5.3.5 - Trench Maintenance**

Trench shall be kept free of nuisance water and debris.

## **5.4 - Storage, Handling, and Installation**

All stored pipe and materials shall be covered to protect against the sun and weather. Pipe and materials shall be protected when being moved and/or installed.

## **5.5 - Water Infrastructure Installation**

### **5.5.1 - Pipe**

All pipe shall be installed to the manufacturer's recommendations.

### **5.5.2 - Gate and Butterfly Valves**

Valves shall be set plumb. Valves ten (10) inches and larger shall be anchored to a trust block with Number 4 rebar.

### **5.5.3 - Valve Riser & Box**

Valve risers shall be plumb and centered over the valve operating nut.

### **5.5.4 - Concrete Valve Pad**

Concrete valve pad shall be two (2) foot square by nine (9) inches thick.

### **5.5.5 - Fire Hydrants**

Fire hydrant shall be served with a water main of six (6) inches.

Each Fire Hydrant shall have its own gate valve for isolation.

Fire Hydrants shall be located and positioned per City or Kern County Fire Department's requirements.

The bottom flange of the fire hydrant shall be six (6) inches above finish grade and secured with breakaway bolts.

Ductile Iron fire hydrant riser shall be wrapped with ten (10) mil polyethylene.

### **5.5.6 - Dead End Blowoffs**

All dead-end blowoffs (Aboveground and Belowground) shall be constructed in the locations approved on the plans. Field changes to blowoff locations shall be approved by the GCWD General Manager.

### **5.5.7 - Boring and Casing**

Bore pits, receiving pits and boring operations shall be done in safe manner consistent with Cal OSHA.

Casing shall be furnished and installed to the lines and grads shown up on the approved plans. The casing installation is to be made by boring or jacking without the use of the water or air.

Carrier pipe shall be installed carefully with the use of spacers. The spacers shall be installed to manufacturers' recommendations.

Casing end seals shall be installed according to the manufacturer's recommendations.

### **5.5.8 - Water Line Vertical Offsets**

Vertical offsets shall be installed using C900 (PVC) DR-18 pipe using restraint fittings.

Vertical offsets crossing under a sewer or storm line shall be installed with flanged ductile iron fittings. See Sheet W-8.

All vertical offsets shall have air relief valves installed on the top of each site of vertical offset to remove any air that may be trapped. See Sheet W-9.

### **5.5.9 - Service Lines (1" to 2")**

Water service lines shall be located per approved plans.

Pipe shall be tapped, and saddles be installed at forty-five (45) degrees from the top of pipe.

Copper services shall be one complete run with no repair joints.

Angel meter valve shall be installed to allow for clearance within meter box.

Services shall have thirty (30) inches of cover.

### **5.6 - Service Lines (3" and Larger)**

Water service shall be located per approved plans.

#### **5.6.1 - Tapping Sleeve**

JCM 432 All Stainless-Steel Full Circle Type Tapping Sleeve or approved equal.

#### **5.6.2 - Piping**

Polyvinyl Chloride (PVC) Class 235 (DR18) and comply with AWWA C900. All Pipe shall be from the same manufacturer.

#### **5.6.3 - Service Lines Less Than 15 Linear Feet**

Piping shall be ductile iron with flanged fittings.

#### **5.6.4 - Fittings**

Fittings shall be ductile iron with shall be restrained – flanged or Mechanical Joint.

### **5.7 - Meters Equipment**

All meters shall be purchased by Owner, applicant or contractor and installed by contractor.

#### **5.7.1 - Air Relief and Vacuum Valves**

Valves shall be constructed in the locations on the approved plans.

#### **5.7.2 - Thrust Blocks**

Thrust blocks shall be installed when a water main changes direction.

All thrust blocks shall be poured against undisturbed soil.

#### **5.7.3 - Tracer Wire**

Tracer wire shall be installed and secured to the top of all water mains. Splices are not allowed.

#### **5.7.4 - Warning Tape**

Water line identifier tape shall be installed twelve (12) to eighteen (18) inches above top of pipe. Tape shall never be installed where grading for a paved road will remove the tape.

#### **5.7.5 - Backfill**

Backfill material may be native soil if is free of debris, rocks, organic, and harmful material. In the event native soil can't be used, Contractor will be required to import clean material.

Compaction shall follow Caltrans, City of Bakersfield or Kern County standards when water infrastructure is within their right of way. In the event that the water infrastructure is not within their right of way, see W-4.

#### **5.7.6 - Disinfection, Hydrostatic Testing and Bacteriological Testing**

Once completion of an installation or a major part of installation, a hydrostatic test is required.

Water main and services shall be filled with water, inspected for a minimum dosage of twenty-five (25) MG/L chlorine residual and stand for a minimum of twenty-four (24) hours. After twenty-four (24) hours, the chlorine residual shall be ten (10) MG/L. Note: During the twenty-four (24) hours, all valves shall be operated.

Water mains and services shall be subjected to a hydrostatic test of one hundred and fifty (150) pounds per square inch (PSI) for a period no less than two (2) hours. Note: Contractor shall flush to evacuate all air and perform a pre-test to ensure system is maintaining one hundred and fifty (150) psi. Once contractor is ready for actual test, contractor shall schedule hydrostatic test with the District (inspector)

Contractor shall supply all hydrostatic equipment. District will supply pressure gauges and recorder.

In the event of a failed hydrostatic test or excess allowable leakage per AWWA, contractor shall determine cause of the leak, repair the leak, pretest water main and schedule re-test with the District.

Allowable Leakage Per 50 Joints or 1000 feet of Pipe. (gallons per hour)							
Nominal Pipe diameter (inches)	4	6	8	10	12	14	16
Test Pressure 150 PSI	0.33	0.50	0.66	0.83	0.99	1.16	1.32

After disinfection and the hydrostatic test, the water mains and services shall be flushed at its extremities until all air and chlorine residual reaches system residual or a maximum of 2Mg/L.

Following flushing, two (2) bacteriological tests (bac-t) shall be sampled by the District (inspector). In the event of a failed bac-t, system must be re-flushed and two (2) additional bac-t's shall be sampled. If the bac-t test still fails, the system shall be re-disinfected and flushed until two (2) bac-t samples pass.

#### **5.7.7 - Tie-In to Existing System**

Once bac-t's have passed, District (inspector) shall direct contractor on construction to tie into existing system.

#### **5.7.8 - Fire Flow Test**

The Responsible Party shall contract the City of Bakersfield Water Resources Department (City) to conduct a fire flow test on the new water system. The City will schedule a time with District to conduct the fire flow test.

Contractor shall make sure all valves are open prior to fire flow test.

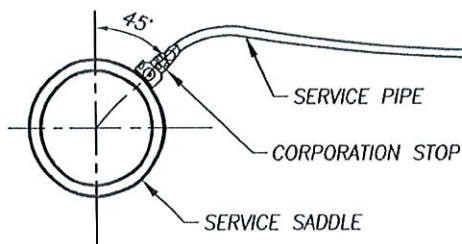
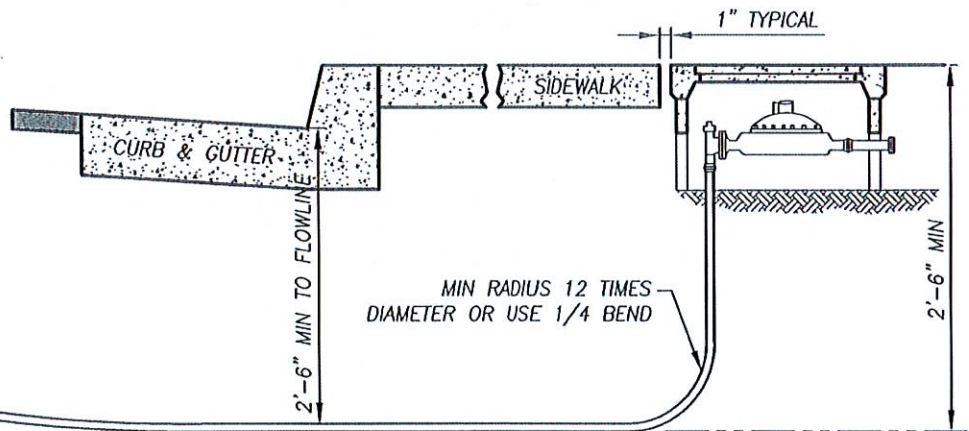
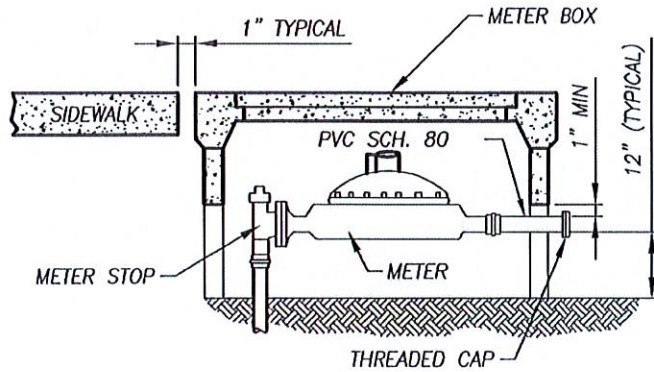
#### **5.7.9 - Testing Cost**

All testing costs shall be the responsibility of the Developer.

**Greenfield County Water District**  
**Standard Details**

NOTES: FOR ALL SINGLE FAMILY SERVICES

1. SERVICE SADDLE: PER GCWD STANDARDS SPECIFICATIONS, IP THREADS.
2. CORP. STOP: BALL STYLE IP x CTS
3. SERVICE PIPE: 1-INCH COPPER TYPE K, ASTM B88 AWWA C-800.
4. METER STOP: 1-INCH-MUELLER ANGLE BALL STYLE CTS x METER NUT
5. METERS: SEE GCWD STANDARD SPECIFICATIONS.
6. METER BOX: SEE GCWD STANDARD SPECIFICATIONS
7. METER SIZE: 1-INCH MINIMUM
8. METERS SHALL BE PURCHASED BY THE APPLICANT.
9. COVER OF METER BOXES SHALL BE PRINTED WITH THE WORD -WATER- & INCLUDE 2" AMR HOLE



NOTE: IF CURBS OR SIDEWALKS ARE NOT INSTALLED, METER BOX SHALL BE INSTALLED WITHIN STREET RIGHT-OF-WAY AND ADJACENT TO PROPERTY LINE.



GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

STANDARD  
SERVICE INSTALLATION

REVISION DATE: OCTOBER 14, 2024

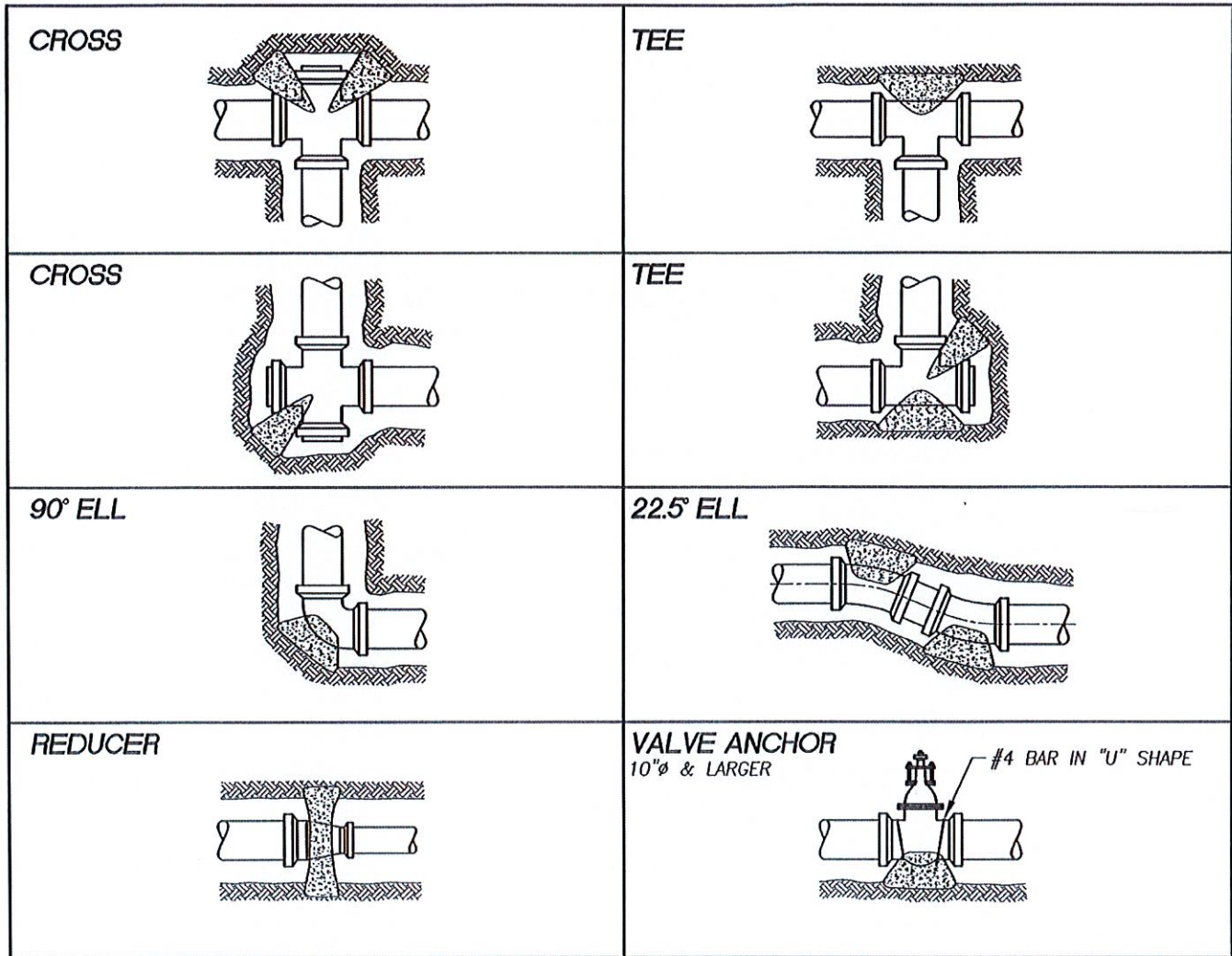
DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

CHK BY: RLG

SHEET

W - 1



THRUST BLOCK SCHEDULE BEARING AREA IN SQUARE FEET				
PIPE SIZE	TEE OR PLUG	90° ELL OR HYDRANT	45° ELL	22.5° ELL
6"	5.0	6.5	3.5	2.0
8"	8.5	12.0	6.5	3.5
10"	13.0	18.5	10.0	5.0
12"	18.5	26.0	14.0	7.5
16"	32.0	45.5	25.0	12.5

NOTE: ALL THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE PLACED BEHIND BELLS OF FITTINGS. PLACE POLYETHYLENE ENCASEMENT ON FITTINGS PRIOR TO PLACING CONCRETE THRUST BLOCKS. BEARING AREAS SHOWN IN TABLE AREA BASED ON ALLOWABLE SOIL PRESSURE OF 1,500 PSF.



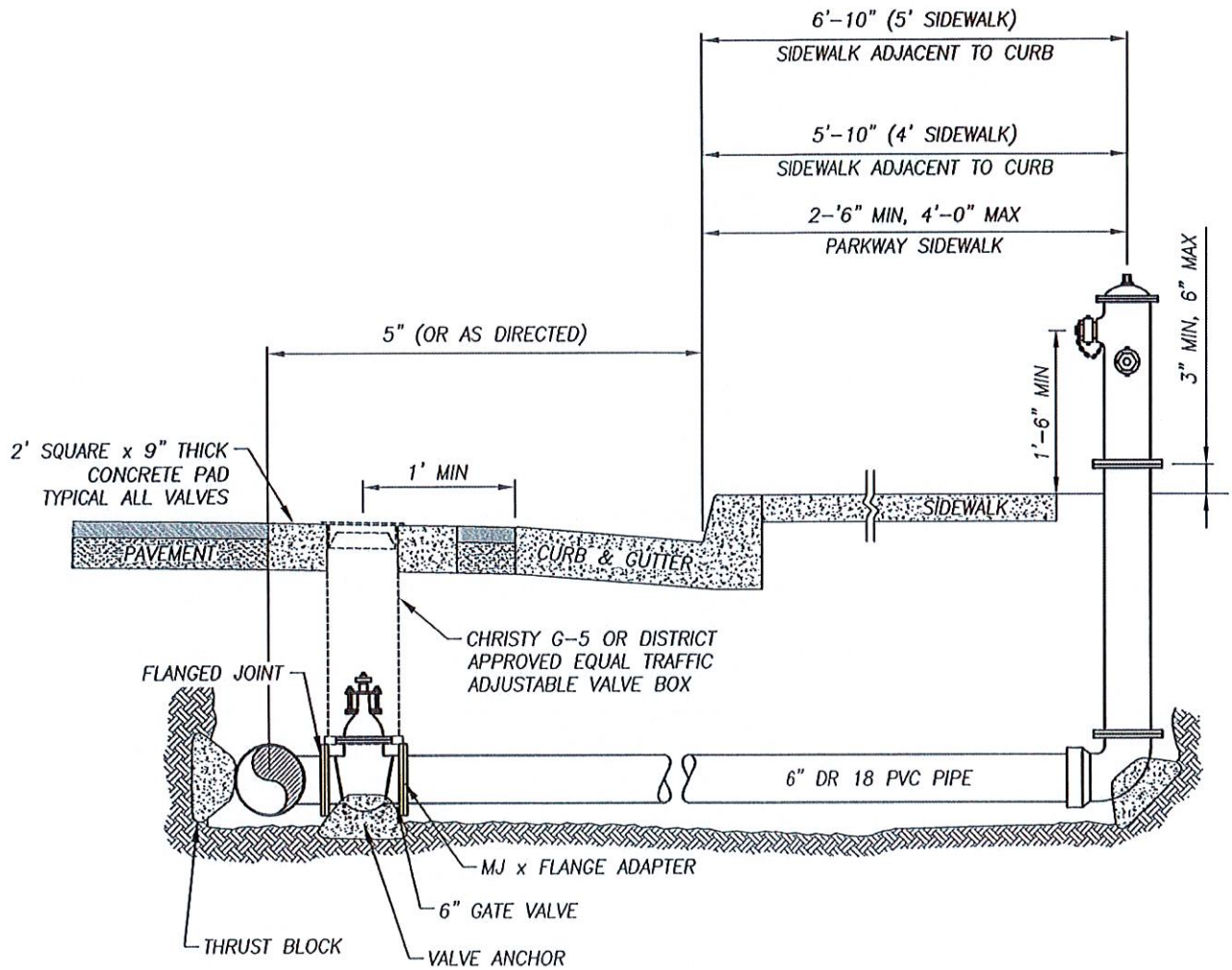
**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**TYPICAL THRUST BLOCKS**

REVISION DATE: OCTOBER 14, 2024	
DISTRICT ENGINEER: CATHERINE S. WILLIAMS	
DRW BY: FR	CHK BY: RLG

**SHEET  
W - 2**





**NOTES:**

1. THE MINIMUM COVER THE FIRE HYDRANT RUN SHALL BE 2'-6".
2. HYDRANTS IN COUNTY AREAS SHALL BE DRY BARREL AWWA C-502 WITH BREAK-OFF COUPLING WITH 1-2 1/2" AND 1-4" PUMPER NOZZLE.
3. HYDRANTS IN CITY AREAS SHALL BE WET BARREL AWWA C-503 WITH 1-2 1/2" & 1-4" PUMPER NOZZLE. HYDRANTS IN COUNTY AREAS SHALL BE WET BARREL AWWA C-502 OR C-503 AND 4" NATIONAL STANDARD THREADED CONNECTIONS AS REQUIRED.
4. FOR THRUST BLOCK SIZES REFER TO W-2



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**FIRE HYDRANT INSTALLATION**

REVISION DATE: OCTOBER 14, 2024

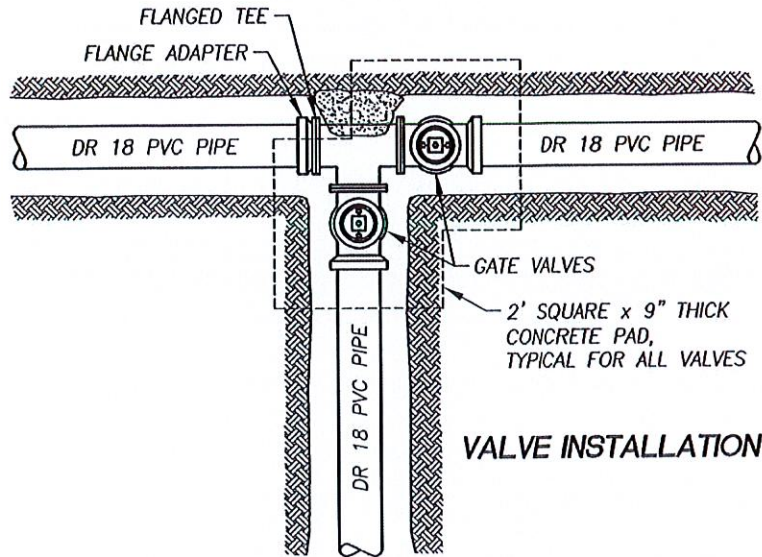
DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

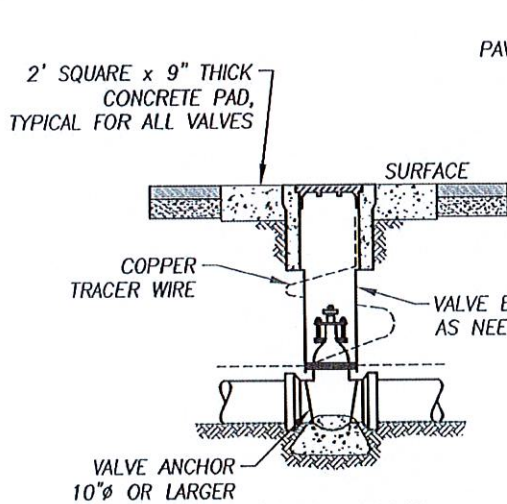
CHK BY: RLG

**SHEET**

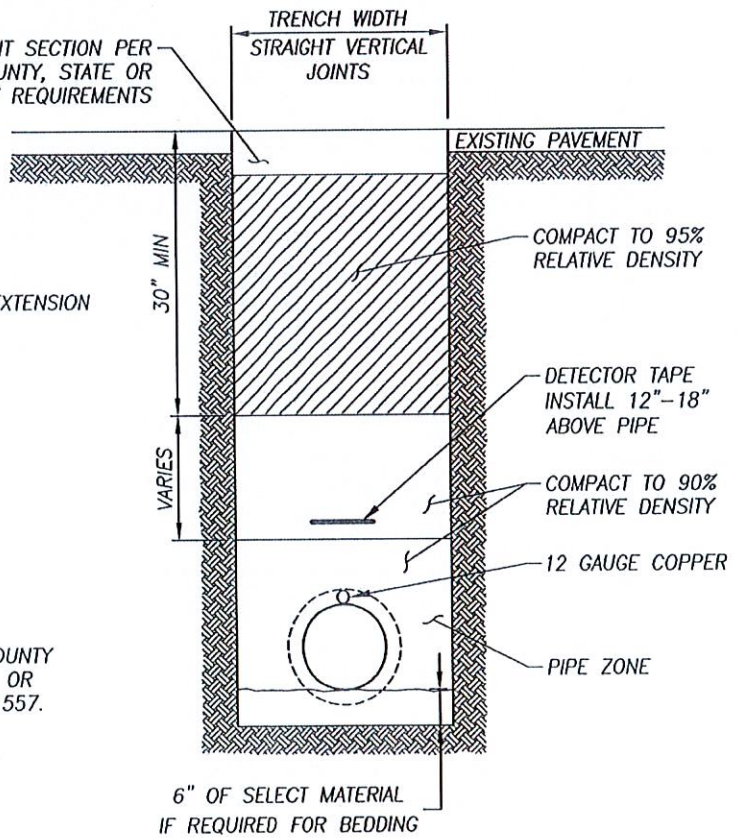
**W - 3**



**VALVE INSTALLATION**



**VALVE BOX  
TYPICAL ALL VALVES**



**TRENCH BACKFILL IN STREETS**

**NOTES:**

1. COMPACTION TESTING WITH STATE, CITY AND COUNTY RIGHTS OF WAY BY TEST METHOD No. CA 216 OR 231. OUTSIDE OF RIGHTS OF WAY BY ASTM D1557.
2. BACKFILL IN PIPE ZONE TO BE CLASS I OR II MATERIAL IN ACCORDANCE WITH ASTM D-2321.

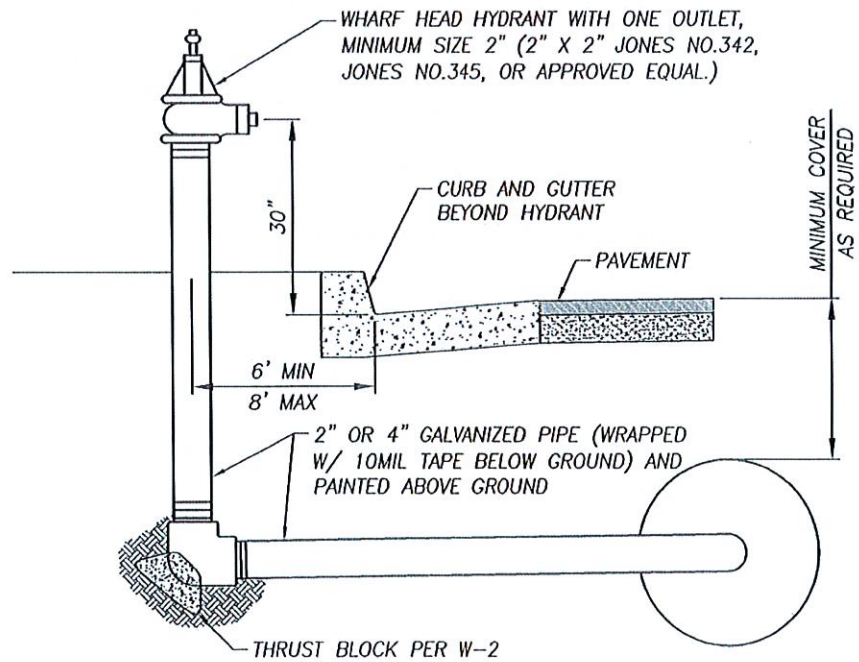
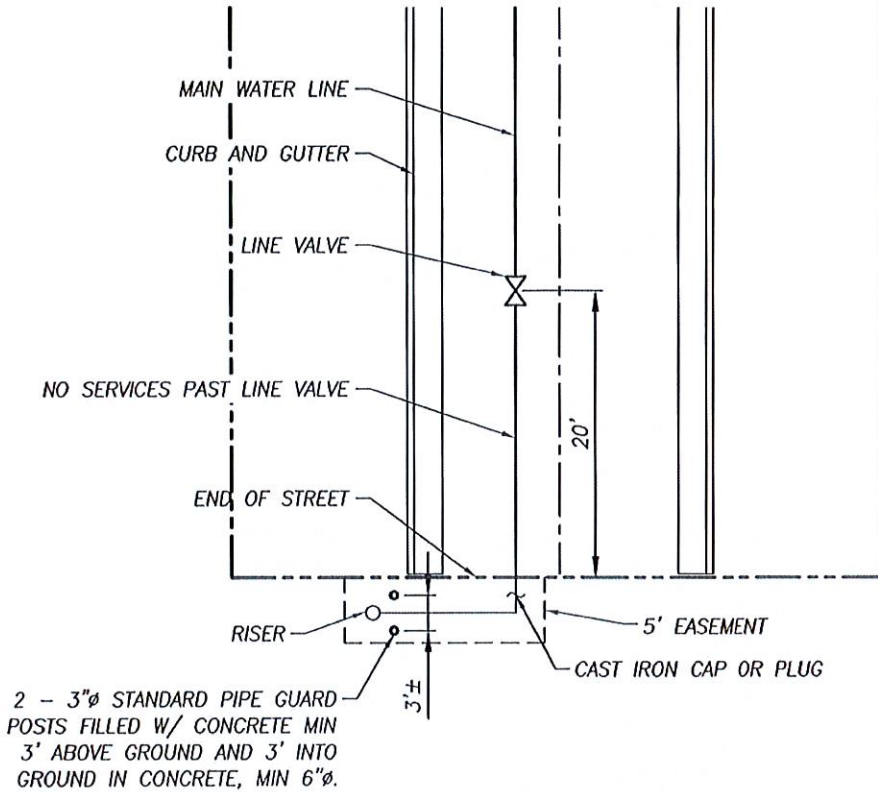


**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**VALVE INSTALLATION  
AND TRENCH BACKFILL**

REVISION DATE: OCTOBER 14, 2024	
DISTRICT ENGINEER: CATHERINE S. WILLIAMS	
DRW BY: FR	CHK BY: RLG

**SHEET  
W - 4**

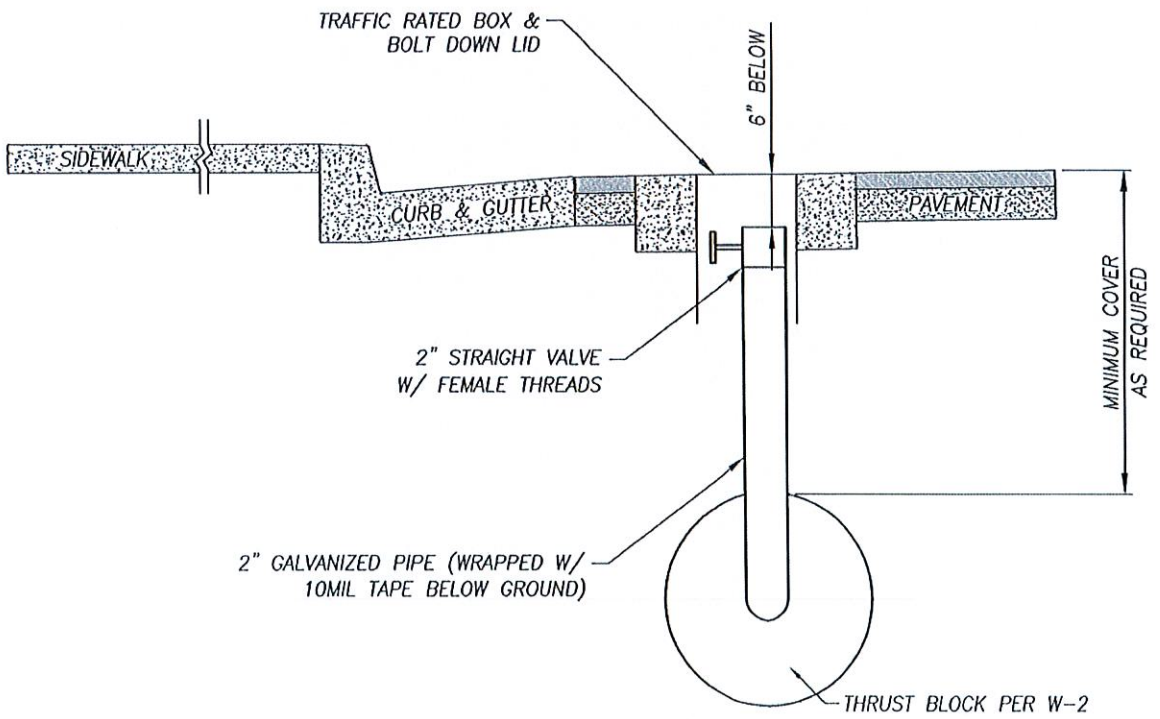
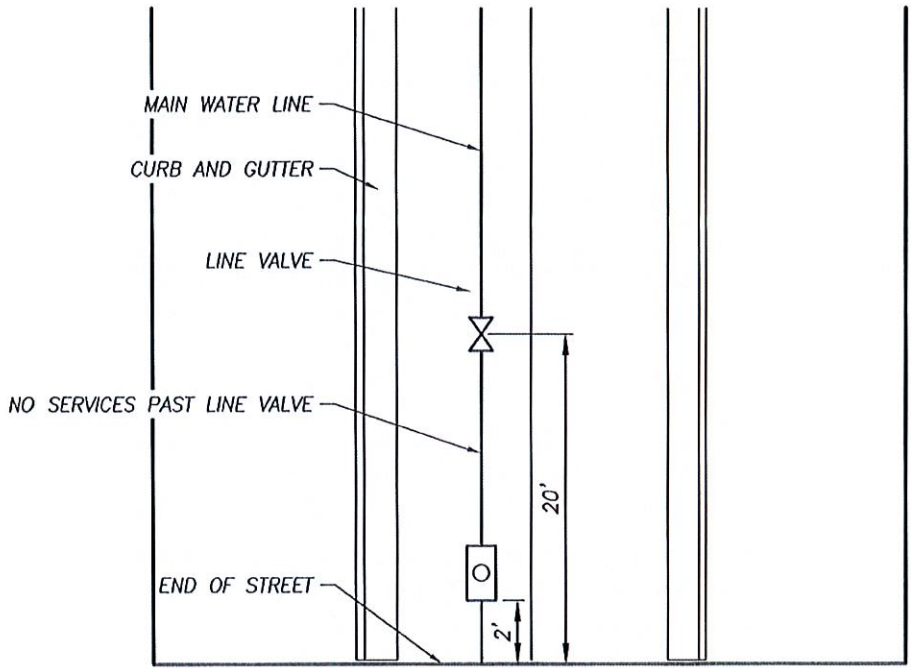


GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

ABOVE GROUND BLOWOFF  
AT DEAD END STREETS

REVISION DATE: OCTOBER 14, 2024  
DISTRICT ENGINEER: CATHERINE S. WILLIAMS  
DRW BY: FR      CHK BY: RLG

SHEET  
W - 5.1



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**BELOW GROUND BLOWOFF  
AT DEAD END STREETS**

REVISION DATE: OCTOBER 14, 2024	
DISTRICT ENGINEER: CATHERINE S. WILLIAMS	
DRW BY: FR	CHK BY: RLG

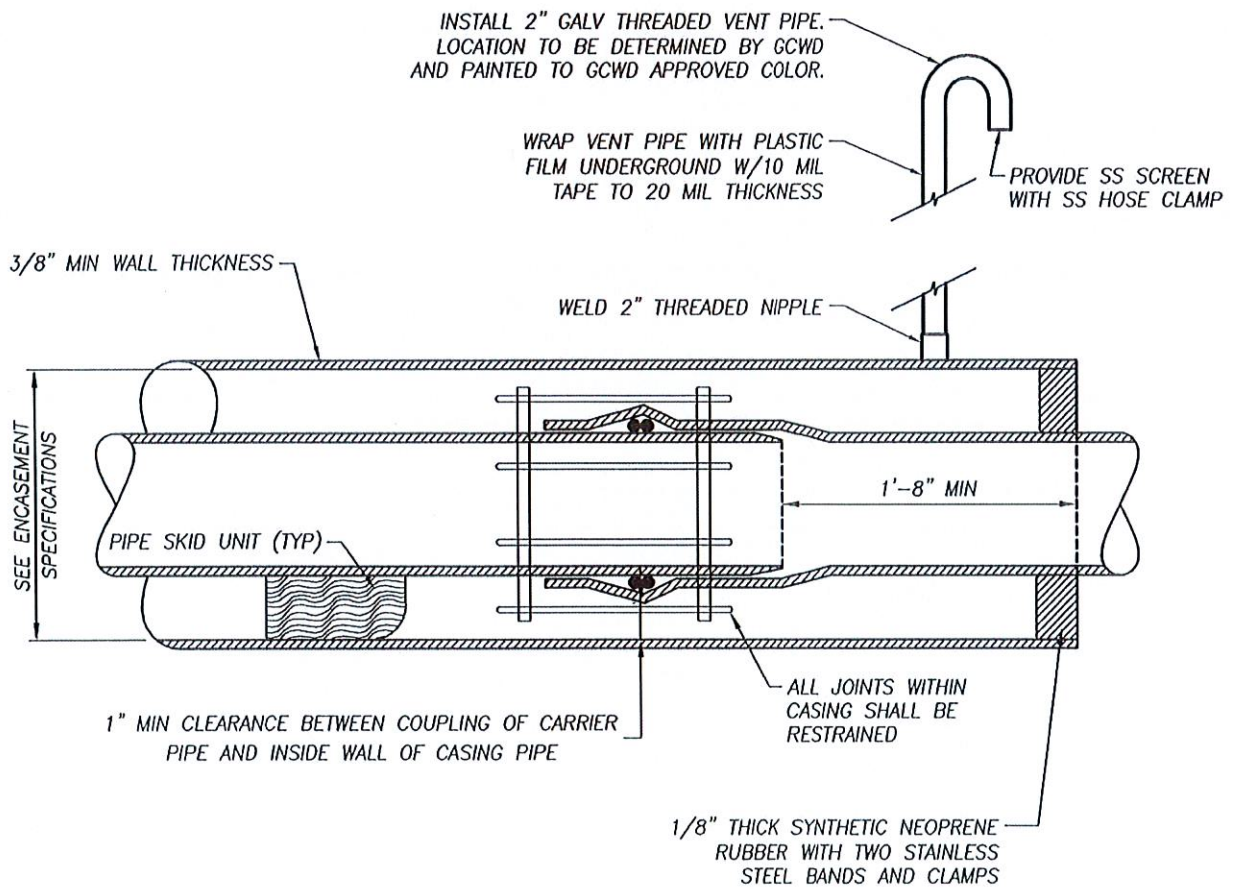
**SHEET  
W - 5.2**

**SPECIFICATIONS:**

ENCASEMENT PIPE SHALL BE FURNISHED AND INSTALLED TO THE LINES AND GRADES SHOWN UPON THE APPROVED PLANS. THE CASING INSTALLATION IS TO BE MADE BY BORING OR JACKING WITHOUT THE USE OF WATER OR AIR AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE ENCROACHMENT PERMIT ISSUED BY THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, CITY OR BY THE COUNTY OF KERN, DEPARTMENT OF PUBLIC WORKS WHICHEVER PREVAILS IN THIS AREA OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL NECESSARY PERMITS FOR START AND PROSECUTION OF THE CONSTRUCTION WORK.

THE EQUIPMENT, MATERIALS AND METHODS USED FOR THE CONSTRUCTION AND THE COMPLETE INSTALLATION OF THE CASING AND WATER MAINS WITHIN THE CASINGS SHALL BE DETERMINED BY THE CONTRACTOR TO THE EXTENT THAT THE FINAL AND COMPLETE INSTALLATION RECEIVES THE APPROVAL OF THE ENGINEER AND IS CONSISTENT WITH THE INTENT OF THESE SPECIFICATIONS.

PIPE SKIDS - CARRIER PIPE SHALL HAVE THREE (3) SKID UNITS PER JOINT OF PIPE THROUGH CASING. EACH SKID UNIT SHALL HAVE TWO PIECES MINIMUM.



GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

TYPICAL PIPE ENCASEMENT

REVISION DATE: OCTOBER 14, 2024

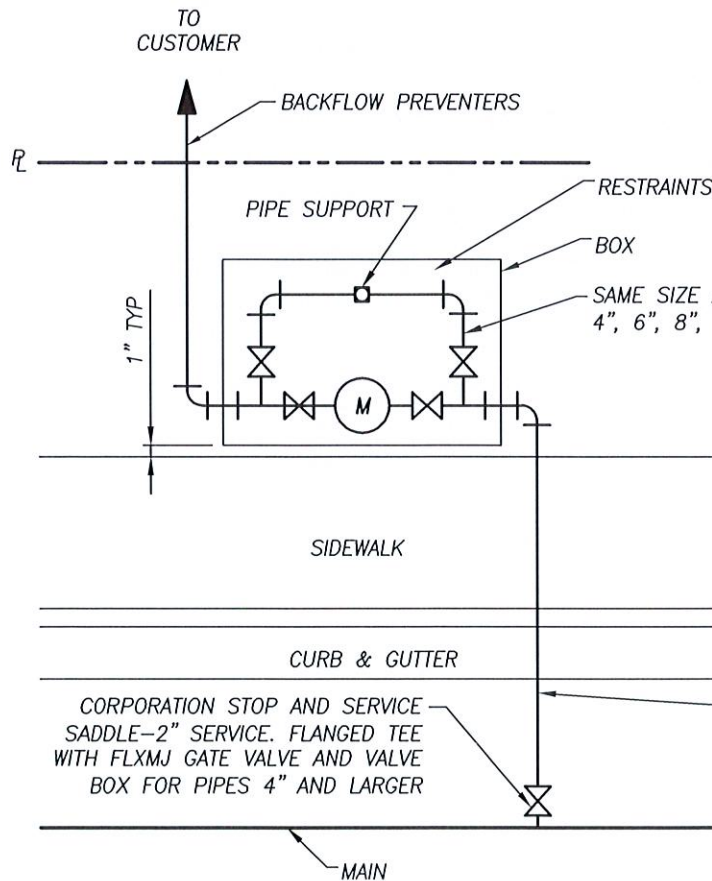
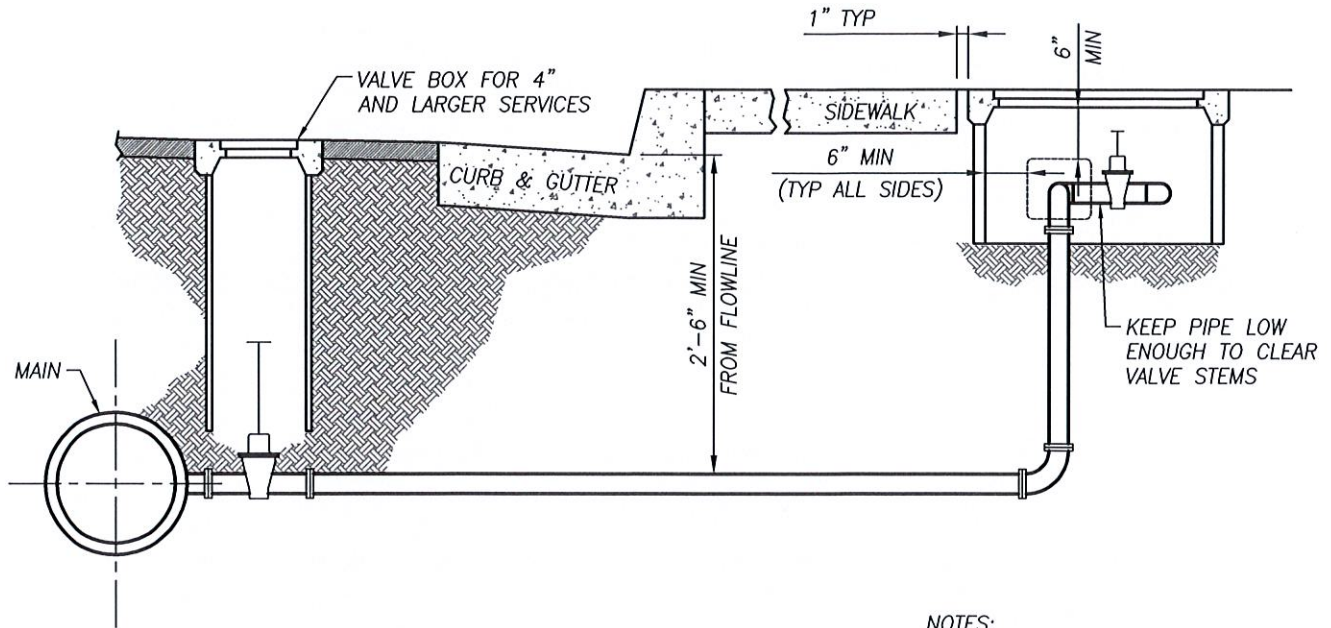
DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

CHK BY: RLG

SHEET

W - 6



**NOTES:**

1. CHECK WITH DISTRICT.
2. BOXES SHALL HAVE PROBE HOLE. BOX TO BE LARGE ENOUGH TO ALLOW 6" OF CLEARANCE ON ALL SIDES.
3. VALVES SHALL HAVE 2" NUT AND BE SOLID WEDGE RS. ALL FITTINGS TO BE DI.



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**STANDARD LARGE  
SERVICE INSTALLATIONS**

REVISION DATE: OCTOBER 14, 2024

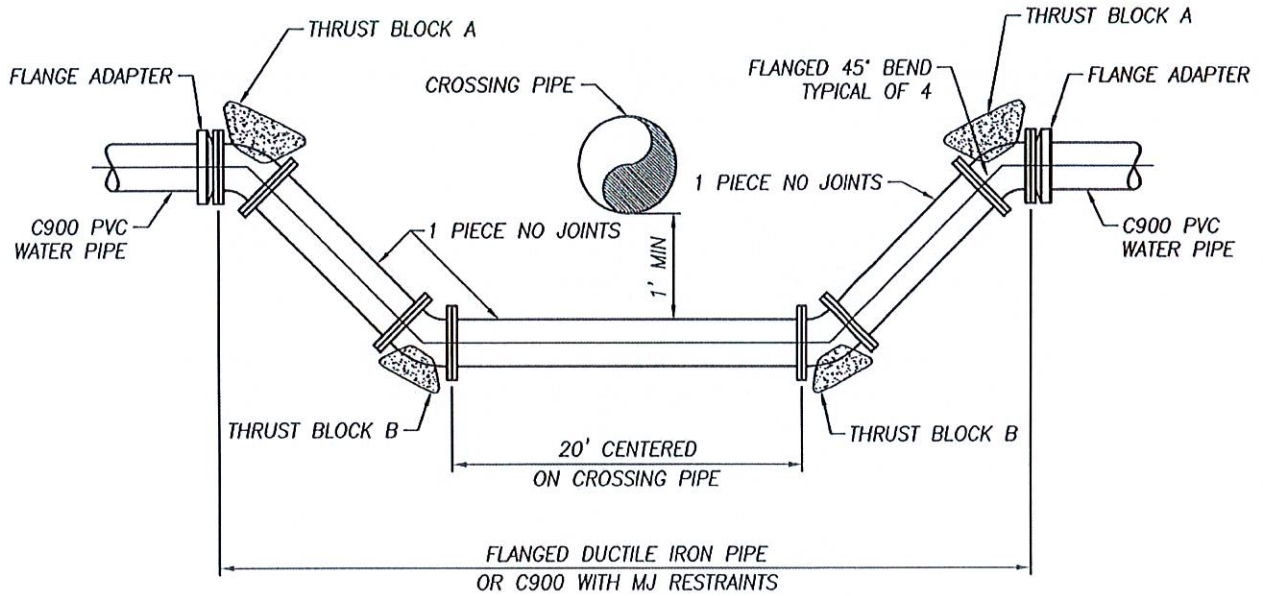
DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

CHK BY: RLG

**SHEET**

**W - 7**



PIPE SIZE	THRUST BLOCKS	
	A VOLUME (CY)	B BEARING (SF)
6"	1.5	3.5
8"	2.5	6.5
10"	4.0	10.0
12"	5.5	14.0
16"	9.5	25.0

NOTE: ALL THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE PLACED BEHIND BELLS OF FITTINGS. PLACE POLYETHYLENE ENCASUREMENT ON FITTINGS PRIOR TO PLACING CONCRETE THRUST BLOCKS. BEARING AREAS SHOWN IN TABLE AREA BASED ON ALLOWABLE SOIL PRESSURE OF 1,500 PSF.



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**WATER PIPELINE UNDER  
SEWER OR STORM DRAIN**

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

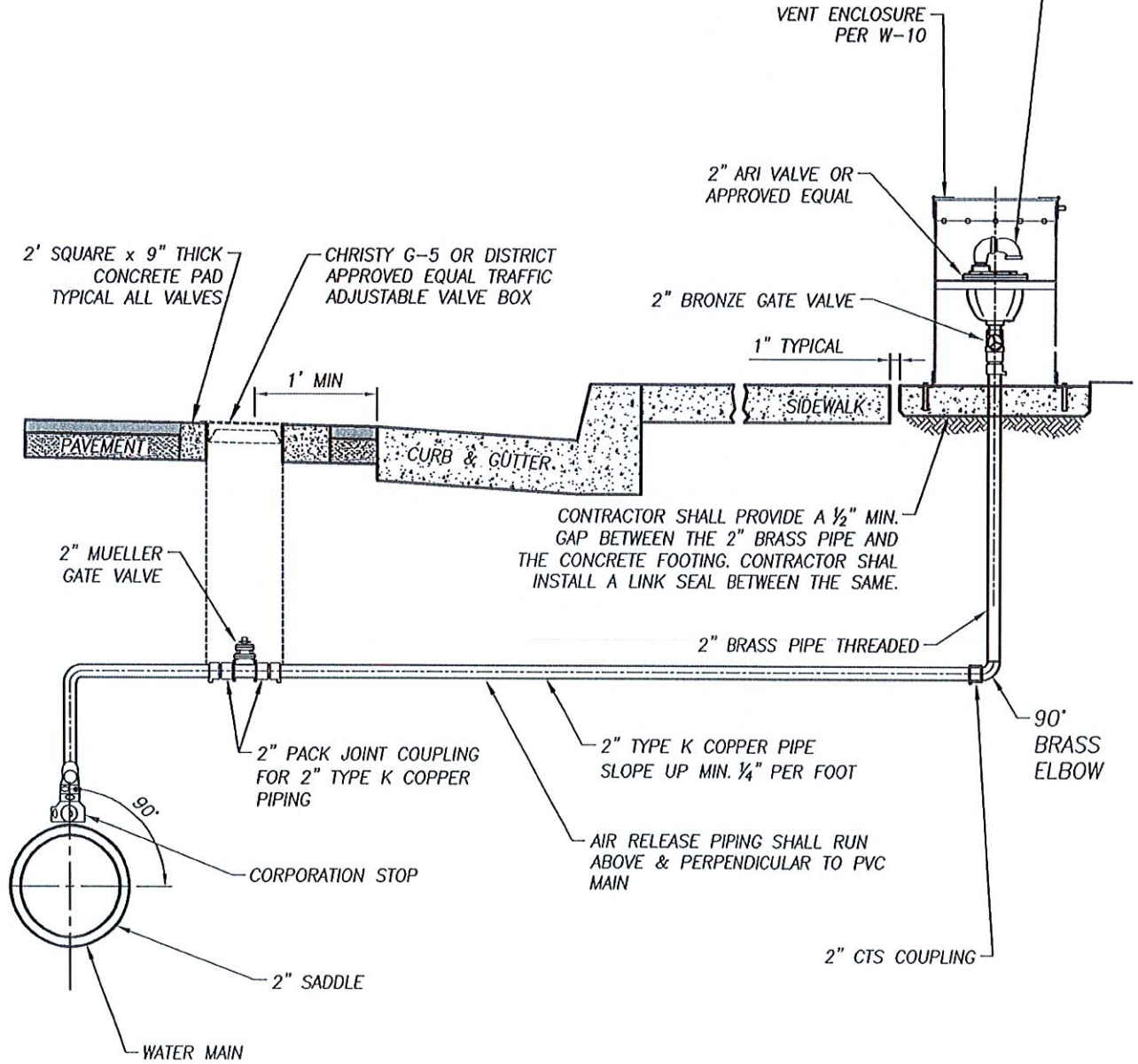
CHK BY: RLG

**SHEET**

**W - 8**

NOTE:  
ALL BRASS SHALL BE NSF 61 CERTIFIED LEAD FREE.

INSTALL 2" THREADED MALE/FEMALE ELBOW,  
2 EACH COVER OPENING WITH VENT SCREEN.  
USE 20 x 20 MESH .011 GAGE BRONZE  
MATERIAL WITH STAINLESS STEEL CLAMP.



GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

AIR / VACUUM VALVE

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

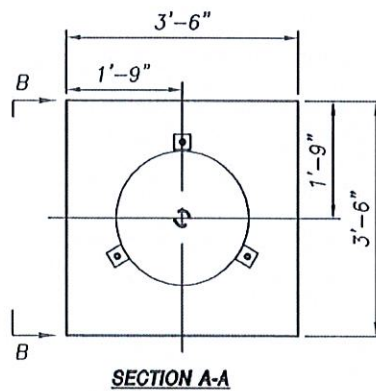
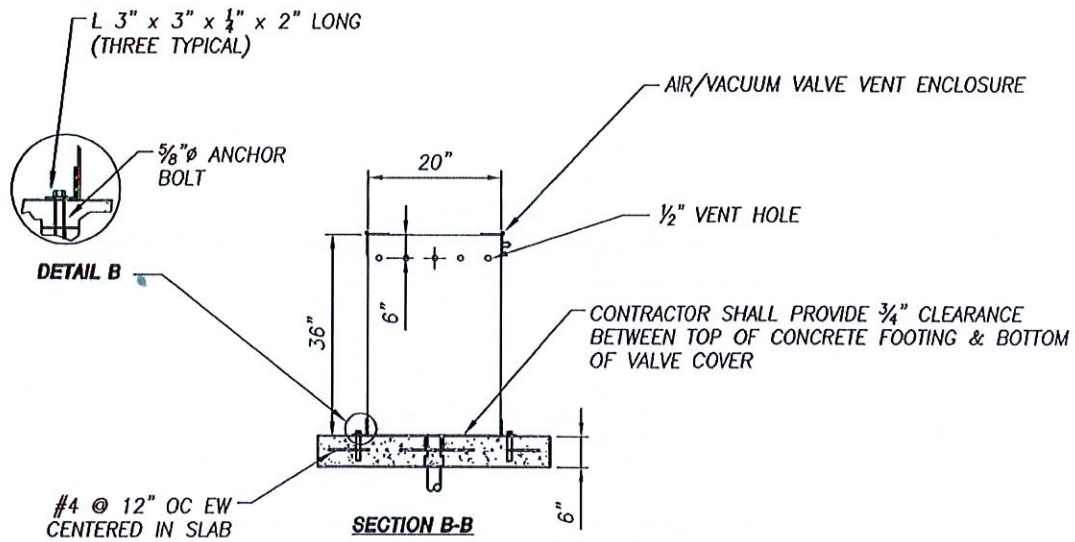
DRW BY: FR

CHK BY: RLG

SHEET

W - 9





**NOTES:**

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF PIPE, VALVES AND COVER TO ASSURE ADEQUATE CLEARANCES ARE GIVEN BETWEEN THE SAME.
2. CONTRACTOR SHALL TAKE CARE TO PROTECT ANY PVC PIPE USED FOR TRANSMISSION LINE PIPING DURING THE CONSTRUCTION OF THE VALVE COVER AND AIR RELEASE VALVE INSTALLATION SO AS TO NOT PLACE EXCESSIVE LOADS ON THE PIPE.
3. AIR RELEASE VALVES SHALL BE EPOXY LINED. EPOXY SHALL BE #134 SCOTCHKOTE SYSTEM.
4. SOIL MATERIAL AND COMPACTION REQUIREMENTS SHALL BE THE SAME AS SHEET SW-4
5. ONE 1/2"Ø VENT HOLE EVERY FOUR-INCHES AROUND CIRCUMFERENCE OF COVER TOP.
6. ALL ABOVE GROUND PIPE, VALVES, CONNECTIONS & BOLLARDS SHALL BE PAINTED AS REQUIRED BY THE DISTRICT.
7. ALL BURIED STEEL PIPE FITTINGS AND APPURTENANCES SHALL BE FILM WRAPPED W/10 MIL TAPE TO A THICKNESS OF 20 MILS.
8. CONCRETE FOR FOOTING SHALL BE 300 PSI MIN.
9. PIPELINE PRODUCTS V-VC-316 TAN IN COLOR



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**AIR RELEASE VALVE COVER**

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

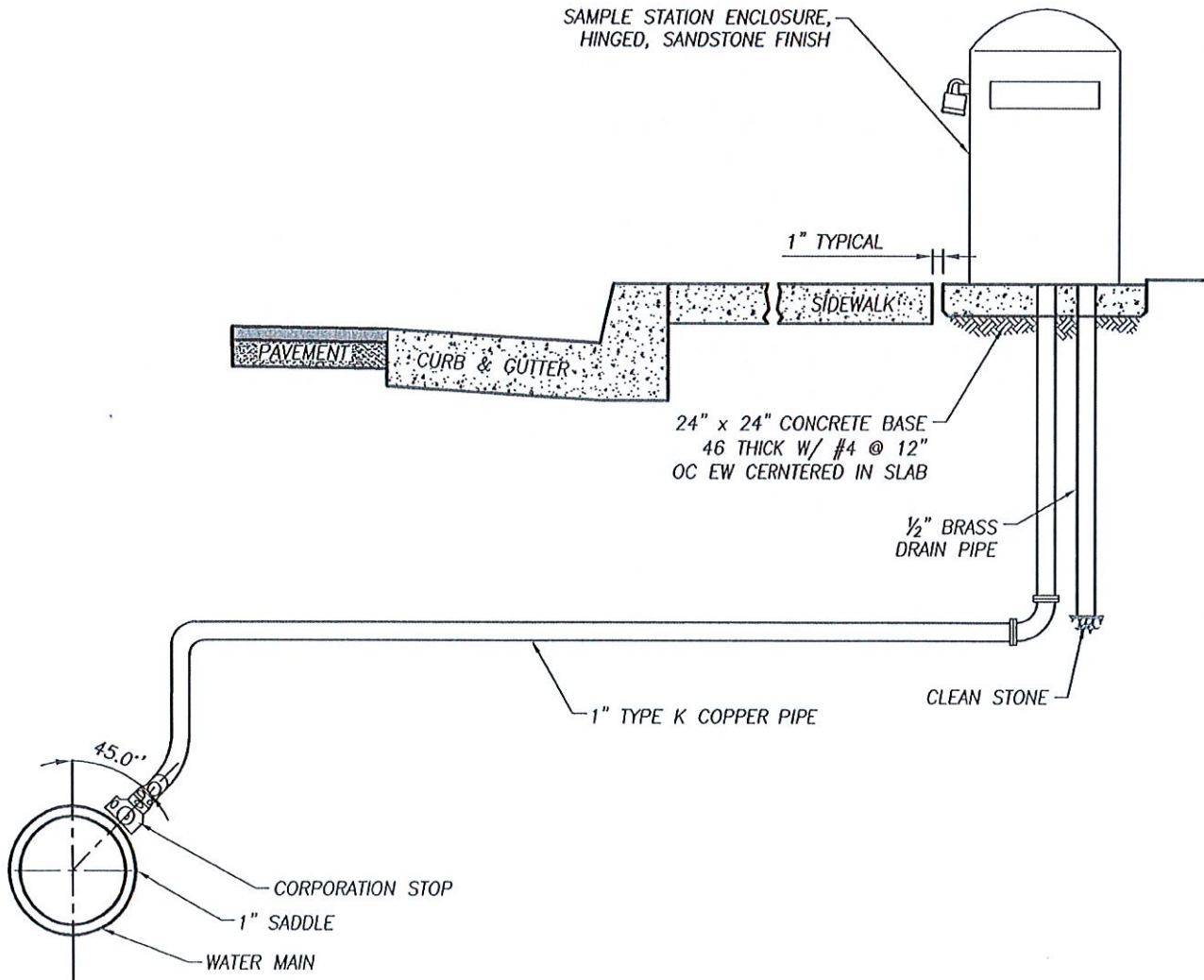
CHK BY: RLG

**SHEET**

**W - 10**

NOTES:

1. SAMPLING STATIONS SHALL BE ECLIPSE 88WC OR SAFETY GUARD BSS02 OR APPROVED EQUAL.
2. SAMPLING STATIONS SHALL BE 18" BURY, WITH A 1" MIP INLET AND A 1" FIP DISCHARGE. A 1/4" BENT-NOSE SAMPLING BIBB SHALL BE LOCATED BEFORE THE DISCHARGE.
3. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE ENCLOSURE.
4. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION AND THE WATER WILL FLOW IN ALL BRASS WATERWAY.
5. ALL WORKING PARTS SHALL BE OF BRASS AND SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING. (OPTIONAL: IF DESIRED, PROVIDE A DRAINAGE HOLE WITHIN THE LOCKING COVER TO PREVENT WATER FROM ACCUMULATING INSIDE THE UNITY.)
6. A 1" BALL VALVE SHALL CONTROL THE WATER FLOW, AND SHALL BE LOCATED BEFORE (OR AFTER) THE SAMPLING BIBB, AS MANUFACTURED BY KUPFERLE FOUNDRY, ST. LOUIS, MO 63102.
7. ALL BRASS SHALL BE NSF61 CERTIFIED LEAD FREE.



GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

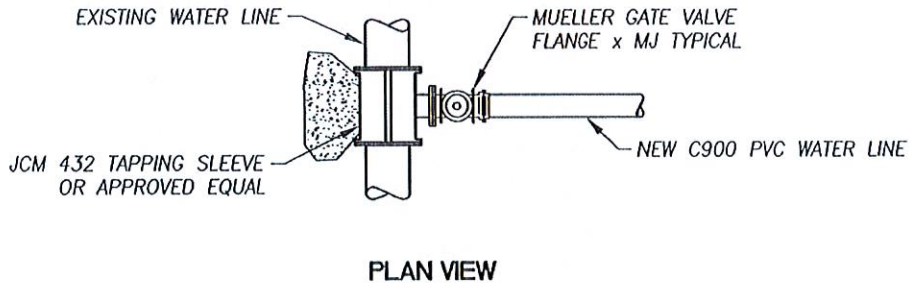
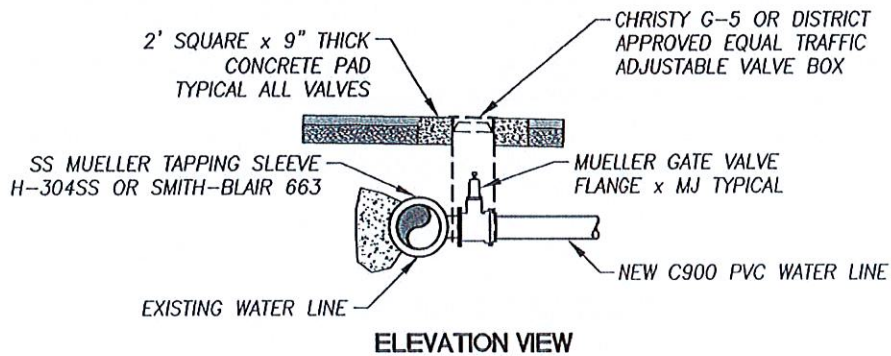
SAMPLE  
STATION INSTALLATION

REVISION DATE: OCTOBER 14, 2024  
DISTRICT ENGINEER: CATHERINE S. WILLIAMS  
DRW BY: FR      CHK BY: RLG

SHEET  
W - 11

**NOTES:**

1. WHEN TAPPING SLEEVES ARE ORDERED FROM THE MANUFACTURER, THE OUTSIDE DIAMETER OF THE PIPE BEING TAPPED, THE SIZE OF THE OUTLET DESIRED, AND THE WORKING PRESSURE SHALL BE SPECIFIED TO INSURE THAT THE CORRECT SLEEVES ARE FURNISHED. LEAD-JOINT SLEEVES SHALL NOT BE USED AND THE TAPPING SLEEVE SHALL PROVIDE FULL SUPPORT AROUND THE CIRCUMFERENCE OF THE PIPE.
2. THE TAPPING SLEEVES SHALL BE ASSEMBLED ON THE PIPE IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, INSURING THAT NO PIPE DISTORTION OCCURS. THE TAPPING VALVE IS THEN CONNECTED TO THE SLEEVE.
3. TAPPING SLEEVES SHALL BE SUPPORTED INDEPENDENTLY FROM THE PIPE DURING THE TAPPING. SUPPORT USED SHALL BE LEFT IN PLACE AFTER TAPPING. THRUST BLOCKS SHALL BE USED AS WITH ANY OTHER FITTING OR APPURTENANCE.
4. ALL THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL, PRIOR TO POURING. GCWD WILL REQUIRED TEST FOR SOIL COMPACTION.
5. POLYETHYLENE PLASTIC FILM WRAP SHALL BE PLACED AROUND ALL BURIED DUCTILE IRON VALVES AND FITTINGS. FILM WRAP SHALL BE OF VIRGIN POLYETHYLENE AND MEET THE REQUIREMENTS OF ASTM D-1248 FOR TYPE I, CLASS A, GRADE E-1, AND ASTM D-1238. FILM WRAP SHALL BE 10 MILS IN THICKNESS.
6. ALL THRUST BLOCKS SHALL BE ALLOWED TO SET UP, UNDISTURBED, AND SHALL BE APPROVED BY GCWD PRIOR TO BACKFILL.
7. CONCRETE STRENGTH SHALL BE 2,000 PSI AT 28 DAYS MINIMUM AND SHALL NOT COME INTO DIRECT CONTACT WITH PIPE AND FITTINGS OR GATE VALVES.
8. SEE SHEET W-2 FOR THRUST BLOCK SIZING TABLES.



**ALLOWABLE "HOT TAP" CONNECTION COMBINATIONS**

MAIN BEING TAPPED	SIZE OF OUTLET PIPE
24"	16" OR SMALLER
18"	12" OR SMALLER
16"	10" OR SMALLER
14"	8" OR SMALLER
12"	8" OR SMALLER
10"	6" OR SMALLER
8"	4" OR SMALLER



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**HOT TAPPING WATER MAIN**

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

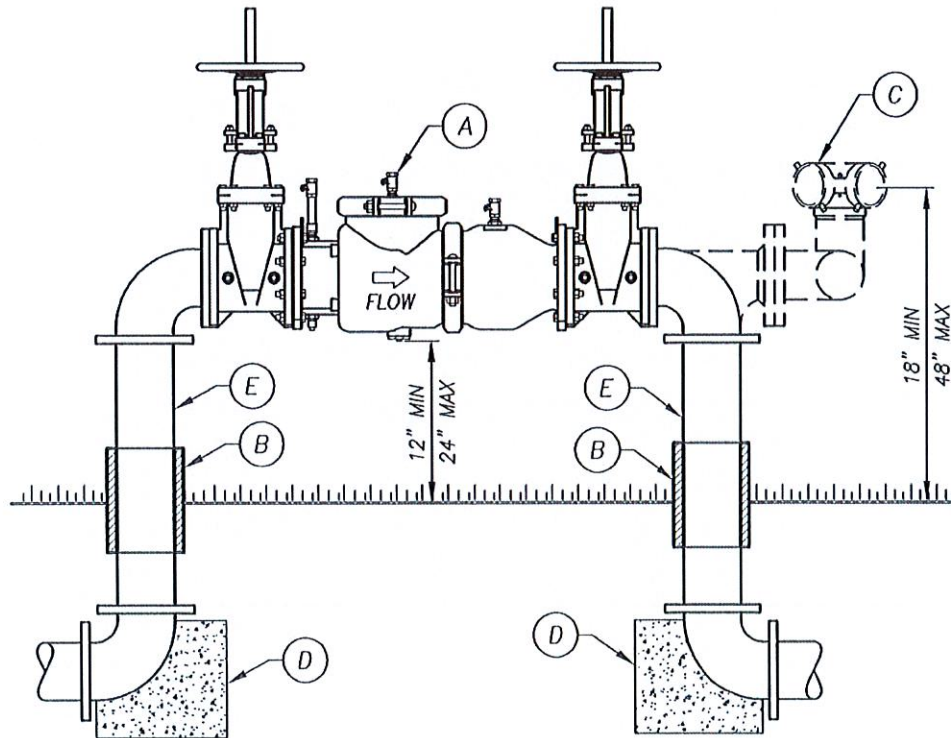
CHK BY: RLG

**SHEET**

**W - 12**

GENERAL NOTES:

1. INSTALLATION OF FIRE SERVICE: MAY ONLY BE MADE BY CONTRACTORS WITH A CLASS 'A' OR 'C-34' CONTRACTOR'S LICENSE.
2. HOT TAP FOR FIRE SERVICE REQUIRES A STAINLESS STEEL TAPPING SLEEVE PER SHEET W-12.



CONSTRUCTION NOTES:

- A. ABOVE GROUND BACKFLOW PREVENTION DEVICE.
- B. PROVIDE PVC PIPE SLEEVE IF PIPE ADJOINS CONCRETE SLAB OR PAVEMENT. PVC PIPE SLEEVE SHALL HAVE 2" MIN ANNULAR SPACE TYPICAL ALL AROUND. SLEEVE SHALL BE A MINIMUM OF 1" ABOVE AND BELOW CONCRETE PAD. (NOTE: DO NOT FILL ANNULAR SPACE WITH DIRT, AGGREGATES OR ANY MATERIAL EXCEPT FOAM SPRAY.)
- C. FDC WHERE APPLICABLE.
- D. THRUST BLOCKS PER SHEET W-2.
- E. FLANGE x FLANGE DUCTILE IRON SPOOL.



GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION

TYPICAL FIRE  
SERVICE DETAIL

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

CHK BY: RLG

SHEET

W - 13

GENERAL NOTES:

1. ALL IMPROVEMENTS SHALL BE IN ACCORDANCE WITH GREENFIELD COUNTY WATER DISTRICT (DISTRICT), CITY OF BAKERSFIELD, COUNTY OF KERN AND/OR STATE OF CALIFORNIA STANDARDS AS APPLICABLE.
2. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE ARRANGED BETWEEN ALL INVOLVED AGENCIES.
3. STAKING SHALL BE PROVIDED PRIOR TO CONSTRUCTION.
4. THE RESPONSIBLE PARTY SHALL OBTAIN PERMITS NECESSARY TO PERFORM THE WORK FROM THE APPROPRIATE AGENCIES.
5. THE PROPERTY OWNER, DEVELOPER OR CONTRACTOR (RESPONSIBLE PARTY) AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE RESPONSIBLE PARTY WILL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS A PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
6. THE RESPONSIBLE PARTY SHALL ACCEPT THE SITE IN ITS PRESENT CONDITION AND DEMOLISH AND/OR REMOVE FROM THE AREA OF DESIGNATED PROJECT EARTHWORK ALL STRUCTURES, BOTH SURFACE AND SUBSURFACE, TREES, BRUSH, ROOT, DEBRIS, ORGAN MATTER AND ALL OTHER MATTER DETERMINED BY THE INSPECTOR TO BE HARMFUL. SUCH MATERIAL SHALL BE REMOVED FROM THE SITE BY THE RESPONSIBLE PARTY.
7. THE RESPONSIBLE PARTY SHALL POST EMERGENCY PHONE NUMBERS FOR POLICE, FIRE, AMBULANCE, AND THOSE AGENCIES FOR MAINTENANCE OF UTILITIES IN THE VICINITY OF JOB SITE.
8. THE RESPONSIBLE PARTY SHALL PROVIDE FOR INGRESS AND EGRESS OF JOB SITE.
9. THE EXCAVATOR SHALL NOTIFY UTILITY COMPANIES AT LEAST TWO WORKING DAYS IN ADVANCE OF CONSTRUCTION FIELD LOCATE UTILITIES. CALL UNDERGROUND SERVICE ALERT (U.S.A), AT 1-800-227-2600. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR EXCAVATOR TO DETERMINE THE EXISTENCE AND LOCATION OF THOSE UTILITIES. ANY ADDITIONAL COST INCURRED AS A RESULT OF THE CONTRACTOR OR EXCAVATORS' FAILURE TO VERIFY LOCATIONS OF EXISTING UTILITY SERVICES PRIOR TO BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR OR EXCAVATOR.
10. EXCAVATIONS SHALL BE ADEQUATELY SHORED, BRACED AND/OR SHEETED SO THAT THE EARTH WILL NOT SLIDE OR SETTLE AND SO THAT ALL EXISTING IMPROVEMENTS OF ANY KIND WILL BE FULLY PROTECTED FROM DAMAGE. ANY DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING, BRACING AND SHEETING, SHALL BE THE RESPONSIBILITY OF THE RESPONSIBLE PARTY. THE RESPONSIBLE PARTY SHALL EFFECT NECESSARY REPAIRS OR RECONSTRUCTION AT OWN'S EXPENSE. WHERE THE EXCAVATION OF A TRENCH IS FIVE FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING, WHICH SHALL CONFORM TO THE APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY OF THE STATE OF CALIFORNIA. THE RESPONSIBLE PARTY SHALL ALWAYS COMPLY WITH OSHA REQUIREMENTS.
11. THE RESPONSIBLE PARTY SHALL TAKE EFFECTIVE ACTION TO PREVENT THE FORMATION OF AN AIRBORNE DUST NUISANCE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE FROM FAILURE TO DO SO.
12. CONTRACTOR SHALL COMPLY WITH SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD) REGULATIONS TO LIMIT FUGITIVE DUST.
13. THE RESPONSIBLE PARTY SHALL MEET AND FOLLOW ALL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS IN EFFECT AT THE TIME OF CONSTRUCTION.



**GREENFIELD COUNTY WATER DISTRICT  
STANDARDS FOR WATER SYSTEM CONSTRUCTION**

**GENERAL NOTES**

REVISION DATE: OCTOBER 14, 2024

DISTRICT ENGINEER: CATHERINE S. WILLIAMS

DRW BY: FR

CHK BY: RLG

**SHEET**

**W - 14.1**

GENERAL NOTES:

14. THE RESPONSIBLE PARTY SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAG PERSON OR OTHER DEVICES NECESSARY TO PROVIDE FOR SAFETY. TRAFFIC CONTROL AND ALL TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH THE 'MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE ZONES', LATEST EDITION AS PUBLISHED BY THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION.
15. ALL EXISTING WATER LINE AND IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE DISTRICT AT THE RESPONSIBILITY PARTY'S EXPENSE.
16. ANY CHANGES OR ALTERATIONS TO APPROVED PLANS SHALL RECEIVE APPROVAL BY THE DISTRICT BEFORE PROCEEDING. CHANGES OR ALTERATIONS SHALL BE PROVIDED TO THE DISTRICT AS AN AS-BUILT.
17. ANY RELOCATION OF WATER INFRASTRUCTURE SHALL BE IN ACCORDANCE WITH ANY AND ALL REQUIREMENTS OF THE DISTRICT. THE WORK SHALL BE DONE AT NO EXPENSE TO THE DISTRICT.
18. IF ARCHAEOLOGICAL MATERIALS ARE UNCOVERED DURING EXCAVATION, WORK SHALL BE STOPPED UNTIL A PROFESSIONAL ARCHAEOLOGIST WHO IS CERTIFIED BY THE SOCIETY OF CALIFORNIA ARCHAEOLOGY (SCA) AND/OR SOCIETY OF PROFESSIONAL ARCHAEOLOGY (SOPA) HAS HAD AN OPPORTUNITY TO EVALUATE THE SIGNIFICANCE OF THE FIND AND SUGGEST APPROPRIATE MITIGATION MEASURES, IF THEY ARE DEEMED NECESSARY.
19. INSTALLATION OF WATER IMPROVEMENTS OR REPAIRS SHALL FOLLOW DISTRICT STANDARDS AND AMERICAN WATER WORKS ASSOCIATION (AWWA) GUIDELINES.
20. DISTRICT INSPECTOR (OPERATOR) OR DESIGNEE SHALL INSPECT ALL CONSTRUCTION OF WATER SYSTEM IMPROVEMENTS. CONTRACTOR SHALL CALL INSPECTOR OR DESIGNEE 24 HOURS AHEAD OF EACH INSPECTION.



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