



GRANGER-HUNTER
IMPROVEMENT DISTRICT

Improving quality of life today – creating a better tomorrow

2026 Material and Construction Specifications For Water and Wastewater Systems



Granger-Hunter Improvement District Engineering Department

2888 S 3600 W, West Valley City, UT 84119

T: 801-968-3551 E: plans@ghid.gov W: www.ghid.gov

CONTENTS

Pre-Construction

New Construction	5
Modifications/Improvements to Existing Infrastructure	5
Contractors	5

Design Specifications

Water System	6
Wastewater System	7

Materials

Water Materials	8
Wastewater Materials	12

Standard Details

General Notes	14
Typical Valve Collar Detail	15
Typical Valve Location Detail	16
Typical Water Service with 3/4"-2" Meter	17
Typical 3 & 4" Meter W/O Bypass 1 of 2	18
Typical 3 & 4" Meter W/O Bypass 2 of 2	19
Typical Large Meter Vault 1 of 2	20
Typical Large Meter Vault 2 of 2	21
Typical Double Check Detector Assembly	22
Typical PRV Vault 1 of 3	23
Typical PRV Vault 2 of 3	24
Typical PRV Vault 3 of 3	25
Typical Vault Thrust Restraint Alternative	26
Typical Air Release Vault	27
Typical Fire Hydrant	28
Typical Sampling Station	29
Typical 2" Blowoff Valve	30
Typical Thrust Restraints	31
Typical Waterline Loops	32
Typical Conflict Detail	33
Typical Pipe Zone	34
Typical Sanitary Sewer Manhole	35

Typical Beaver Slide & Sewer Manhole Abandonment	36
Typical Mainline Sanitary Sewer Cleanouts/Sanitary Sewer Service 90° Bends	37
Typical Sewer Service	38
Typical Sewer Repair	39
Typical Grease Interceptor	40
Typical Sampling Manhole	41
Inspections & Testing	
Pre-Inspection Requirements	42
Inspection Requirements	42
Water Shutdown Requirements	43
Disinfection & Testing	43
Sewer Testing	44
Abandonments	44
Engineering Office Hours	47
GHID Lobby Hours	47
Inspection Hours	47
Engineering Contact	47

- ❖ AASHTO – American Association of State Highway and Transportation Officials
- ❖ ADS – Polyethylene Material
- ❖ APWA – American Public Works Association
- ❖ ASTM – American Society of Testing and Materials
- ❖ CC – Center to Center
- ❖ CI – Cast Iron
- ❖ CORP- Corporation
- ❖ CTS – Copper Tube Size
- ❖ DI – Ductile Iron
- ❖ DIAM – Diameter
- ❖ FIP – Female Iron Pipe
- ❖ FM (Grease) – Food Grade (Grease)
- ❖ GHID – Granger-Hunter Improvement District
- ❖ H-20 – Traffic Loading (AASHTO Load Rating)
- ❖ ID – Inside Diameter
- ❖ MAX – Maximum
- ❖ MH – Manhole
- ❖ MIL – Thickness (1 MIL =1/1000 of an inch)
- ❖ MIN – Minimum
- ❖ MIP – Male Iron Pipe
- ❖ MJ – Mechanical Joint
- ❖ NO- Number
- ❖ OC – On Center
- ❖ OD- Outside Diameter
- ❖ OSHA – Occupational Safety and Health Administration
- ❖ PVC – Polyvinyl Chloride
- ❖ SDR – Standard Dimension Ratio
- ❖ SS – Stainless Steel
- ❖ TYP –Typical
- ❖ WVC – West Valley City

Pre-Construction



New Construction

Prior to construction of water and wastewater lines, all plans must undergo a review process to determine if the proposed improvements meet GHID standards. The following is a general outline of the process:

- The Owner shall complete the Availability and Plan Review Application (s), pay the fee.
- The Owner shall finalize any easements and/or rights-of-way documents necessary.
- After plan approval, GHID shall issue a Letter of Availability (and sign the plat if applicable).
- It is the Developer/Contractors responsibility to schedule a pre-construction meeting. All applicable fees, signed development agreement (for construction of public infrastructure) License & Permit Bond, Certificate of Insurance and Workers Comp or Workers Comp Waiver must be submitted prior to scheduling pre-construction meeting.

Copies of GHID's Development Agreement, Availability & Plans Review Application, requirements, and connection fees are available on our website at <https://www.ghid.gov/engineering>. E-mail final plans to plans@ghid.gov. Each plan set must be accompanied by a completed plan submittal checklist. West Valley City's standard plans are available here: <https://www.wvc-ut.gov/1592/West-Valley-City-Engineering-Standards>.



Modifications/Improvements to Existing Infrastructure

A plan review of improvements of existing infrastructure is required whenever the water, sewer, irrigation, or fire protection systems are being modified. Owners are responsible to contact GHID and fill out an Availability & Plan Review Application. Fees will be assessed on the type of improvements made. Forms are available on GHID's website at <https://www.ghid.gov/engineering>.



Contractors

The following items will be required before work may commence:

- Submittal of Contractor's License and Permit Bond.
- General Liability Insurance Certificate.
- Workers Compensation and Employer's Liability Certificate, or State of Utah approved waiver.
- Approved set of drawings.
- Arrange for a Pre-Construction meeting with District inspectors by calling 801-968-3551.
- 24-hour notification is required for all inspections. Inspections are available Monday-Thursday. 8:00 AM to 4:00 PM, excluding holidays.

Design Specifications

Water System

- The design of the improvements shall be consistent with West Valley City's Fire Department fire flow requirements.
- All materials that come into contact with drinking water shall be ANSI/NSF 61 Certified.
- All pipe, joints, fittings, valves, and fire hydrants shall conform to AWWA Standards C104-C550 and C900-C950.
- Service laterals shall conform to the Utah Plumbing Code.
- Water mains not connected to hydrants shall be 6-inch minimum diameter. Water mains connected to hydrants shall be 8-inch minimum diameter.
- Water main valves shall be spaced not more than 500 feet in commercial districts and not more than 800 feet or one block in other areas. Water main valves shall be placed at all street and/or water main intersections.
- All dead-end water mains shall be provided with a fire hydrant or blow-off.
- At high points in water mains, air relief valves shall be installed per GHID Specifications.
- Pipe shall be buried at least 4 feet below ground surface.
- The open ends of all pipelines under construction shall be sealed at the end of each day.
- No used materials (valves, fittings, pipe, fire hydrants, etc.....) shall be used.
- Hydrant drains shall not be connected to, or located within, 10 feet of sanitary sewers or storm drains.
- No vaults with valves or blow-offs shall discharge directly to the storm drain or sewer system.
- In PRV Vaults, isolation valves shall be installed on both sides of the PRV.
- Service laterals shall not be connected to fire lines.
- Water meters shall be placed at adjoining property lines centered in the park strip or within one foot back from curb in accordance with District specifications.
- Only two meters per lot (plus either a landscape/back-out meter) are allowed. Landscaping back-out meters must be smaller than the main meter.
- Owner is responsible to submit backflow reports to [GHID Water Quality](#) Department within 10 days of initial use and annually thereafter. Submit reports to bsionline@backflow.com
- Contractor must sign for service before meters will be installed or provided. <https://www.ghid.gov/sign-up-for-service> for service agreement.
- Abandoned water mains are to be completely removed on reconstruction projects or when the removal does not require excessive disturbance of hard surface improvements as determined by the District. If the water main removal will result in excessive disturbance of hard surface improvements the contractor shall cap and restrain the pipe with a blind flange or equivalent type of plug.
- All metallic pipe and fittings, coupling, mechanical joints, flanged joints, valves, hydrants and fittings, including tees, wyes, elbows, plugs etc. exposed to soil shall be coated with shop applied fusion bonded epoxy coating system or coated with Trenton Wax Tape System (or approved equal), including primer, mastic, and tape. PE is not an approved coating for any buried metallic pipe, fitting or appurtenances. All buried bolts and nuts shall be wax tape coated regardless of fitting or coating.
- Water mains are to be protected from allowing water, debris or animals to enter. All pipelines shall be covered and sealed at the end of each days work.
- Pipe shall not be dropped into the trench during construction.
- For new construction HydroGrip gaskets may be used in lieu of thrust blocking per GHID specifications.

Wastewater System

- The maximum spacing between manholes for all sewer lines shall not exceed 400 feet.
- End all sewer mains with a manhole or cleanout.
- All building connections must have an exterior lateral cleanout within five feet of the building.
- Maximum spacing between cleanouts for all 4-inch cleanouts shall not exceed 60 feet.
- Maximum spacing between cleanouts for all 6-inch cleanouts shall not exceed 100 feet.
- All establishments that discharge fat, oil, grease, or sand shall install a 1,000-gallon minimum interceptor and sampling manhole per District specifications.
- Sampling manholes and grease interceptors shall be placed where they are permanently accessible.
- All wastewater pipelines and laterals must conform to GHID's Typical Conflict Detail.
- All swimming pool drain lines must be limited to 50 GPM.
- Any business requiring a grease interceptor must have its own meter.
- Covered Parking lots and car washes are required to install a sand/water separator.
- Abandoned sewer mains are to be completely removed on reconstruction projects or when the removal does not require excessive disturbance of hard surface improvements the abandoned sewer main shall be filled with flowable fill. In the rare circumstances where removing the abandoned sewer main or placing flowable fill is infeasible, and with approval from the District Engineer, abandoned sewer main may be plugged with a permanent, water-tight concrete (4000 PSI) plug extending into the abandoned pipe at least two feet. All openings in walls of remaining manholes, catch basins, or structures must be plugged as well. This will not be an option for sewer main pipes showing signs of significant deterioration.

Materials

Water Materials

	<p>Water Mainline Pipe</p> <p>C-900 SDR 18 PVC</p> <p>Fittings shall be Pressure Class 250 psi Minimum.</p>		<p>Fire Hydrants</p> <p>6" Waterous or Mueller.</p>
	<p>Water Valves</p> <p>Gate valve <= 12-inch. AVK, Clow, Mueller or Waterous.</p> <p>Brass valve nuts required.</p>		<p>Tracer Wire</p> <p>#14 Insulated Solid Copper Electrical Tracer Wire. Tracer Wire must be continuity tested prior to paving.</p>
	<p>Mechanical Joint Restraints</p> <p>Megalug or Romac grip rings or equivalent</p>		<p>Valve Boxes</p> <p>Cast Iron adjustable with cover labeled "WATER"</p> <p>D&L M-8045-02 Heavy Weight Valve Box Lid or equivalent</p>
	<p>Wax Tape</p> <p>Trenton Wax Tape or Equivalent</p>		<p>Poly-Ply Wrap</p> <p>Trenton Poly-Ply Wrap or Equivalent</p>

	<p>Water Meters</p>		<p>Meter Rings and Lids</p>
	<p>Meter Box</p>		<p>Ford Coppersetter</p>
	<p>Stainless Tapping Sleeve</p>		<p>Service Line</p>
	<p>Corporation Stops</p>		<p>Check Valve</p>
	<p>Water Warning Tape</p>		<p>Snake Pit</p>
	<p>Meters Supplied by the District. 3/4" - 2" installed by District, 3" - 10" installed by Contractor Provided by the District.</p>		<p>D&L 5024 or B-5334</p>
			<p>See detail for part numbers</p>
			<p>C.T.S. SDR-9 Poly or Municipex w/ss stiffeners and compression fittings</p>
			<p>IP x CTS</p>
			<p>Angle Cartridge Dual Check Valve</p>
	<p>2" Wide Min. 4mil thick Min. For water and sewer mains</p>		<p>CD14BLUTP</p>

	<p>Sampling Station</p> <p>Kupferle #88-SS Eclipse With Pedestal</p>		<p>Brass Saddle</p> <p>Ford 202BSD with brass accessory packs</p>
	<p>Curb Stamps</p> <p>W for water lateral Brass pins allowed</p>		<p>Bonding Clamp</p> <p>For Copper to Poly connection for tracer wire</p>
	<p>Accessory Packs</p> <p>All accessory packs to be PTFE- Polytetraflouroethylene or SS–Stainless Steel Type 316</p> <p>Anti-seize required for SS Accessory Packs.</p>		<p>Repair Coupler</p> <p>Smith-Blair Full Circle Repair Clamp with PTFE or SS Type 316 nuts and bolts</p>
	<p>Thrust Restraints</p> <p>HydroGrip Gaskets formerly known as Riberlock</p> <p>Or Concrete Thrust Blocks</p>		



Typical Large Meter with Bypass

Meters to be provided by the District



Typical Fireline Backflow

Double Check Detector Assembly or Equivalent Required per UPC Section 603.5.14.
Meter to be provided by the District.

Wastewater Materials

	<p>Sewer Pipe</p>		<p>Nose-on</p>
<p>PVC SDR 35</p>	<p>Inserta Tee or Equal on Existing Mains Wye Fittings on New Mains.</p>		
	<p>Ring and Cover</p>		<p>Manhole</p>
<p>D&L A1180 or EJ NPR-20-004590-23214 W/Titus TL-125 Twist Lift Security Lock or Equal Labeled as shown</p>	<p>Concrete</p>		
	<p>Grease Interceptor</p>		<p>Butyl Sealant</p>
<p>Concrete 1,000 gallon minimum</p>	<p>Kent seal or equivalent (for joints in concrete manholes and grease interceptors)</p>		

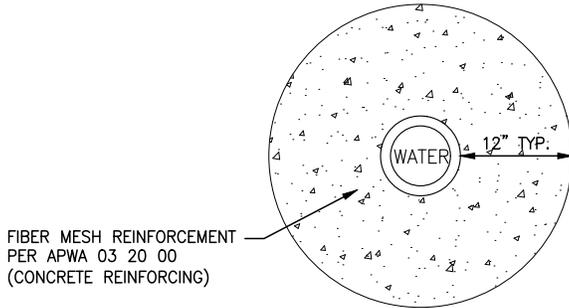
	<p>WhirlyGIG Manhole Riser Collar System</p>		<p>Cretex Pro-Ring</p>
	<p>Shielded Fernco Connectors</p>		<p>No Hub Cleanout w/ brass plug</p>
	<p>Curb Stamps</p>		<p>Sewer Warning Tape</p>
	<p>S for Sewer Brass pins allowed</p>		

Standard Details

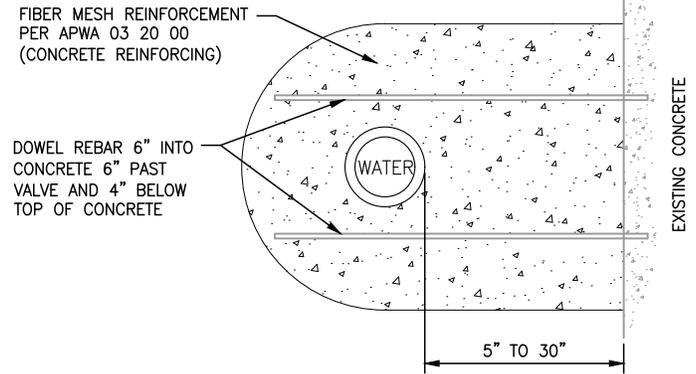
General Notes

1	All construction in the pipe zone shall follow GHID specifications and requirements.
2	The existing water distribution system shall remain in service during construction.
3	It is the contractor's sole responsibility to verify all work dimensions and locate and avoid all underground utilities.
4	All construction above the pipe zone including, but not limited to, replacement of curb, sidewalk, etc to be in accordance with applicable agency (i.e. UDOT, West Valley City, APWA 2025 edition) specifications and requirements. Refer to GHID, WVC, APWA and OSHA requirements for trench excavation and safety.
5	All waterline and sewerline construction to be in accordance with GHID Materials and Construction Specifications and APWA Standard Plans and Specifications (2025 edition).
7	Contractor shall restore pavement per applicable agency standards.
8	Bedding and Backfill within Pipe Zone: Waterline Constructed in dry ground – select sand shall be used. Waterline constructed in wet ground and Sewerline – ¾" minus gravel with separation fabric shall be used. Select Sand Bedding and Backfill shall be compacted to a minimum average of 92% density ASTM D-1557. Material shall be compacted in 6-inch layers (uncompacted depth) within the pipe zone area including the haunch areas.

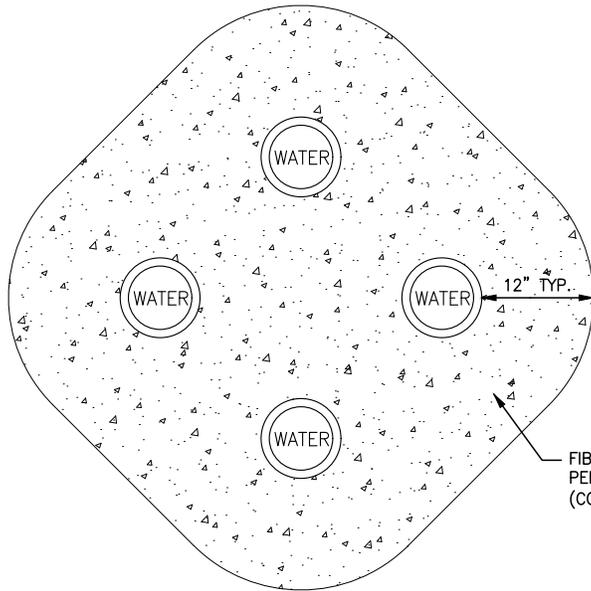
Typical Valve Collar Detail



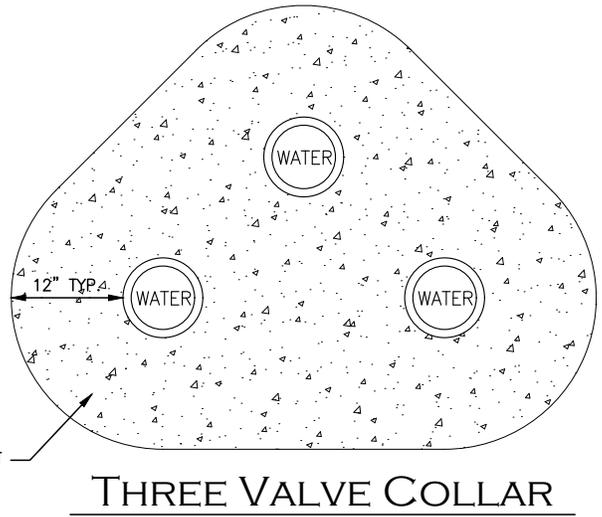
SINGLE VALVE COLLAR



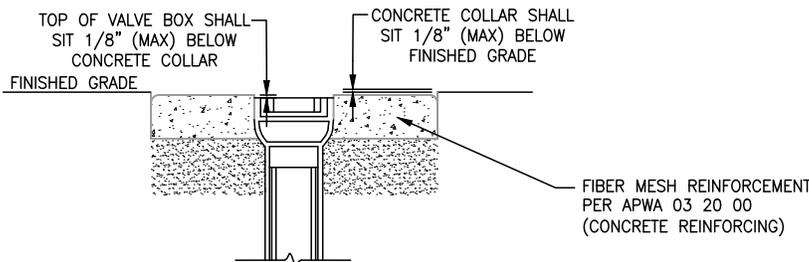
VALVE BOX WITHIN 30" OF EXISTING CONCRETE



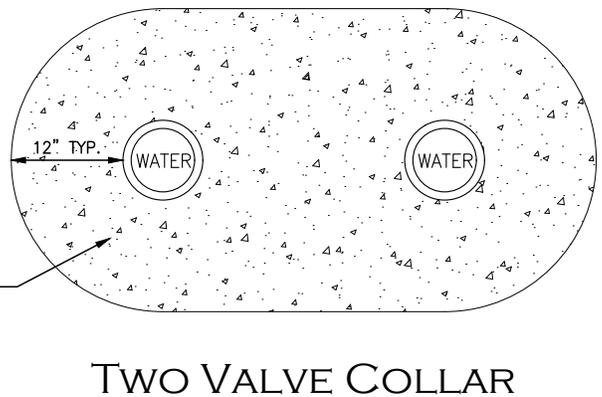
FOUR VALVE COLLAR



THREE VALVE COLLAR



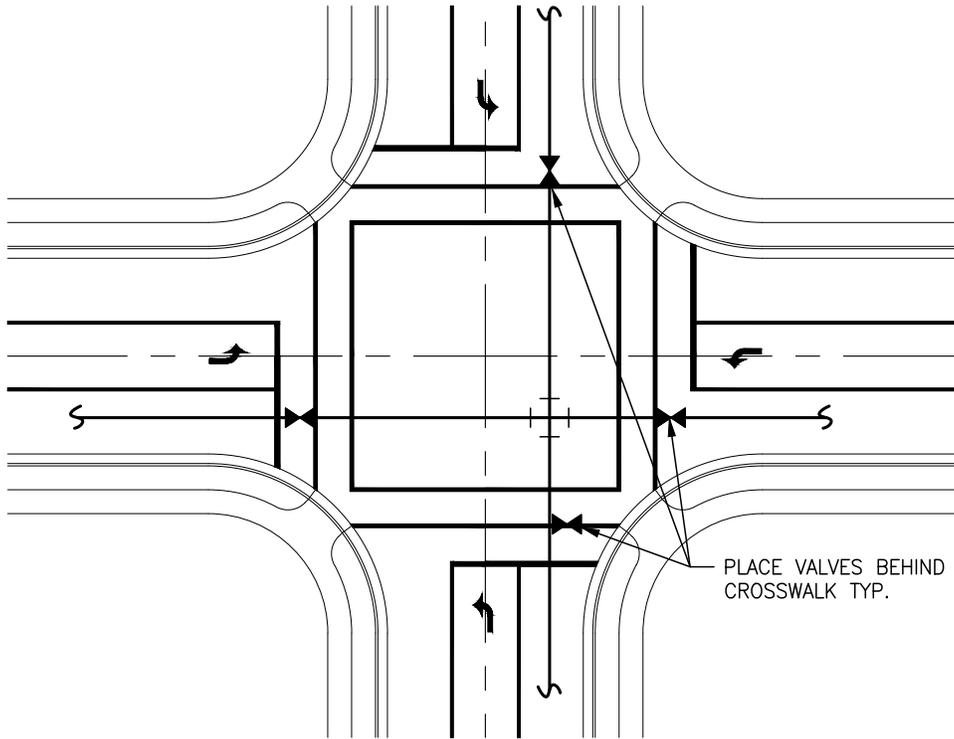
VALVE COLLAR CROSS SECTION



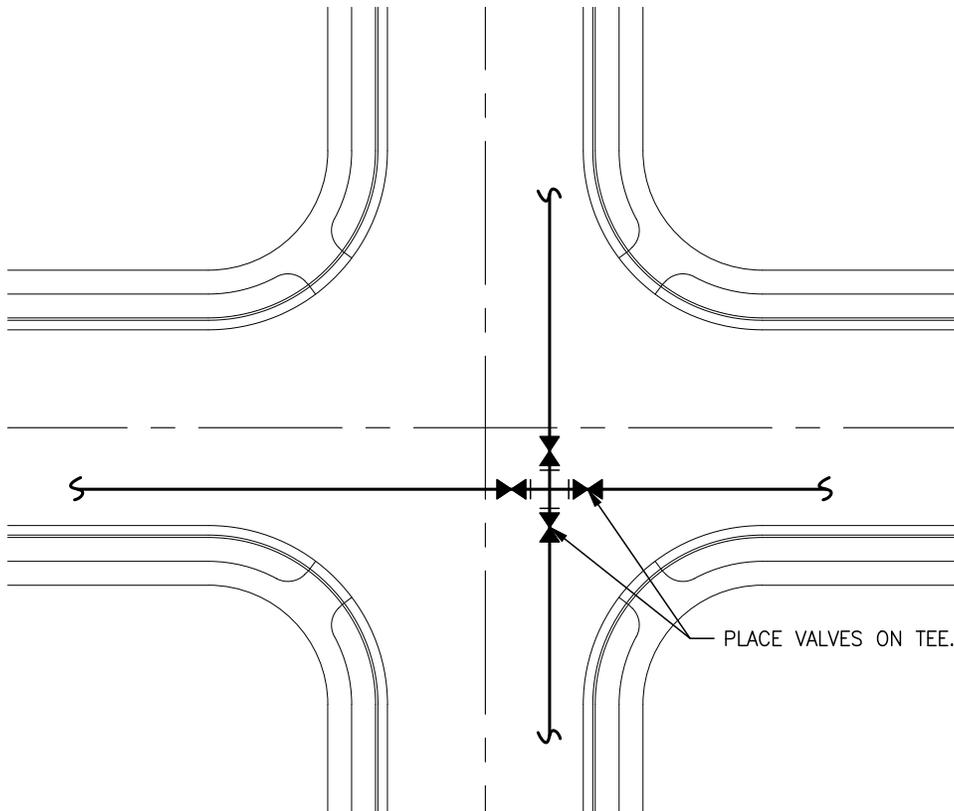
TWO VALVE COLLAR

- NOTE:
1. VALVE RINGS AND CONCRETE COLLARS SHALL BE PROTECTED BY A COVERING DURING A SEAL COAT.
 2. VALVE BOXES SHALL BE 2 PIECE, CAST IRON, SCREW ADJUSTABLE SLEEVE, 5 1/4" SHAFT WITH A DROP LID.
 3. VALVE BOXES ON MAINS TOO SHALLOW FOR 2 PIECE BOXES SHALL HAVE A 10" SLIPTOP, D&L M-8056 OR APPROVED EQUIVALENT.

Typical Valve Location Detail



SIGNALIZED INTERSECTIONS



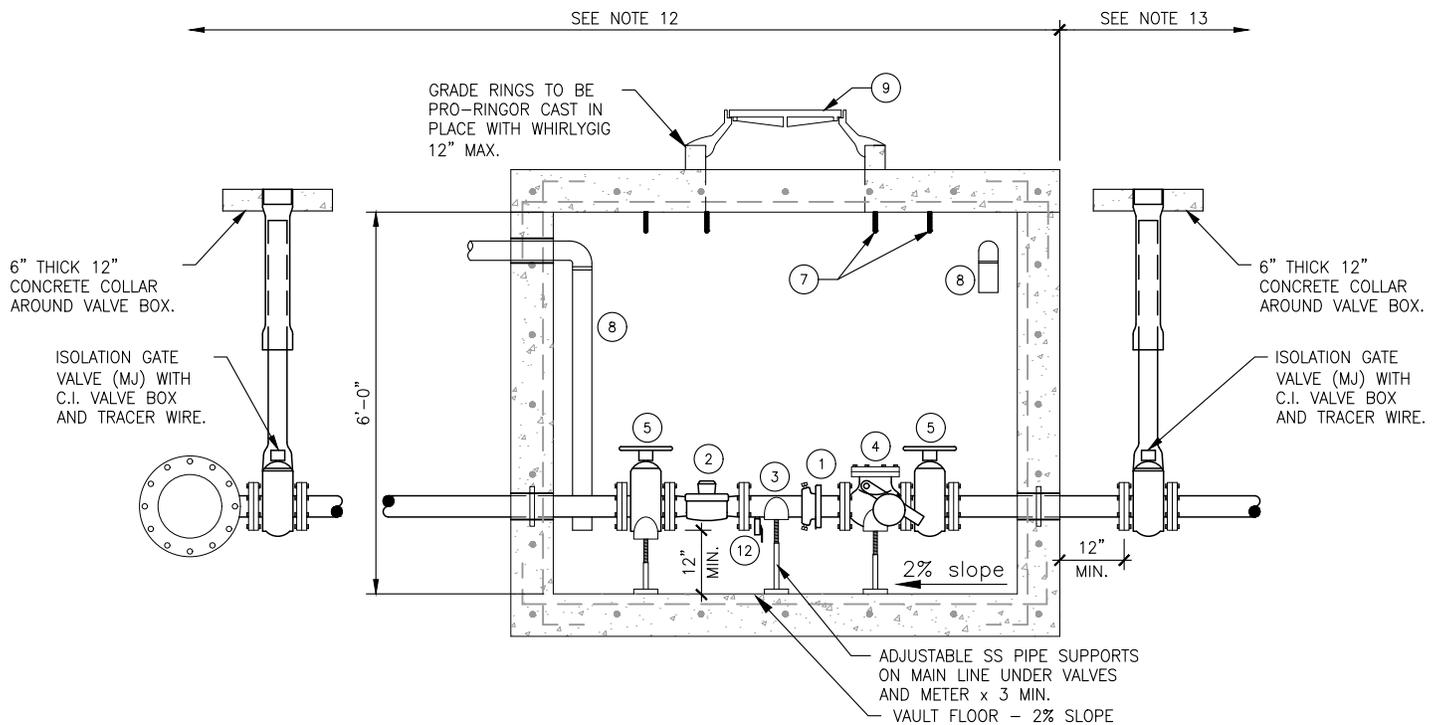
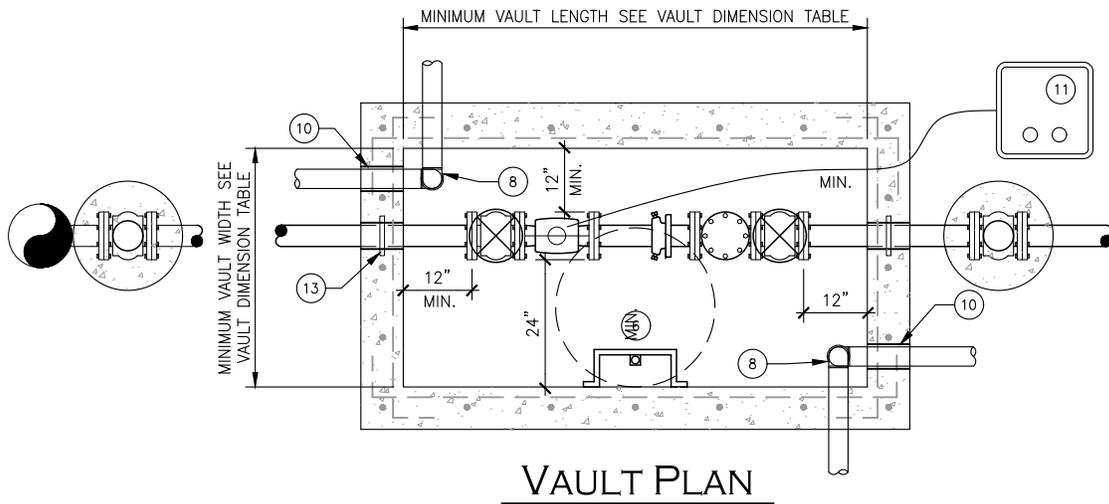
NON-SIGNALIZED INTERSECTIONS

- NOTE:
1. SEE PAGE 14 FOR GENERAL NOTES
2. SEE TYPICAL TRENCH SPECIFICATIONS FOR BEDDING AND BACKFILL

3 & 4" Water Meter W/O Bypass 1 of 2

- ① FLANGED COUPLING ADAPTER
- ② MAG METER
- ③ FLANGED x PLAIN END PIECE, CUT TO FIT. LENGTH = 3 x PIPE DIA.
- ④ SWING CHECK VALVE
- ⑤ GATE VALVE SEE VAULT DIMENSION TABLE FOR BYPASS VALVE SIZE
- ⑥ STAINLESS STEEL LADDER WITH EXTENSION, HALLIDAY MODEL L6B WITH L6E LADDER EXTENSION OR EQUAL
- ⑦ (3) 3/4" DIA. S.S. LIFTING EYES (TYPE 316) OVER ALL METERS AND VALVES
- ⑧ AIR VENT PIPING, MAY BE PLUMBED OUT THE SIDES OR END OF THE VAULT AS CONDITIONS REQUIRE.
- ⑨ 30" VAULT OPENING EJ 2600 SERIES 4-1/8" TALL COMPOSITE MANHOLE ASSEMBLY W/COMMLOCK LATCHES MARKED GHID WATER
- ⑩ SEAL ALL INTRUSIONS WITH NON-SHRINK GROUT
- ⑪ 12"x12" IRRIGATION BOX W/1 3/4" HOLE FOR TOUCHREAD SENSOR. PLACE BOX IN LANDSCAPING DRILL (2) 2" HOLES IN VAULT TO RUN WIRE THROUGH. RUN 1 1/2" CONDUIT FROM VAULT TO SENSOR BOX. CONDUIT TO BE SEALED WITH SPRAY FOAM BY GHID AFTER SENSOR IS INSTALLED
- ⑫ 3/4" SS BALL VALVE TAPPED INTO SPOOL
- ⑬ PIPE RESTRAINT CAST INTO WALL. ALTERNATIVES AT DISCRETION OF ENGINEER.

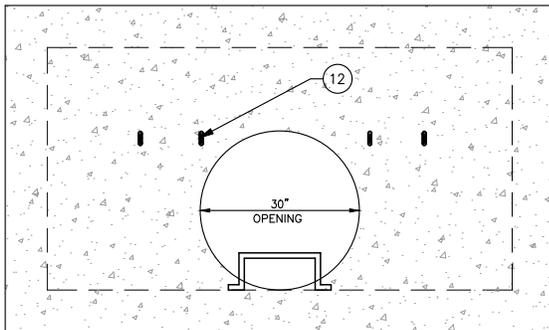
VAULT DIMENSION TABLE		
METER SIZE	MIN. LENGTH	MIN. WIDTH
3"	6'-0"	4'-0"
4"	7'-6"	4'-0"



3 & 4" Water Meter W/O Bypass 2 of 2

NOTE:

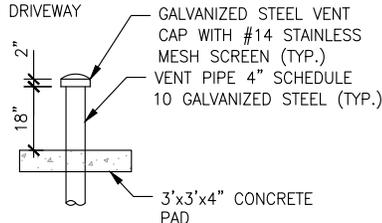
1. SEE PAGE 14 FOR GENERAL NOTES.
2. **METER TO BE PROVIDED BY GHID.**
3. ALL MANHOLES SHALL HAVE A 6" THICK CONCRETE COLLAR PER A.P.W.A. PLAN 362.
4. VAULT BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
5. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
6. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
7. ALL FLANGED x PLAIN END SPOOLS TO BE PRE-CAST INTO VAULT WALLS BY VAULT MANUFACTURER.
8. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
9. VAULT SHALL BE SUITABLE FOR H-20 LOADINGS.
10. BYPASS SHALL BE 2".
11. GHID OWNS, MAINTAINS, AND REPAIRS CULINARY WATER SERVICE TO THE BACK OF THE METER VAULT.
12. CULINARY WATER SERVICE OWNED, MAINTAINED AND REPAIRED BY PROPERTY OWNER.
13. VAULT TO BE ENGINEERED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF UTAH. STAMPED DRAWINGS TO BE PROVIDED TO THE DISTRICT.
14. BEDDING FOR VAULT TO BE 1" MINUS GRAVEL 12" THICK.
15. PIPE ASSEMBLY TO BE PREPARED PAINTED PRE ASSEMBLED & CAST INTO BOX. DI PIPES AND FITTINGS INSIDE VAULT TO BE PAINTED WITH EPOXY PAINT SW4086 SAFETY BLUE OR EQUIVALENT.
16. 10" AND LARGER METERS REQUIRE AN ADDITIONAL ADJUSTABLE PIPE SUPPORT ON THE SPOOL PIECE ON THE MAIN LINE.
17. 3" METERS: INSTALL 4" TAPPING SADDLE, 4 INCH GATE VALVE AND 4x3 REDUCER. TAP AND LATERAL TO BE 3" MAX.
4" AND LARGER METERS: TAPPING SADDLE, GATE VALVE AND LATERAL MUST MATCH METER SIZE.
18. GHID SHALL NOT BE RESPONSIBLE FOR REPLACING CONCRETE, TREES OR STRUCTURES PLACED WITHIN 5' OF METER VAULT.
19. ALL VAULT FITTINGS TO BE DUCTILE IRON.
20. VALVES INSIDE VAULT SHALL HAVE HAND WHEELS
21. FOR 3" METERS VAULTS VALVE ON CUSTOMER SIDE SHALL BE 4" MINIMUM INCREASER TO BE PLACED ON CUSTOMER SIDE OF TEE.



ROOF PLAN

NOTE:

PLACE VENT PIPES IN LANDSCAPING IF METER VAULT IS LOCATED IN DRIVEWAY



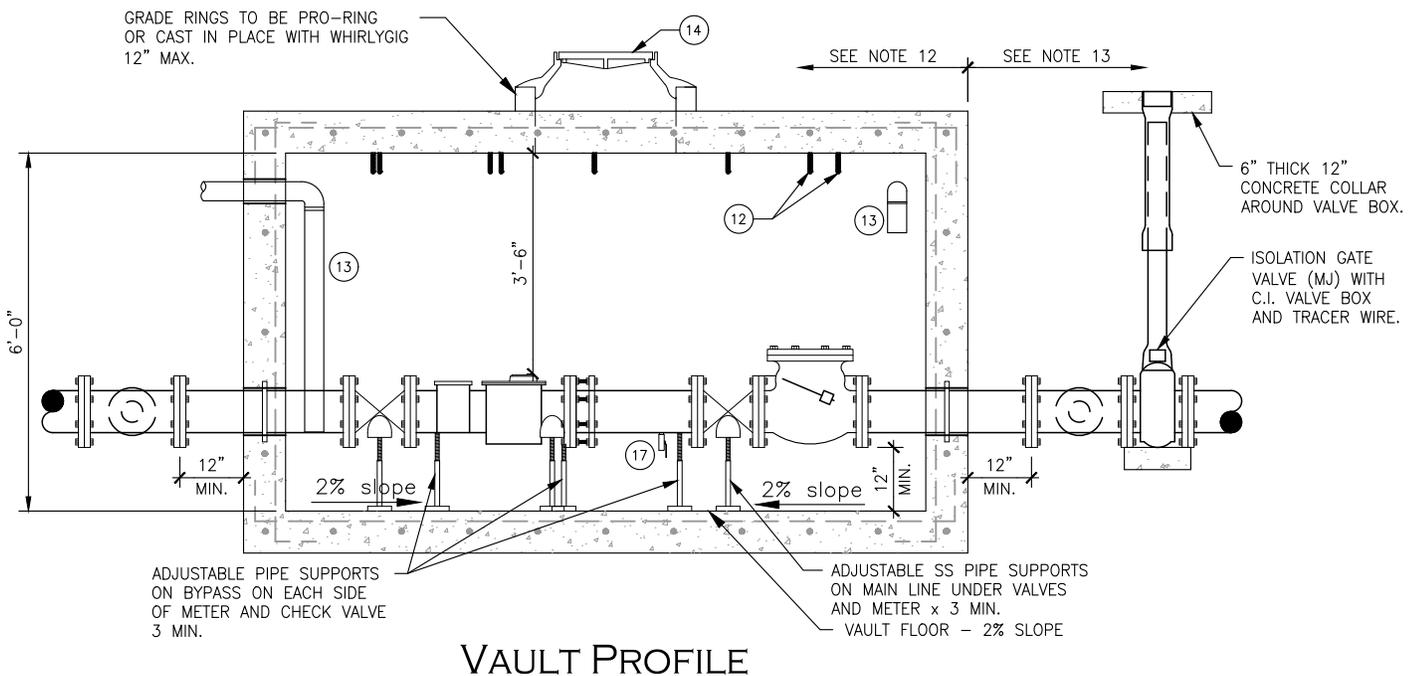
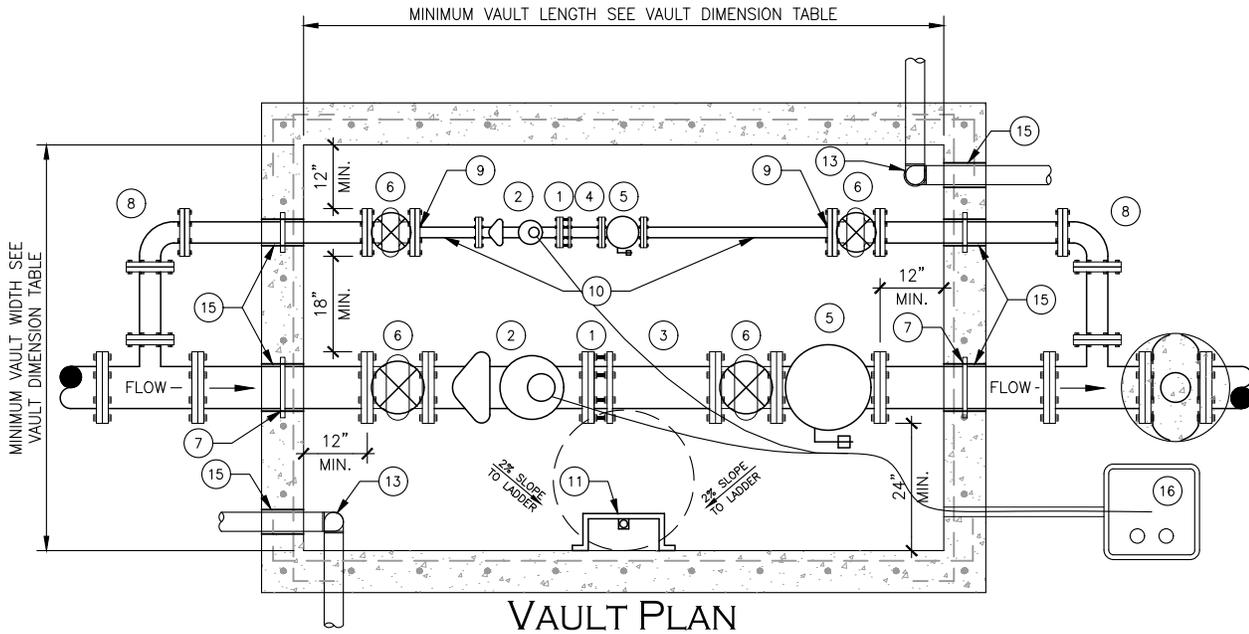
VENT DETAIL

Typical Large Meter Vault 1 of 2

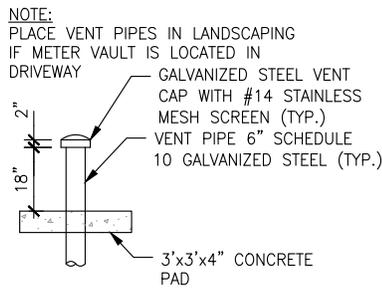
- ① FLANGED COUPLING ADAPTER
- ② SENSUS OMNI METER
- ③ FLANGED x PLAIN END PIECE. CUT TO FIT. LENGTH = 3 x PIPE DIA.
- ④ FLANGED x PLAIN END PIECE, CUT TO FIT. MINIMUM LENGTH 16"
- ⑤ SWING CHECK VALVE
- ⑥ GATE VALVE SEE VAULT DIMENSION TABLE FOR BYPASS VALVE SIZE
- ⑦ PIPE RESTRAINT CAST INTO WALL. ALTERNATIVES AT DISCRETION OF ENGINEER.
- ⑧ 90° BEND SEE VAULT DIMENSION TABLE FOR SIZE
- ⑨ BLIND FLANGE W/2" TAPPED HOLE SEE VAULT DIMENSION TABLE FOR SIZE
- ⑩ 2" COPPER OR BRASS ONLY
- ⑪ STAINLESS STEEL LADDER WITH EXTENSION, HALLIDAY MODEL L6B WITH L6E LADDER EXTENSION OR EQUAL
- ⑫ (8) 3/4" DIA. S.S. LIFTING EYES (TYPE 316) OVER ALL METERS AND VALVES
- ⑬ AIR VENT PIPING
- ⑭ 30" VAULT OPENING EJ 2800 SERIES 4-1/8" TALL COMPOSITE MANHOLE ASSEMBLY W/COMMLOCK LATCHES MARKED GHID WATER
- ⑮ SEAL ALL INTRUSIONS WITH NON-SHRINK GROUT
- ⑯ 12"x12" IRRIGATION BOX W/1 3/4" HOLE FOR TOUCHREAD SENSOR. PLACE BOX IN LANDSCAPING DRILL (2) 2" HOLES IN VAULT TO RUN WIRE THROUGH. RUN 1 1/2" CONDUIT FROM VAULT TO SENSOR BOX. CONDUIT TO BE SEALED WITH SPRAY FOAM BY GHID AFTER SENSOR IS INSTALLED
- ⑰ 3/4" SS BALL VALVE TAPPED INTO SPOOL

VAULT DIMENSION TABLE				
METER SIZE	MIN. LENGTH	MIN. WIDTH	*MIN. WIDTH	BYPASS FITTINGS
3"	6'-0"	6'-6"	5'-0"	3"
4"	7'-6"	6'-6"	5'-0"	4"
6"	9'-0"	7'-0"	5'-0"	4"
8"	11'-0"	7'-6"	6'-0"	4"
10"	13'-0"	7'-6"	6'-0"	4"

*MINIMUM WIDTH LANDSCAPE METER W/O BYPASS



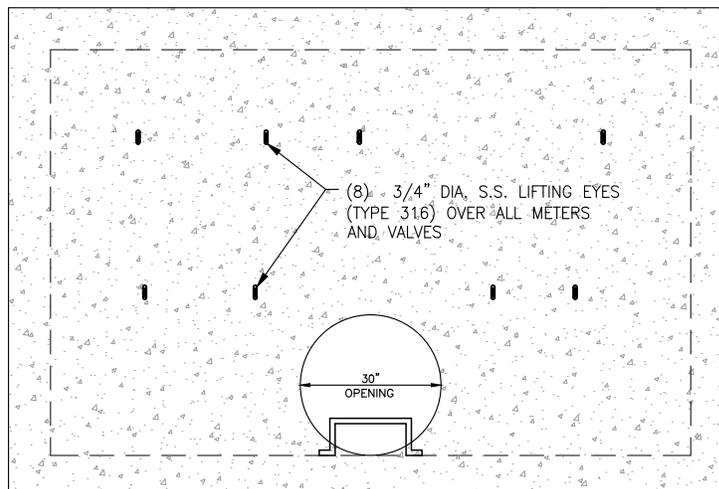
Typical Large Meter Vault 2 of 2



VENT DETAIL

NOTE:

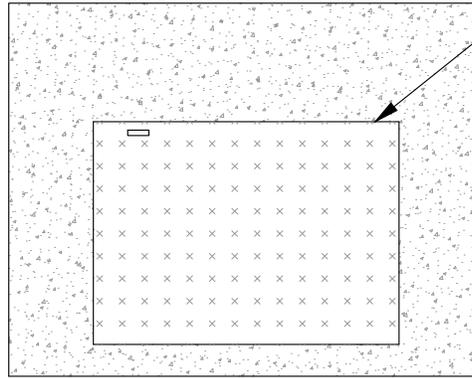
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4. VAULT BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
5. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
6. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
7. ALL FLANGED x PLAIN END SPOOLS TO BE PRE-CAST INTO VAULT WALLS BY VAULT MANUFACTURER.
8. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
9. VAULT SHALL BE SUITABLE FOR H-20 LOADINGS.
10. BYPASS SHALL BE 2".
11. GHID OWNS, MAINTAINS, AND REPAIRS CULINARY WATER SERVICE TO THE BACK OF THE METER VAULT.
12. CULINARY WATER SERVICE OWNED, MAINTAINED AND REPAIRED BY PROPERTY OWNER.
13. VAULT TO BE ENGINEERED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF UTAH. STAMPED DRAWINGS TO BE PROVIDED TO THE DISTRICT.
14. BEDDING FOR VAULT TO BE 1" MINUS GRAVEL 12" THICK.
15. PIPE ASSEMBLY TO BE PREPARED PAINTED PRE ASSEMBLED & CAST INTO BOX. DI PIPES AND FITTINGS INSIDE VAULT TO BE PAINTED WITH EPOXY PAINT SW4086 SAFETY BLUE OR EQUIVALENT.
16. 10" AND LARGER METERS REQUIRE AN ADDITIONAL ADJUSTABLE PIPE SUPPORT ON THE SPOOL PIECE ON THE MAIN LINE.
17. 3" METERS: INSTALL 4" TAPPING SADDLE, 4 INCH GATE VALVE AND 4x3 REDUCER. TAP AND LATERAL TO BE 3" MAX.
4" AND LARGER METERS: TAPPING SADDLE, GATE VALVE AND LATERAL MUST MATCH METER SIZE.
18. GHID SHALL NOT BE RESPONSIBLE FOR REPLACING CONCRETE, TREES OR STRUCTURES PLACED WITHIN 5' OF METER VAULT.
19. ALL VAULT FITTINGS TO BE DUCTILE IRON.
20. VALVES INSIDE VAULT SHALL HAVE HAND WHEELS
21. FOR 3" METERS VAULTS VALVE ON CUSTOMER SIDE SHALL BE 4" MINIMUM INCREASER TO BE PLACED ON CUSTOMER SIDE OF TEE.
22. SEAL ALL INTRUSIONS WITH NON-SHRINK GROUT.



ROOF PLAN

Typical Double Check Detector Assembly

- 1 3/4" METER PROVIDED, OWNED, MAINTAINED AND REPAIRED BY DISTRICT
- 2 DOUBLE CHECK DETECTOR ASSEMBLY PROVIDED, OWNED, MAINTAINED AND REPAIRED BY OWNER
- 3 MEGA LUG CAST INTO WALL OR EPOXY COATED GALVANIZED STEEL PLATE BOLTED ON OUTSIDE OF BOX W/MEGA LUG. REQ'D
- 4 STAINLESS STEEL LADDER WITH EXTENSION, HALLIDAY MODEL L6B WITH L6E OR EQUAL RECOMMENDED, NOT REQUIRED
- 5 FLANGED COUPLING ADAPTER REQ'D
- 6 12"x12" IRRIGATION BOX W/1 3/4" HOLE FOR TOUCHREAD SENSOR. PLACE BOX IN LANDSCAPING DRILL (2) 2" HOLES IN VAULT TO RUN WIRE THROUGH. RUN 1 1/2" CONDUIT FROM VAULT TO SENSOR BOX. CONDUIT TO BE SEALED WITH SPRAY FOAM BY GHID AFTER SENSOR IS INSTALLED.
- 7 SUMP RECOMMENDED IN AREAS WITH HIGH GROUND WATER.

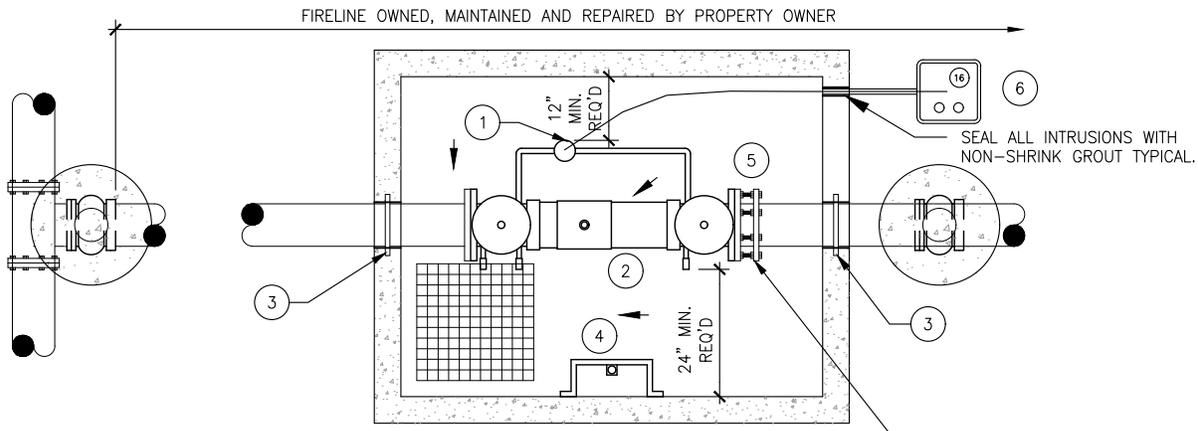


EJ H40542594 40"x 54-1/4"
ALUMINUM HATCH ASSEMBLY
VAULT ACCESS OR EQUIVALENT
RECOMMENDED

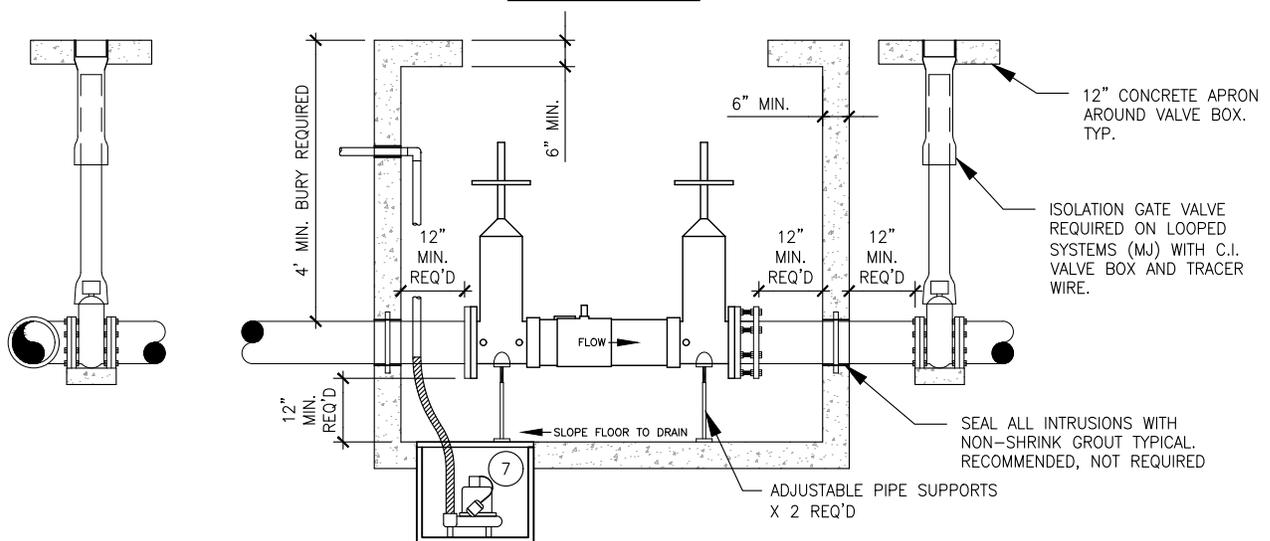
VAULT DIMENSION TABLE		
BACKFLOW SIZE	MIN. LENGTH	MIN. WIDTH
6"	78"	54"
8"	96"	58"
10"	98"	58"
12"	100"	58"

DIMENSIONS BASED ON WILKINS MODEL 350DA

ROOF PLAN



VAULT PLAN

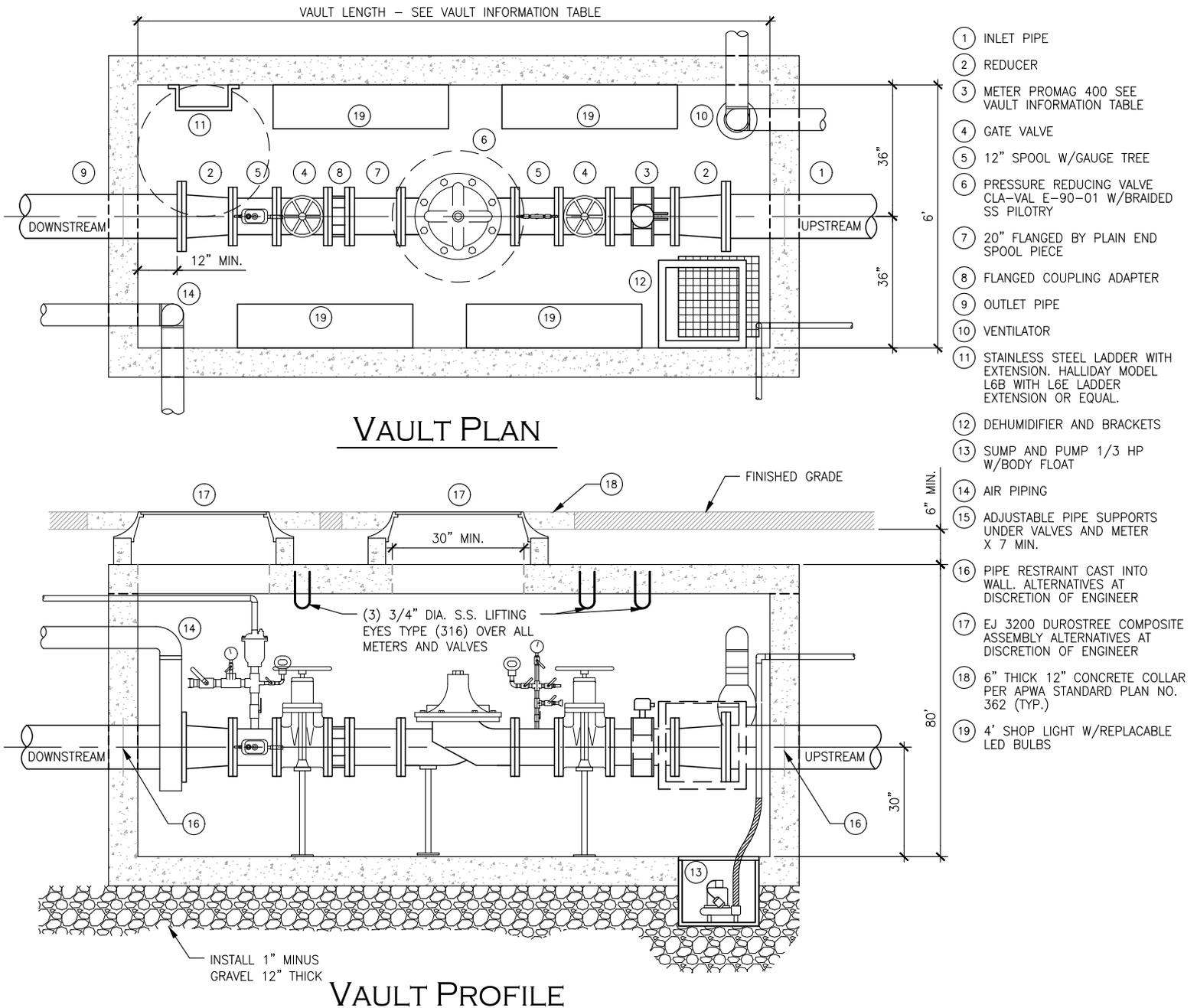


VAULT PROFILE

NOTES:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. VAULT AND PIPE BEDDING SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
3. ALL FLANGED x PLAIN END SPOOLS TO BE PRE-CAST INTO VAULT WALLS BY VAULT MANUFACTURER.
4. OWNER SHALL AVOID PLACING VAULT IN TRAFFIC AREAS IF POSSIBLE.
5. VAULTS IN TRAFFIC AREAS SHALL BE SUITABLE FOR H-20 LOADINGS.
6. VAULT TO BE ENGINEERED BY LICENSED STRUCTURAL ENGINEER, DRAWINGS TO BE PROVIDED TO GHID.
7. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
7. GHID OWNS, THE MAINLINE VALVE AND THE METER EVERYTHING ELSE TO BE OWNED MAINTAINED BY PROPERTY OWNER.
8. BEDDING FOR VAULT TO BE 1" MINUS GRAVEL 12" THICK.
9. PIPE ASSEMBLY TO BE PREPARED PAINTED PRE ASSEMBLED & CAST INTO BOX. DI PIPES AND FITTINGS INSIDE VAULT TO BE PAINTED WITH EPOXY PAINT SW4086 SAFETY BLUE OR EQUIVALENT, RECOMMENDED, NOT REQUIRED
10. BACKFLOW ASSEMBLY MAY ALSO BE PLACED IN A HEATED ABOVE GROUND ENCLOSURE.
11. IF OWNER OPTS TO USE A MANHOLE INSTEAD OF A HATCH, VAULT LID MAY NEED TO BE REMOVED TO REPLACE BACKFLOW ASSEMBLY.
12. BACKFLOW MAY FAIL TESTS IF IT IS SUBMERGED.
13. SEAL ALL INTRUSION WITH NON-SHRINK GROUT.

Typical Pressure Reducing Valve 1 of 2

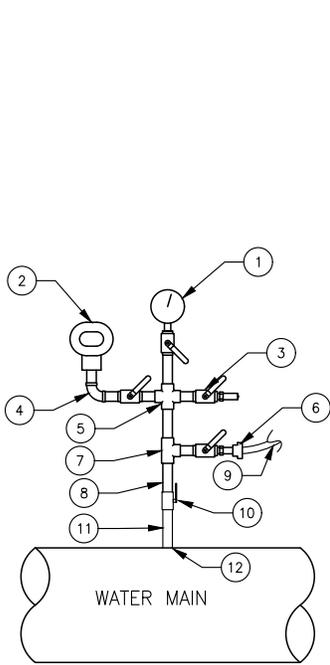


NOTE:

1. PIPE ASSEMBLY TO BE PREPARED, PAINTED, PRE ASSEMBLED, & CAST INTO BOX. DI PIPES AND FITTINGS INSIDE VAULT TO BE PAINTED WITH EPOXY PAINT SW4086 SAFETY BLUE OR EQUIVALENT
2. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
3. VAULT BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
4. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEAN, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
6. VAULT SHALL BE SUITABLE FOR H2O LOADINGS.
7. VAULT TO BE ENGINEERED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF UTAH. STAMPED DRAWINGS TO BE PROVIDED TO THE DISTRICT.
8. BEDDING FOR VAULT TO BE 1" MINUS GRAVEL 12" THICK.
9. ALL VAULT FITTINGS TO BE DUCTILE IRON.
10. VALVES INSIDE VAULT SHALL HAVE HAND WHEELS.
11. SEAL ALL INTRUSIONS WITH NON-SHRINK GROUT.

VAULT INFORMATION TABLE			
MAIN SIZE	PRV SIZE	METER PT. NO.	MINIMUM VAULT LENGTH
8"	6"	X	12'-6"
10"	8"	X	13'-6"
12"	10"	Promag W 400, 5W4C2F, DN250 10"	15'-0"
16"	12"	X	16'-6"

Typical Pressure Reducing Valve 2 of 2

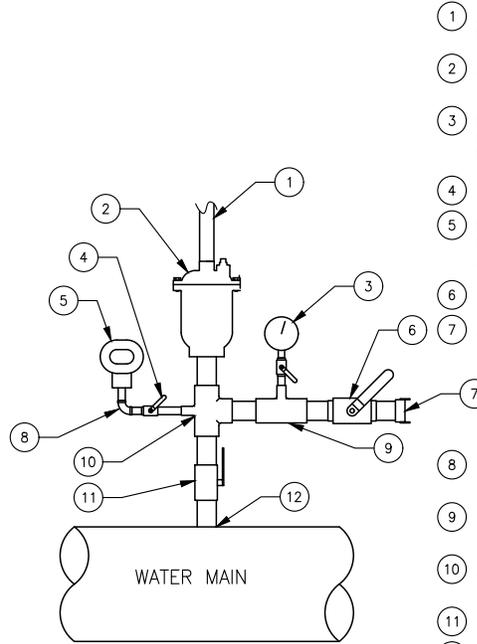


- ① PRESSURE GAUGE, 3-1/2" DIA. FACE, 0-200 PSI, ASCROFT PER PLANS
- ② PRESSURE TRANSMITTER ROSEMOUNT MODEL 2088-G 3522A-1M4 W/ CURRENT ISOLATOR
- ③ 3/4" HOSE BIB
- ④ 1" SS ELBOW, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑤ 1" SS CROSS, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑥ 3/4" COMPRESSION FITTING
- ⑦ 1"x1"x3/4" SS TEE, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑧ 1" SS NIPPLE, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑨ ROUTE TO SAMPLE STATION
- ⑩ 1" SS BALL VALVE (TYP.)
- ⑪ 1" SS NIPPLE, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑫ 3000 LB THREAD O LET (TYP.)

NOTES:

- 1. ALL PIPING, FITTINGS, AND VALVES SHALL BE SS.
- 2. ALL SS 1" NIPPLES TO BE 3" LONG.
- 3. THREADED INSULATING BUSHINGS, UNIONS, OR COUPLINGS, SHALL BE USED FOR JOINING THREADED PIPES OF DISSIMILAR METALS. THREADED INSULATING CONNECTIONS SHALL BE OF NYLON, TEFLON, POLYCARBONATE, POLYCARBONATE, POLYETHYLENE, OR OTHER NONCONDUCTIVE MATERIALS, AND SHALL HAVE RATINGS AND PROPERTIES TO SUIT THE SERVICE AND LOADING CONDITIONS.

UPSTREAM PRESSURE GAUGE TREE

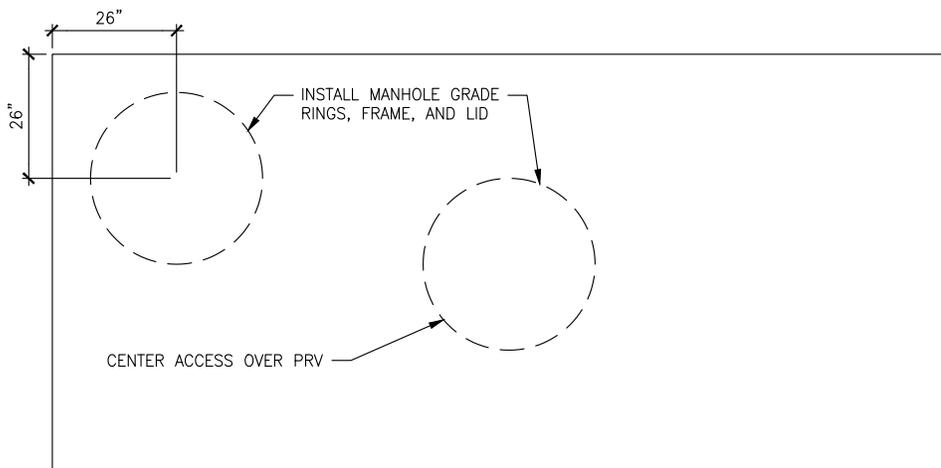


- ① 2" VENT PIPING, ROUTE PER PLANS
- ② 2" COMBINATION AIR VALVE, APCO MODEL 145C OR EQUAL
- ③ PRESSURE GAUGE, 3-1/2" DIA. FACE, 0-200 PSI, ASCROFT MODEL 1009SW OR EQUAL.
- ④ 3/4" SS BALL VALVE (TYP.)
- ⑤ PRESSURE TRANSMITTER ROSEMOUNT MODEL 2088-G 3522A-1M4
- ⑥ 2" SS BALL VALVE (TYP.)
- ⑦ 2" CAM LOCK FITTING
- ⑧ 3/4" SS ELBOW, SCH 40, THREADED CONNECTIONS (TYP.)
- ⑨ 2"x2"x3/4" SS TEE SCH 40, THREADED CONNECTION (TYP.)
- ⑩ 2"x2"x2"x3/4" SS CROSS SCH 40, THREADED CONNECTION (TYP.)
- ⑪ 2" SS BALL VALVE (TYP.)
- ⑫ 3000 LB THREAD O LET (TYP.)

NOTES:

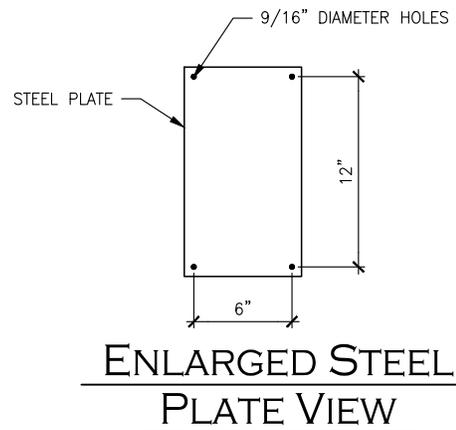
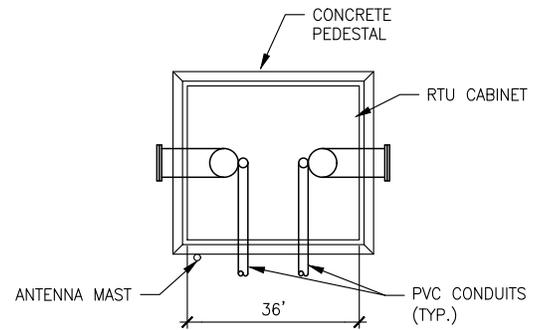
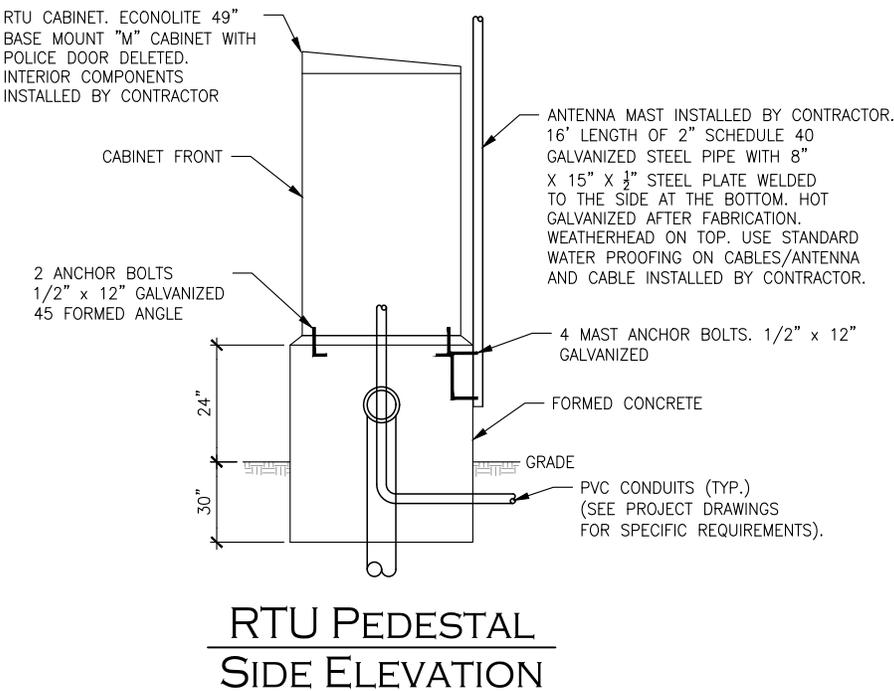
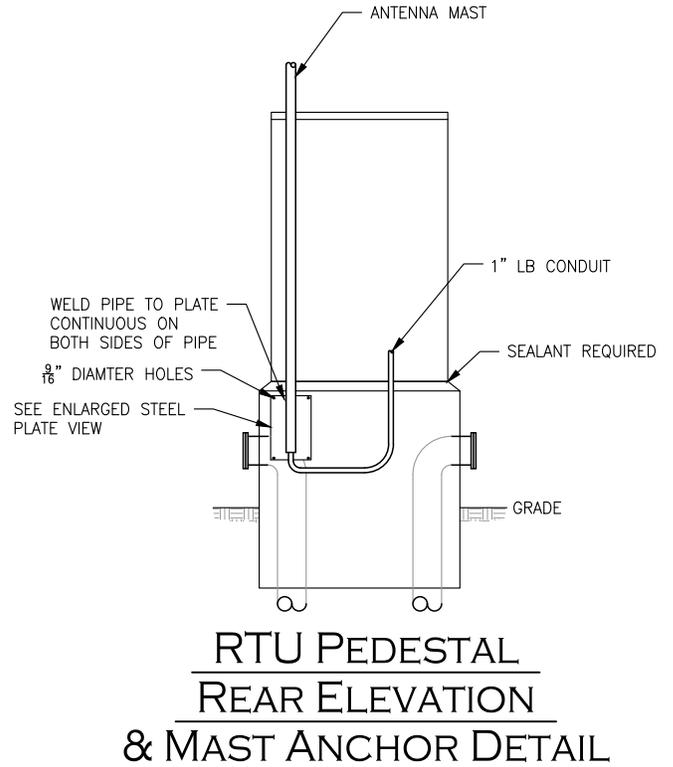
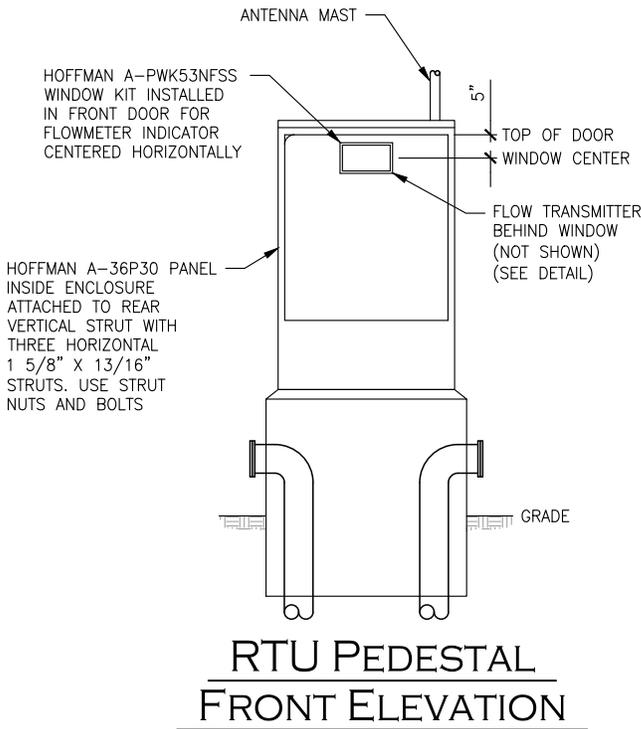
- 1. ALL PIPING, FITTINGS, AND VALVES SHALL BE SS.
- 2. THREADED INSULATING BUSHINGS, UNIONS, OR COUPLINGS, SHALL BE USED FOR JOINING THREADED PIPES OF DISSIMILAR METALS. THREADED INSULATING CONNECTIONS SHALL BE OF NYLON, TEFLON, POLYCARBONATE, POLYCARBONATE, POLYETHYLENE, OR OTHER NONCONDUCTIVE MATERIALS, AND SHALL HAVE RATINGS AND PROPERTIES TO SUIT THE SERVICE AND LOADING CONDITIONS.

DOWNSTREAM PRESSURE GAUGE TREE



Vault Lid

Typical Pressure Reducing Valve 3 of 3



Typical Vault Thrust Restraint Alternative

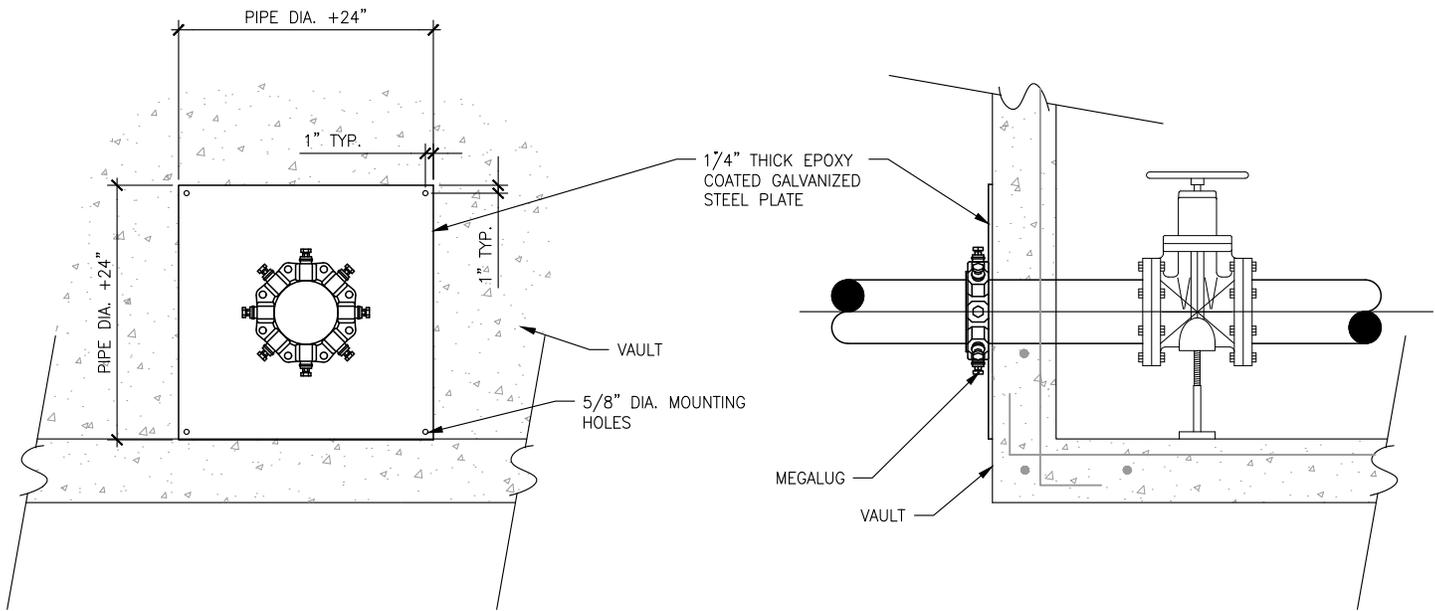


TABLE 1
PIPE-INSIDE OR OUTSIDE DIAMETER-BURIED OR IMMERSED-POTABLE OR NON-POTABLE

COATING LAYER	PRODUCT	PRODUCT CODE	DRY FILM THICKNESS (MILS)	SURFACE PREPARATION	ALTERNATIVES
ONE COAT	SHERWIN-WILLIAMS DURA-PLATE 6000	B62-710 SERIES	20.0-30.0	SSPC-SP 10 NEAR WHITE METAL BLAST CLEANING	UP TO 125.0 MILS DFT IF REQUIRED

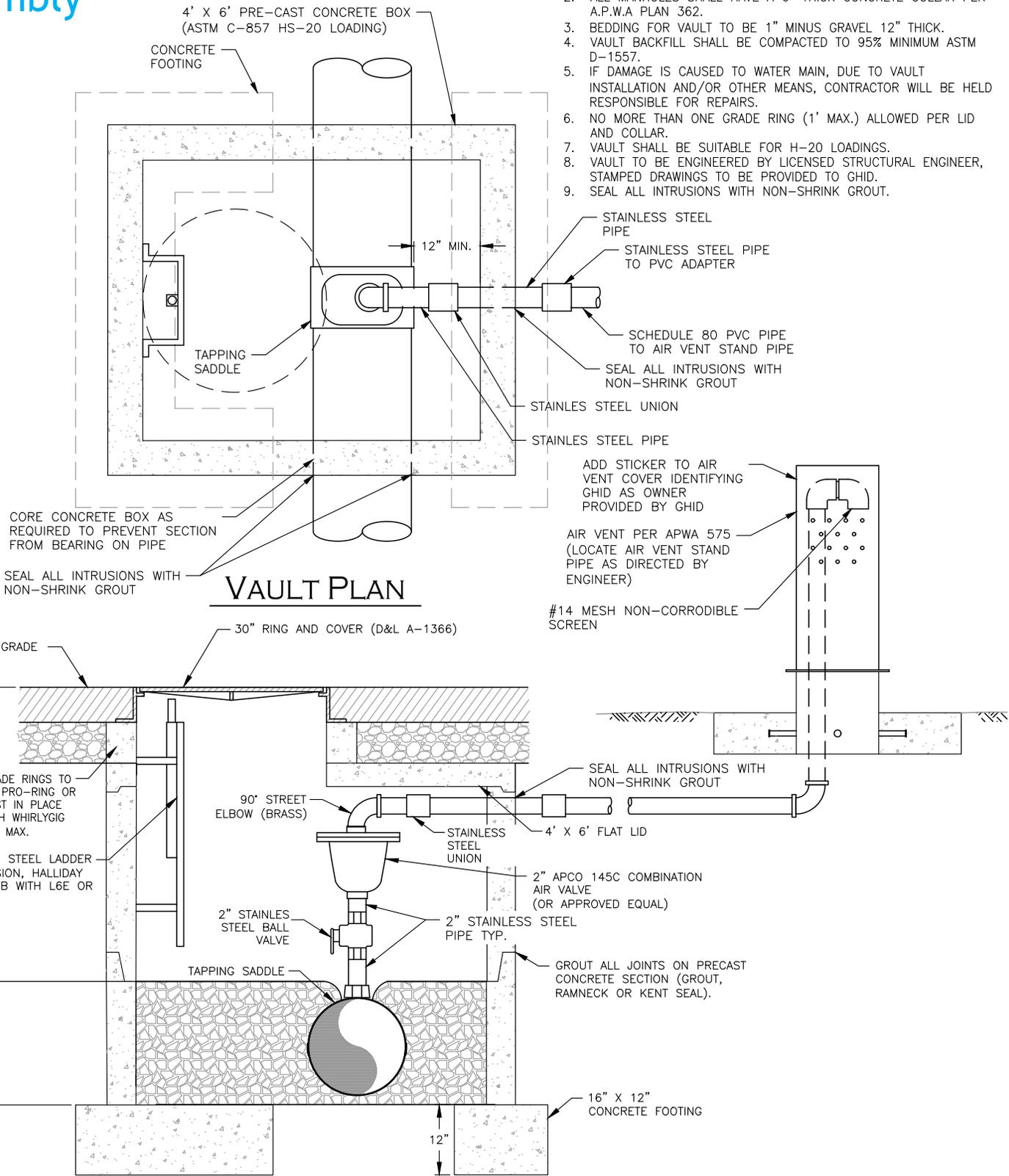
NOTE:

1. PIPE ASSEMBLY TO BE PREPARED, PAINTED, PRE ASSEMBLED, & CAST INTO BOX. DI PIPES AND FITTINGS INSIDE VAULT TO BE PAINTED WITH EPOXY PAINT SW4086 SAFETY BLUE OR EQUIVALENT
2. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
3. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEAN, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. ALL VAULT FITTINGS TO BE DUCTILE IRON.
5. MEGALUG THRUST RESTRAINT REQUIRED ON BOTH ENDS OF VAULT ON LOOPED SYSTEMS.
6. EPOXY COATING SHALL BE SHERWIN-WILLIAMS 6000 (B62-710 SERIES) OR AN APPROVED EQUAL MEETING REQUIREMENTS LISTED IN TABLE 1.

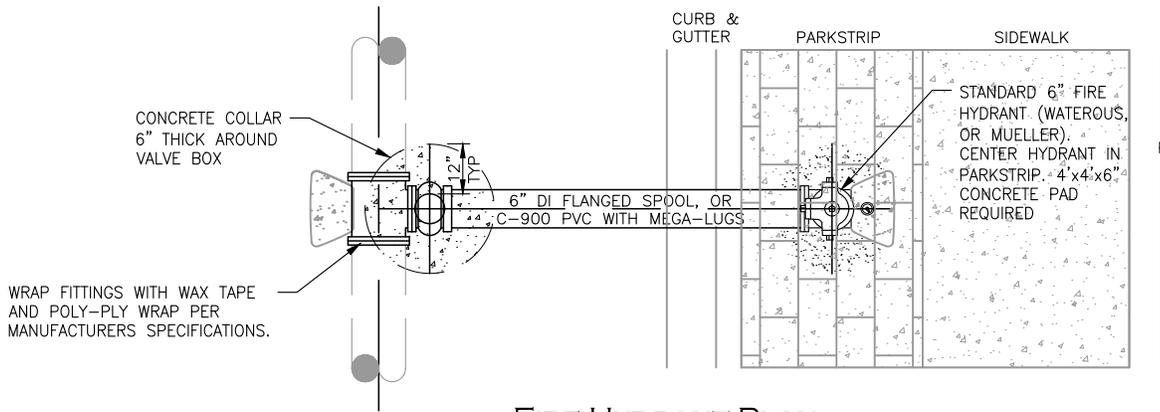
Typical Air/Vacuum Release Assembly

NOTE:

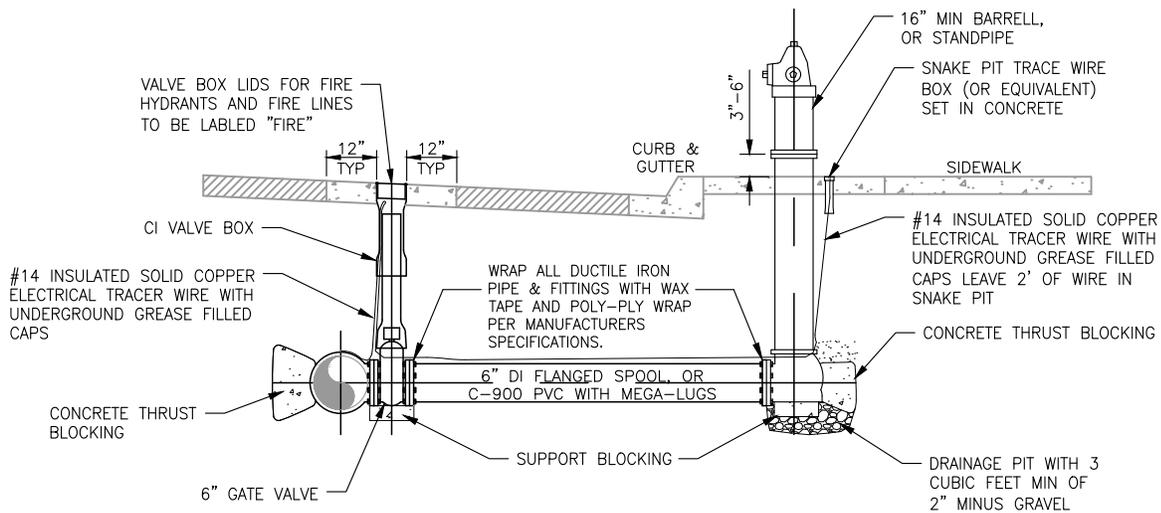
1. SEE PAGE 14 FOR GENERAL NOTES.
2. ALL MANHOLES SHALL HAVE A 6" THICK CONCRETE COLLAR PER A.P.W.A PLAN 362.
3. BEDDING FOR VAULT TO BE 1" MINUS GRAVEL 12" THICK.
4. VAULT BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
5. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
6. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
7. VAULT SHALL BE SUITABLE FOR H-20 LOADINGS.
8. VAULT TO BE ENGINEERED BY LICENSED STRUCTURAL ENGINEER, STAMPED DRAWINGS TO BE PROVIDED TO GHID.
9. SEAL ALL INTRUSIONS WITH NON-SHRINK GROUT.



Typical Fire Hydrant



FIRE HYDRANT PLAN

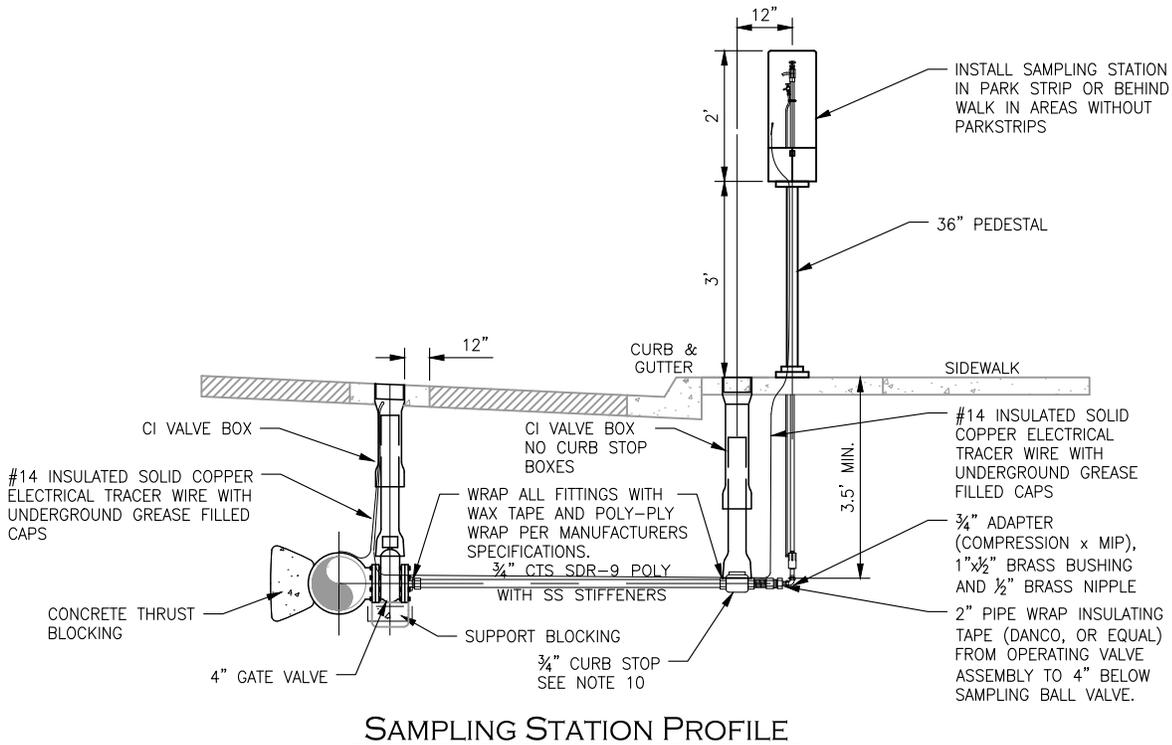
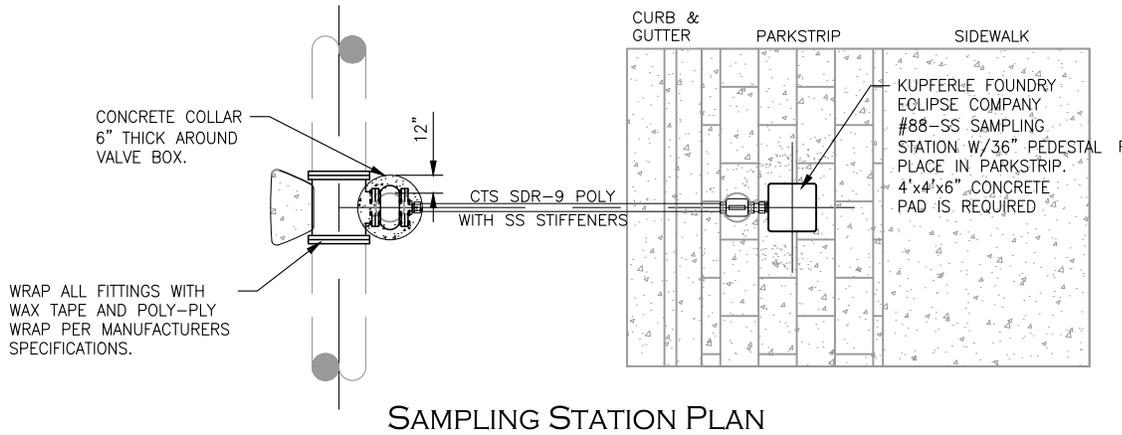


FIRE HYDRANT PROFILE

NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES
2. SEE TYPICAL TRENCH SPECIFICATIONS FOR BEDDING AND BACKFILL
3. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' EACH SIDE OF PIPE. SEE TYPICAL TRENCH SPECIFICATIONS.
4. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO FIRE HYDRANT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. FIRE HYDRANT SHALL BE SET SUCH THAT THE BARREL, OR STANDPIPE, FLANGE IS 3" TO 6" ABOVE FINISH GRADE.
6. WRAP ALL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
7. DRAINAGE PIT MUST HAVE 3 CUBIC FEET (MINIMUM) OF 3/4" MINUS GRAVEL.
8. ALL THRUST BLOCKING MUST BE REINFORCED BY A UNDISTURBED GROUND. SEE TYPICAL THRUST BLOCKING DETAIL.

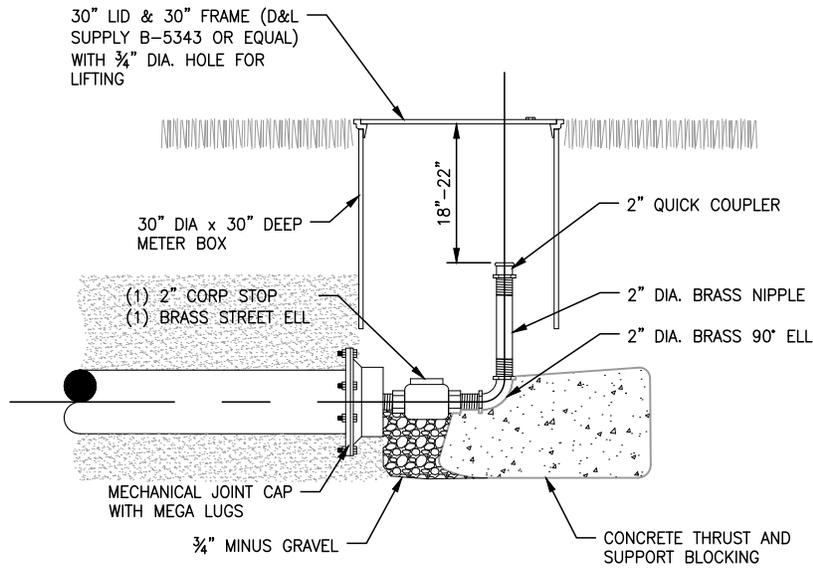
Typical Sampling Station



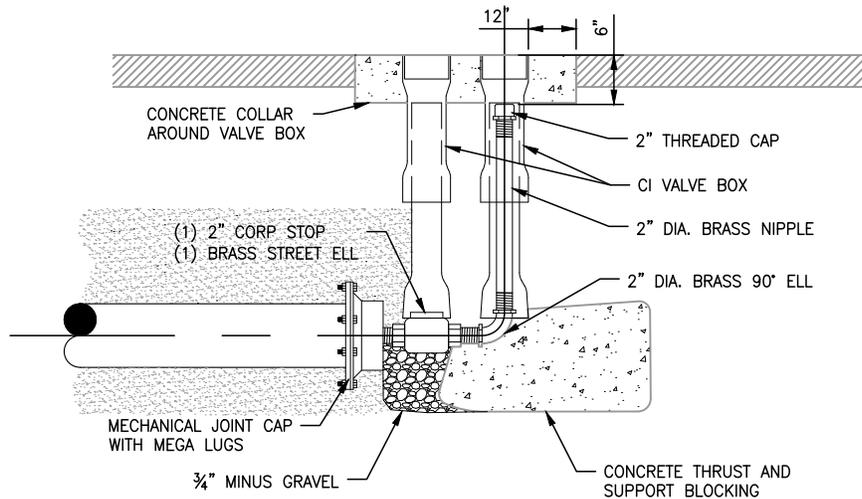
NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES
2. SEE TYPICAL TRENCH SPECIFICATIONS FOR BEDDING AND BACKFILL.
3. IF DAMAGE IS CAUSED TO MAIN LINE, DUE TO SAMPLING STATION INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. TYPE OF PIPE SHALL BE CTS POLYETHYLENE WITH COMPRESSION FITTINGS, SS STIFFENERS, AND #14 INSULATED SOLID COPPER ELECTRICAL TRACER WIRE WITH UNDERGROUND GREASE FILLED CAPS.
5. SAMPLING STATION FINISH GRADE SHALL BE SET ACCORDING TO MANUFACTURER SPECIFICATIONS.
6. WRAP ALL FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
7. 2" PIPE WRAP INSULATING TAPE (DANCO, OR EQUAL) FROM OPERATING VALVE ASSEMBLY TO 4" BELOW SAMPLING BALL VALVE.
8. ALL THRUST BLOCKING SHALL BE REINFORCED BY A UNDISTURBED GROUND. SEE TYPICAL THRUST BLOCKING DETAIL.
9. SAMPLING STATION SHALL BE INSTALLED IN PARK STRIP, IF APPLICABLE, OR 6" TO 1' BEHIND SIDEWALK.
10. CURB STOP REQUIRED ON ALL STREETS THAT WOULD TYPICALLY BE STRIPED.

Typical 2" Blow-Off Valve



BLOW OFF IN LANDSCAPING

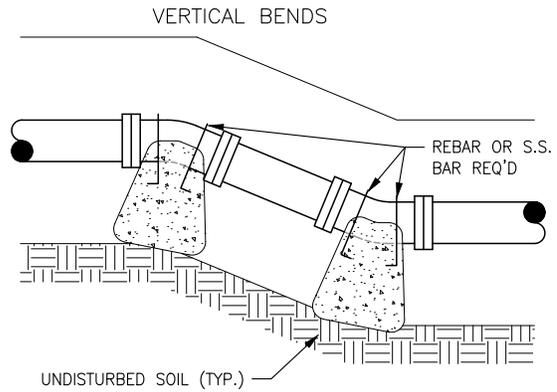
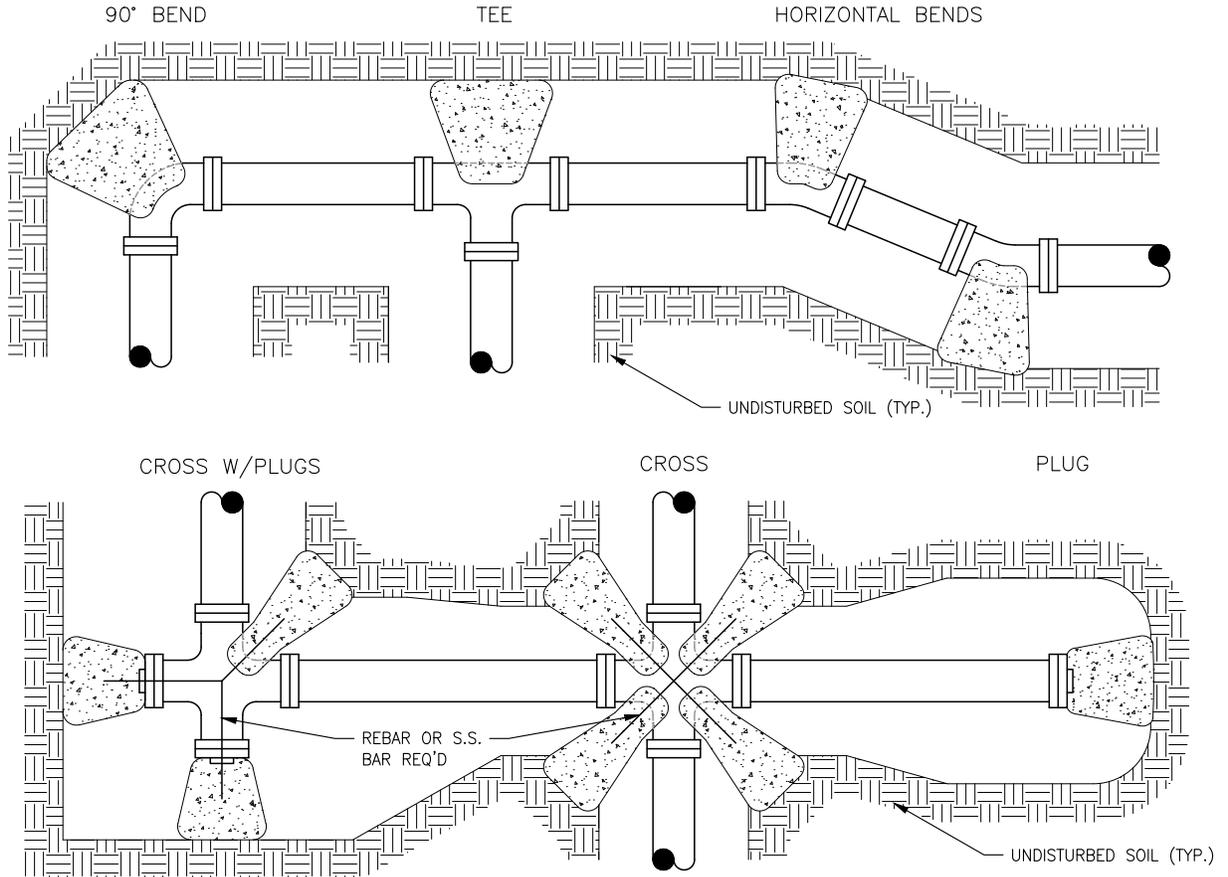


BLOW OFF IN ROADWAY

NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES
2. BLOW OFF PIPE SHALL BE 2" SDR 9 POLY OR COPPER WITH ALL BRASS FITTINGS. GALVANIZED PIPE WILL NOT BE PERMITTED.
3. BLOW-OFF ASSEMBLY SHALL BE INSTALLED AS SHOWN OR OTHERWISE APPROVED BY GHID.
4. WRAP ALL FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
5. ALL BLOCKING MUST BE REINFORCED BY UNDISTURBED GROUND. SEE TYPICAL THRUST BLOCKING DETAIL.

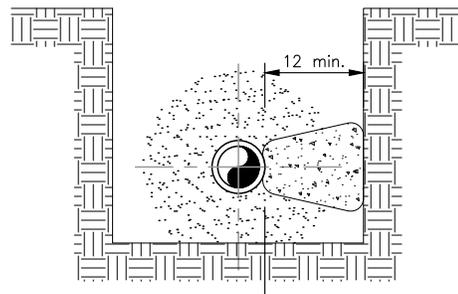
Typical Thrust Restraints



MINIMUM BEARING AREA IN SQ. FT.					
SIZE OF PIPE	TEES, VALVES DEAD ENDS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
4"	2	3	2	2	2
6"	4	5.5	3	2.5	2
8"	6.5	9.5	5	2.75	2.5
12"	14	20	11	5.5	3
14"	19	26.5	14.5	7.5	4
16"	24	34	18.5	9.5	6
20"	27	52	28.5	14.5	9
24"	53	74	41	21	12
30"	81	114	62	32	16

PER APWA PLAN 561

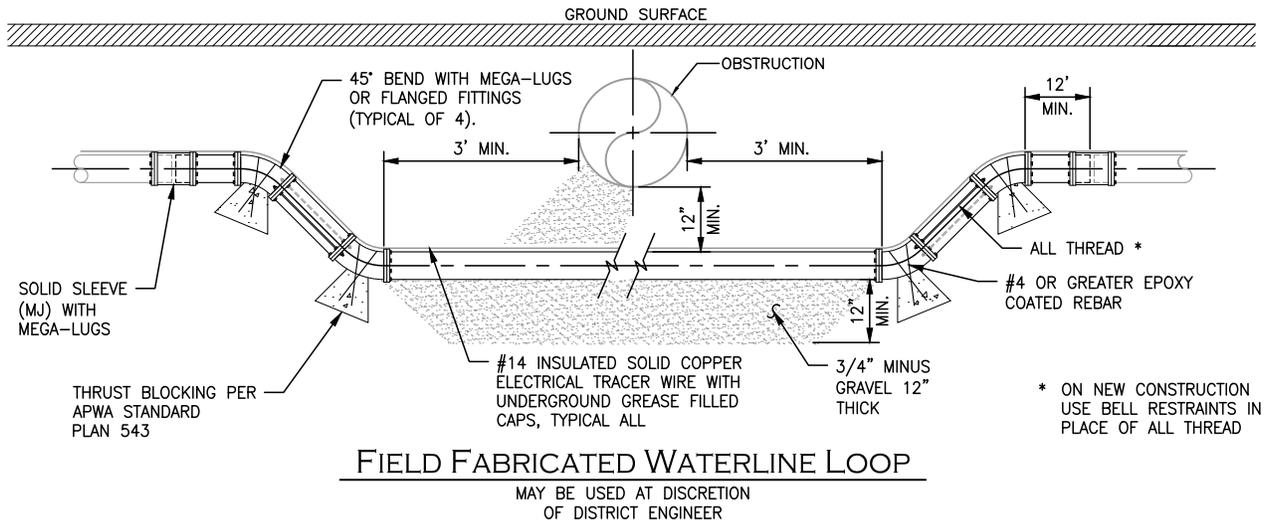
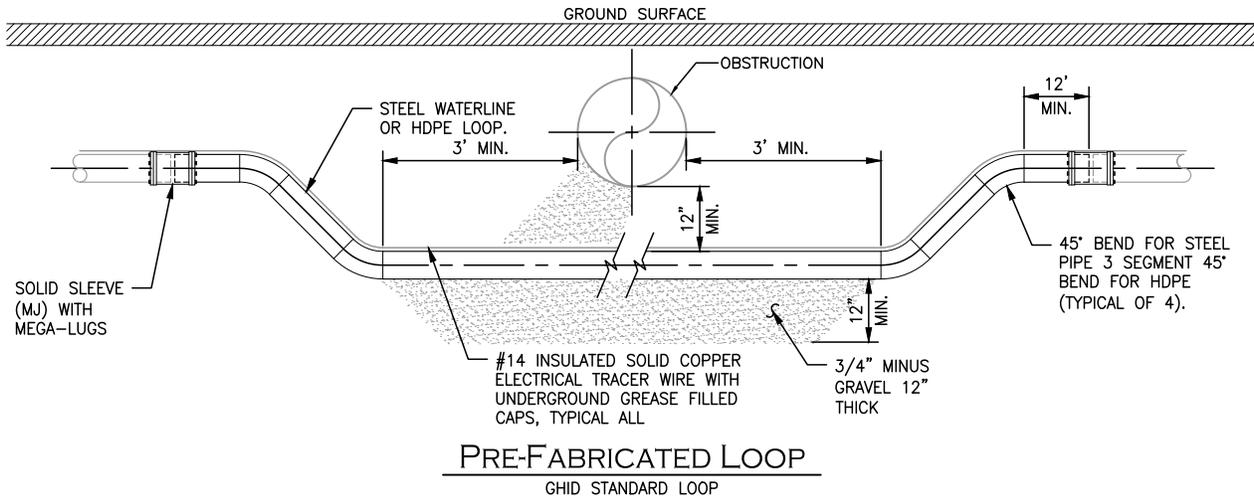
TYPICAL SECTION THROUGH THRUST BLOCKS



NOTE:

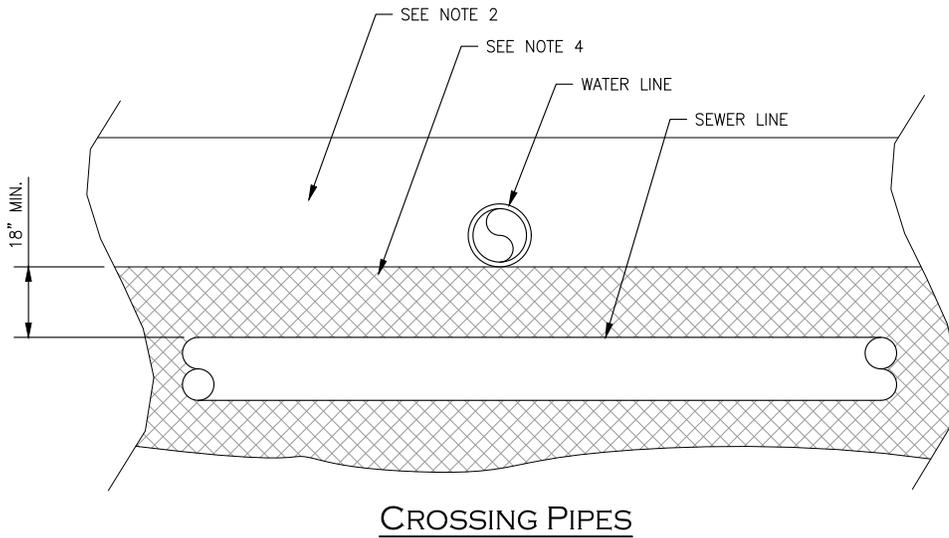
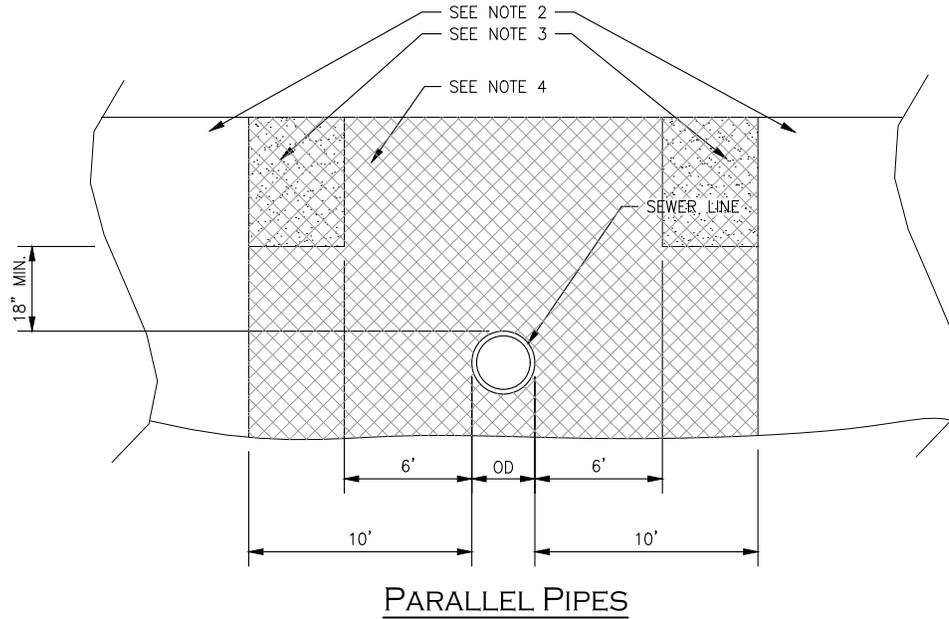
1. ALL REBAR MUST BE #4 (MINIMUM) AND EPOXY COATED.
2. 3/8" (MINIMUM) STAINLESS STEEL BAR IS ACCEPTED IN PLACE OF REBAR.
3. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL, OR AN APPROVED COMPACTED BACKFILL.
4. CONCRETE USED FOR THRUST BLOCKING SHALL BE CLASS 6.0-B-3000.
5. ALL THRUST BLOCK SIDES SHALL BE FORMED.
6. FOR NEW CONSTRUCTION ONLY HYDROGRIP GASKETS MAY BE USED IN LIEU OF THRUST BLOCKING. HYDROGRIP GASKETS TO BE USED ON ALL JOINTS.

Typical Waterline Loops



- NOTE:
1. SEE PAGE 14 FOR GENERAL NOTES.
 2. SEE TYPICAL TRENCH SPECIFICATIONS FOR BEDDING AND BACKFILL.
 3. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' EACH SIDE OF PIPE. SEE TYPICAL TRENCH SPECIFICATIONS.
 4. IF DAMAGE IS CAUSED TO WATER MAIN CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
 5. PRE-FAB WATERLINE PIPE AND FITTINGS SHALL BE BUTT WELDED A53 GRADE B SCH. 80 STEEL FOR PIPES LESS THAN 12" DIAMETER AND SCH. 40 FOR PIPE GREATER THAN 12" DIAMETER, OR HDPE DR-9 UNLESS OTHERWISE SPECIFIED BY GHID. ALL PIPE SHALL HAVE #14 INSULATED SOLID COPPER ELECTRICAL TRACER WIRE WITH UNDERGROUND GREASE FILLED CAPS.
 6. REFER TO AWWA C210 FOR EPOXY COATING OR AWWA C214 FOR TAPE COATING DETAILS
 7. WRAP ALL FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS. SEE TYPICAL THRUST BLOCKING DETAILS
 8. ALL THRUST BLOCKING MUST BE REINFORCED BY UNDISTURBED GROUND.
 9. FOR CANAL OR RIVER CROSSINGS, A MINIMUM OF 2' OF VERTICAL SEPARATION IS REQUIRED. FOR CROSSINGS GREATER THAN 15', RESTRAINED JOINTS SHALL BE USED UNDER THE WATERWAY AND FLEXIBLE RESTRAINED JOINTS USED AT BOTH EDGES, ISOLATING VALVES SHALL BE PROVIDED AT BOTH ENDS OF CROSSING, SAMPLING STATIONS SHALL BE INSTALLED OUTSIDE THE FLOOD AREA ON BOTH SIDES TO ENABLE TESTING OF THE SECTION, AND PRESSURE TESTING MUST BE COMPLETED ON THE SECTION PRIOR TO PLACING IT INTO SERVICE.
 10. FOR HDPE LOOPS MATCH INTERNAL DIAMETERS TO HOST PIPE.
 11. NO WATER LATERAL OR TEE CONNECTIONS TO BE MADE TO LOOP.

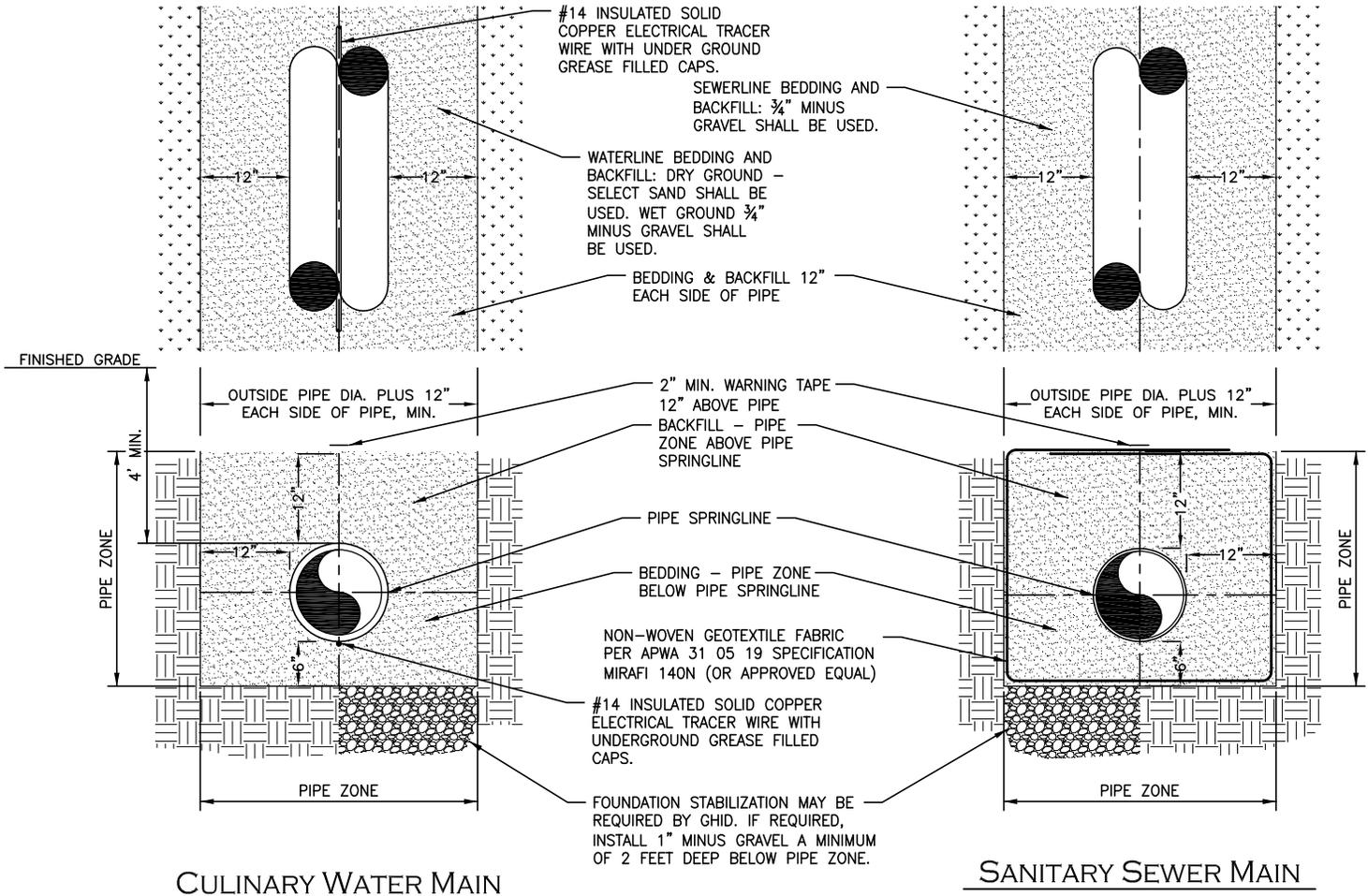
Typical Conflict Resolution



NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. MEETS BASIC SEPARATION STANDARDS.
3. MUST APPLY FOR A VARIANCE PER R309-550-7
4. MUST APPLY FOR EXCEPTION PER R309-105-6(2)(b)
5. WATER MAINS AND SEWER LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH.
6. IF SEWER IS FORCE MAIN, SEWER SHALL BE ENCASED IN A CONTINUOUS SLEEVE WITHIN 10' OF WATERLINE
7. IF WATER MAIN IS OVER FORCE MAIN, WATER MAIN WILL BE RATED FOR 200 PSI MINIMUM.

Typical Pipe Zone



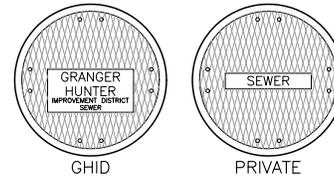
NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. CONTRACTOR SHALL RESTORE PAVEMENT PER APPLICABLE AGENCY STANDARDS.
3. BEDDING AND BACKFILL IS REQUIRED 6" UNDER, 12" ON SIDES AND 12" OVER WATERLINE, SEWERLINE, FITTINGS, SERVICES, AND METERS.
4. BEDDING AND BACKFILL WITHIN PIPE ZONE: WATERLINE CONSTRUCTED IN DRY GROUND – SELECT SAND SHALL BE USED. WATERLINE CONSTRUCTED IN WET GROUND AND SEWERLINE – 3/4" MINUS GRAVEL WITH SEPARATION FABRIC SHALL BE USED. SELECT SAND BEDDING AND BACKFILL SHALL BE COMPACTED TO A MINIMUM AVERAGE OF 92% DENSITY ASTM D-1557. MATERIAL SHALL BE COMPACTED IN 6" LAYERS (UNCOMPACTED DEPTH) WITHIN THE PIPE ZONE AREA INCLUDING THE HAUNCH AREAS.
5. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' EACH SIDE OF PIPE.
6. IF DAMAGE IS CAUSED TO WATER AND/OR SEWER MAIN CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
7. WRAP ALL EXTERNAL DUCTILE IRON PIPE & FITTINGS WITH WAX TAPE AND POLY-PLY WRAP PER MANUFACTURER'S SPECIFICATIONS.
8. ALL BLOCKING MUST BE REINFORCED BY UNDISTURBED GROUND. SEE TYPICAL THRUST BLOCK DETAILS.
9. SUBMISSION OF QUALITY CONTROL COMPACTION TEST RESULT DATA FOR TRENCH BACKFILL MAY BE REQUESTED, BY THE DISTRICT, AT ANY TIME. CONTRACTOR IS TO PROVIDE RESULTS OF TESTS IMMEDIATELY UPON REQUEST.
10. FOR ALL NON-METALLIC CULINARY WATERLINES AND PRESSURE SEWERLINES INSTALL #14 INSULATED SOLID COPPER ELECTRICAL TRACER WIRE. TRACER WIRE TO BE CONTINUITY CHECKED PRIOR TO PAVING.

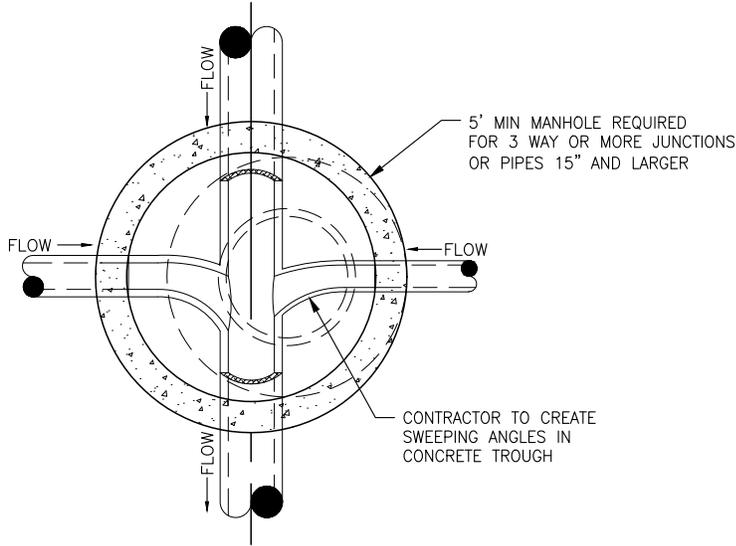
Select Sand Gradation	
US Sieve Size	% Passing By Weight
3/8"	100
#4	80-95
#40	15-35
#100	10-20
#200	5-11

*PI<=6

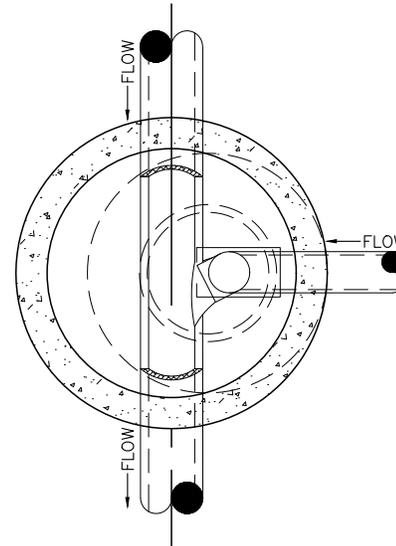
Typical Sanitary Sewer Manhole



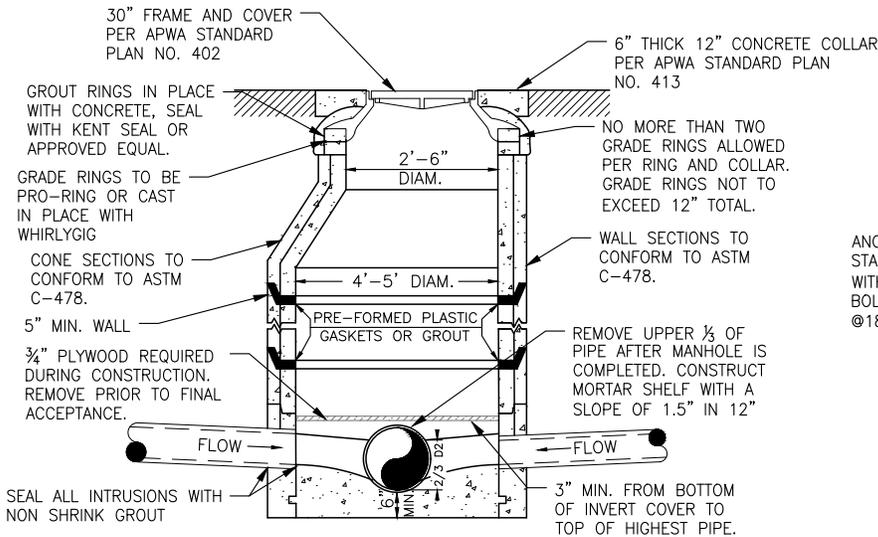
MANHOLE COVERS



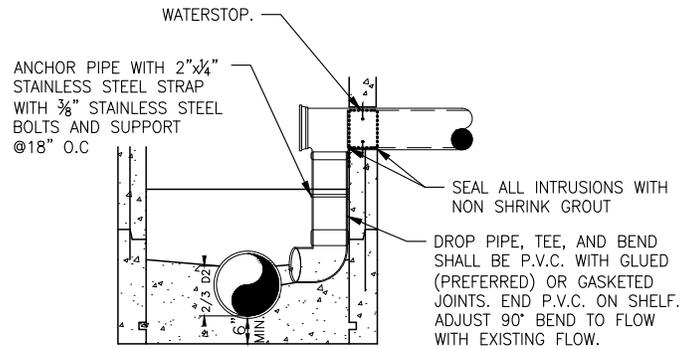
STANDARD MANHOLE PLAN



DROP MANHOLE PLAN



STANDARD MANHOLE SECTION



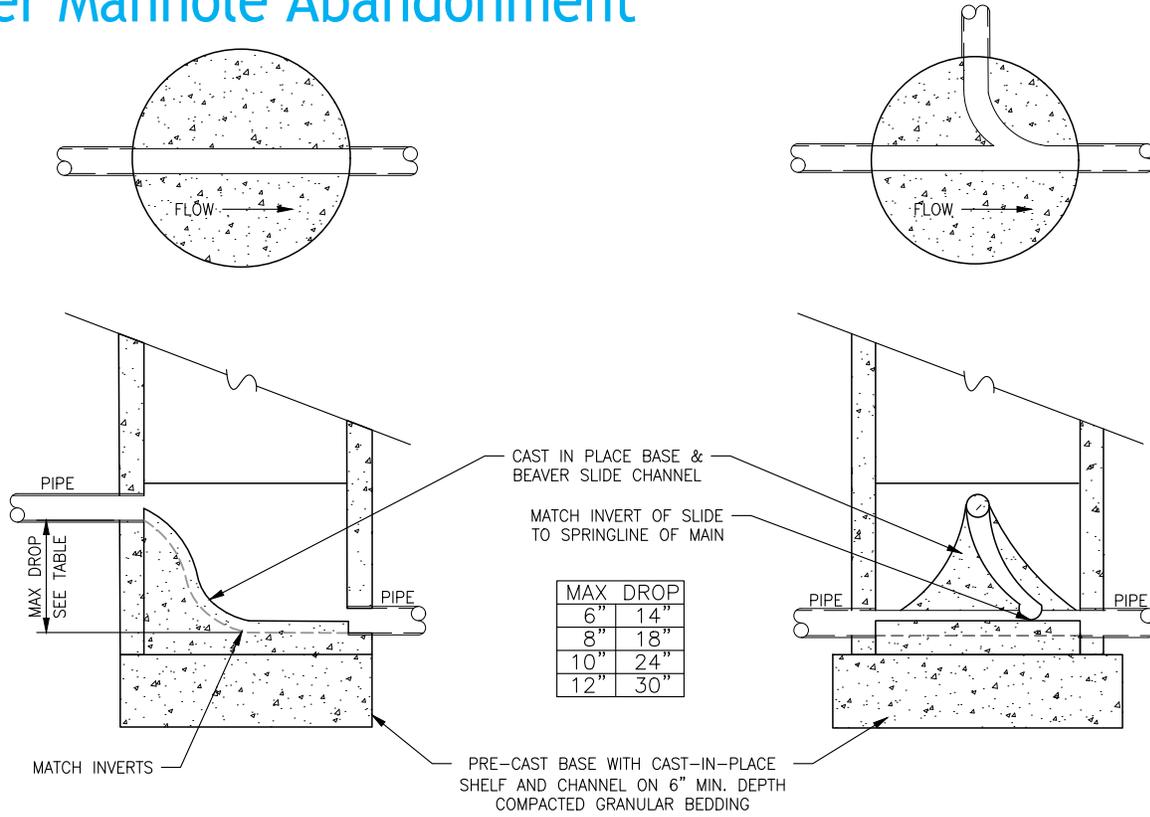
DROP MANHOLE SECTION

NOTE:

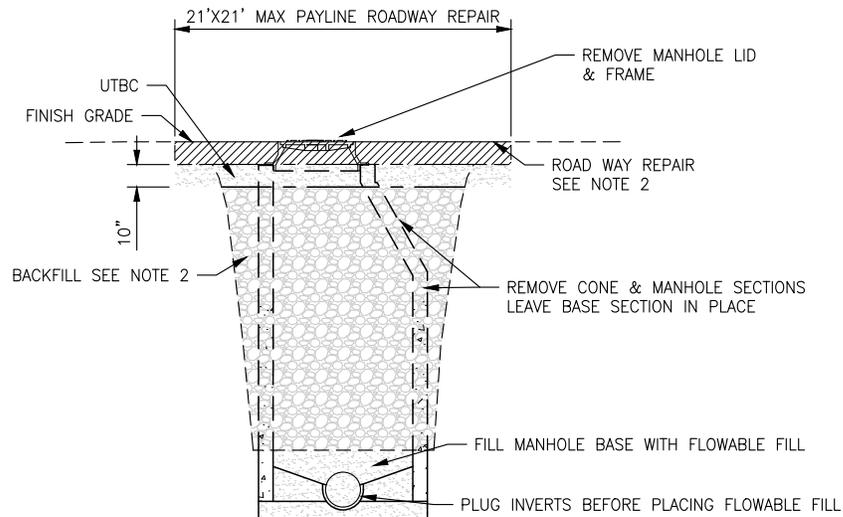
- SEE PAGE 14 FOR GENERAL NOTES.
- MANHOLES MUST BE ACCESSIBLE AND MUST NOT BE PLACED IN PARKING SPACES.
- POUR MANHOLE BASE AFTER PIPES ARE IN PLACE. IF PRE-FORMED BASE IS USED AS ALTERNATIVE TO POURED BASE, FOUNDATION OF 1" MINUS GRAVEL 1.5' DEEP UNDER BASE IS REQUIRED.
- MANHOLE BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557 3/4" MINUS GRAVEL BACKFILL IS REQUIRED 12" ON SIDES OF MANHOLE TO TOP OF PIPE ZONE.
- ALL MANHOLES SHALL HAVE A CONCRETE COLLAR PER A.P.W.A. STANDARD PLAN 413.
- IF DAMAGE IS CAUSED TO SEWER MAIN DUE TO MANHOLE INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
- GRANGER-HUNTER MANHOLE COVERS AVAILABLE AT D&L SUPPLY AND NEENAH FOUNDARY.
- MAINTAIN SLOPE THROUGH TROUGH OF MANHOLE.
- MANHOLES ARE REQUIRED TO BE LINED WITH AN EPOXY SYSTEM FOR SEWER SYSTEMS NO MEETING MINIMUM SLOPE REQUIREMENTS, IN HIGH GROUNDWATER AREAS, AND INDUSTRIAL AREAS OR DROP MANHOLES.

MINIMUM SEWER SLOPES	
PIPE SIZE	SLOPE
4"	2%
6"	1%
8"	0.5%
10"+	0.2%

Typical Beaver Slide & Sewer Manhole Abandonment



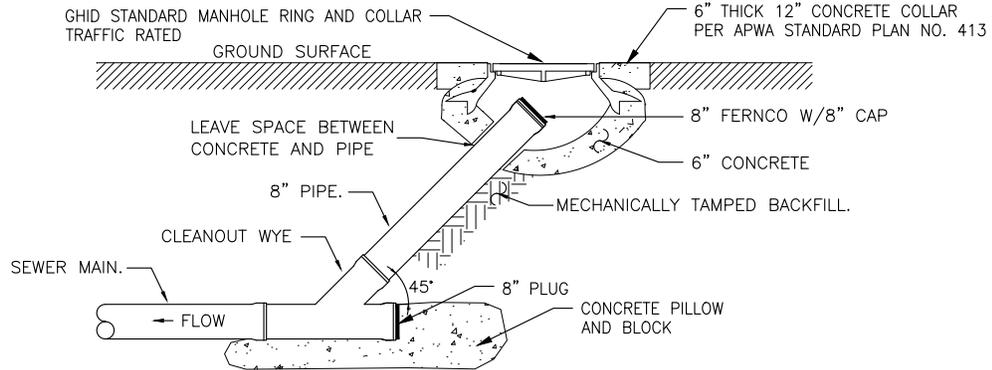
BEAVER SLIDE DETAIL



SEWER MANHOLE ABANDONMENT

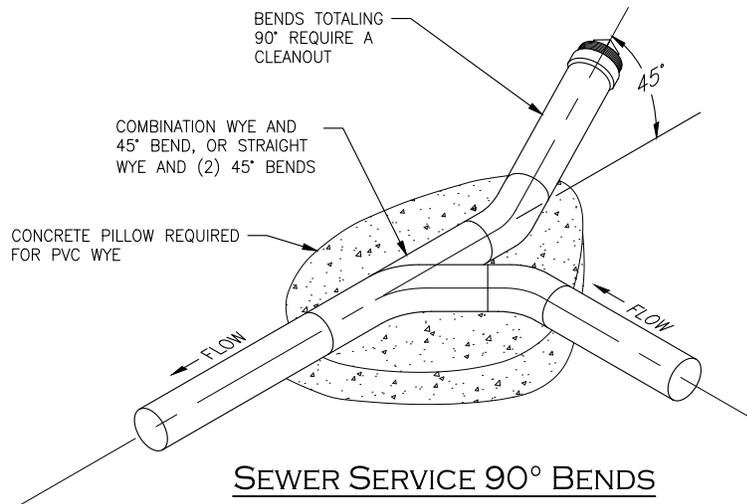
- NOTE:
- SEE PAGE 14 FOR GENERAL NOTES.
 - BACKFILL AND ROADWAY REPAIR TO MEET REQUIREMENTS APPLICABLE AGENCY ENGINEERING STANDARDS.
 - SEE DROP MANHOLE DETAIL FOR DROPS LARGER THAN MAXIMUM DROP.

Typical Mainline Sanitary Sewer Cleanouts



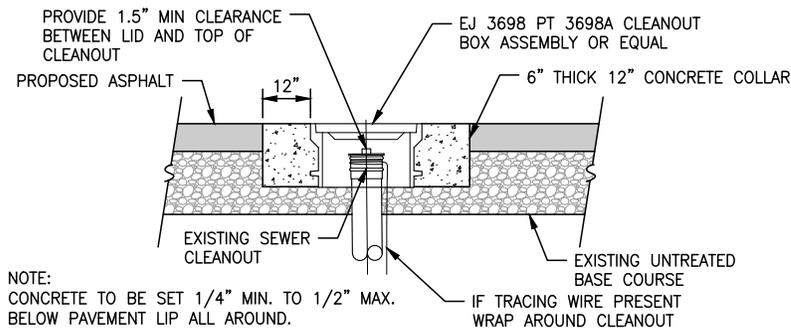
**STANDARD 8" AND LARGER
CLEANOUT PROFILE**

Typical Sanitary Sewer Service 90° Bends



SEWER SERVICE 90° BENDS

Cleanout Lids in Paved Areas

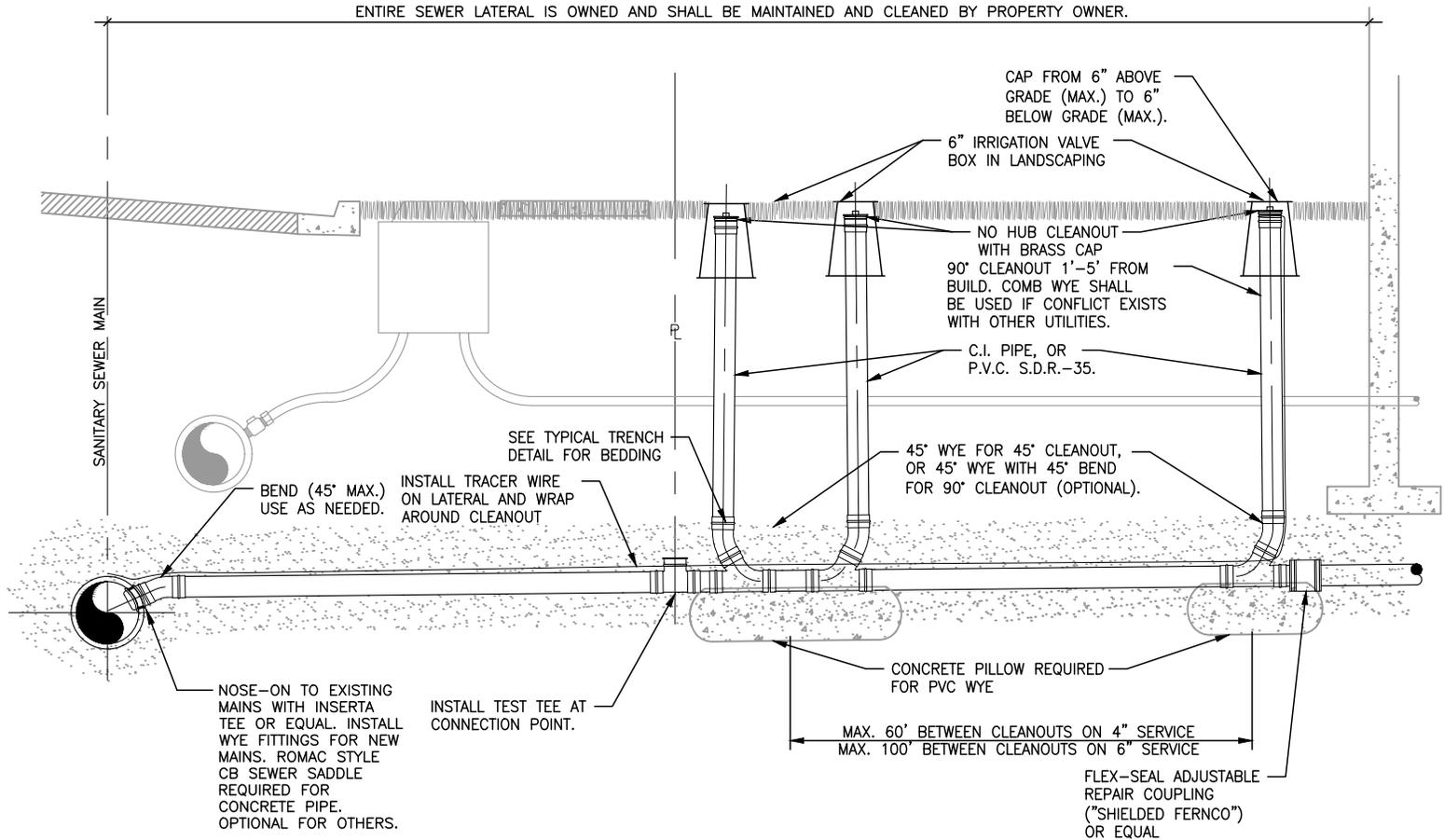


NOTE:
CONCRETE TO BE SET 1/4" MIN. TO 1/2" MAX.
BELOW PAVEMENT LIP ALL AROUND.

CLEANOUT LIDS IN PAVED AREAS

- NOTE:
1. SEE PAGE 14 FOR GENERAL NOTES.
 2. SEE TYPICAL SECTIONS FOR BEDDING AND BACKFILL.
 3. CONTRACTOR IS TO SAW CUT ALL TRENCHES AND PROVIDE A SMOOTH CLEAN EDGE FOR PAVING.
 4. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO MANHOLE INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.

Typical Sewer Service

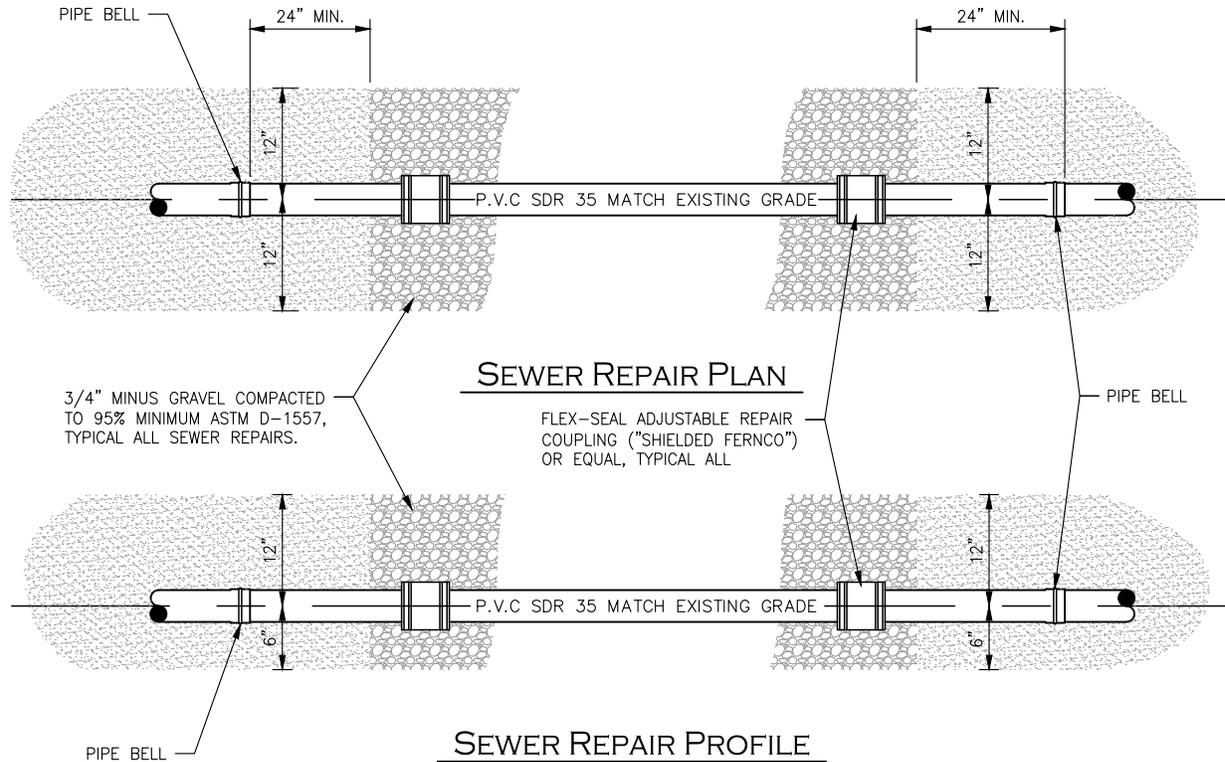


SEWER SERVICE PROFILE

NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES
2. SEE TYPICAL SECTIONS FOR BEDDING AND BACKFILL.
3. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' EACH SIDE OF PIPE. SEE TYPICAL TRENCH SPECIFICATIONS
4. IF DAMAGE IS CAUSED TO WATER AND/OR SEWER MAIN, DUE TO WATERLINE/SEWERLINE INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. SEWER LATERAL PIPE SHALL BE PVC SDR-35.
6. BETWEEN TWO DIFFERENT MATERIALS, SUCH AS CLAY TO P.V.C., USE FLEX SEAL ADJUSTABLE REPAIR COUPLING (SHIELDED FERNCO), OR EQUAL (NO-HUB BANDS ARE NOT ALLOWED).
7. BENDS TOTALING 90° SHALL BE BACKED BY A CLEANOUT, SEE TYPICAL SANITARY SEWER SERVICE 90° BEND DETAIL.
8. ALL SEWER LATERAL PLUGS SHALL BE SLIP IN SOLID PLASTIC PLUGS (BRANDT PLUGS ARE NOT ALLOWED).
9. A SEWER TEST TEE SHALL BE INSTALLED AT EACH CONNECTION POINT.
10. SEWER MAIN SHALL BE CORE DRILLED (OTHER CUTTING, CHIPPING AND/OR PUNCHING METHODS ARE NOT ALLOWED).
11. SEWER NOSE-ON SHALL BE ABOVE THE SEWER MAIN SPRING LINE.
12. SEE TYPICAL WATER SERVICE DETAIL FOR WATER AND SEWER SEPARATION.
13. SEWER SERVICE TO BE MARKED WITH S AT CURB
14. INSTALL BACKWATER VALVE PER IPC CODE 714 REQUIREMENTS

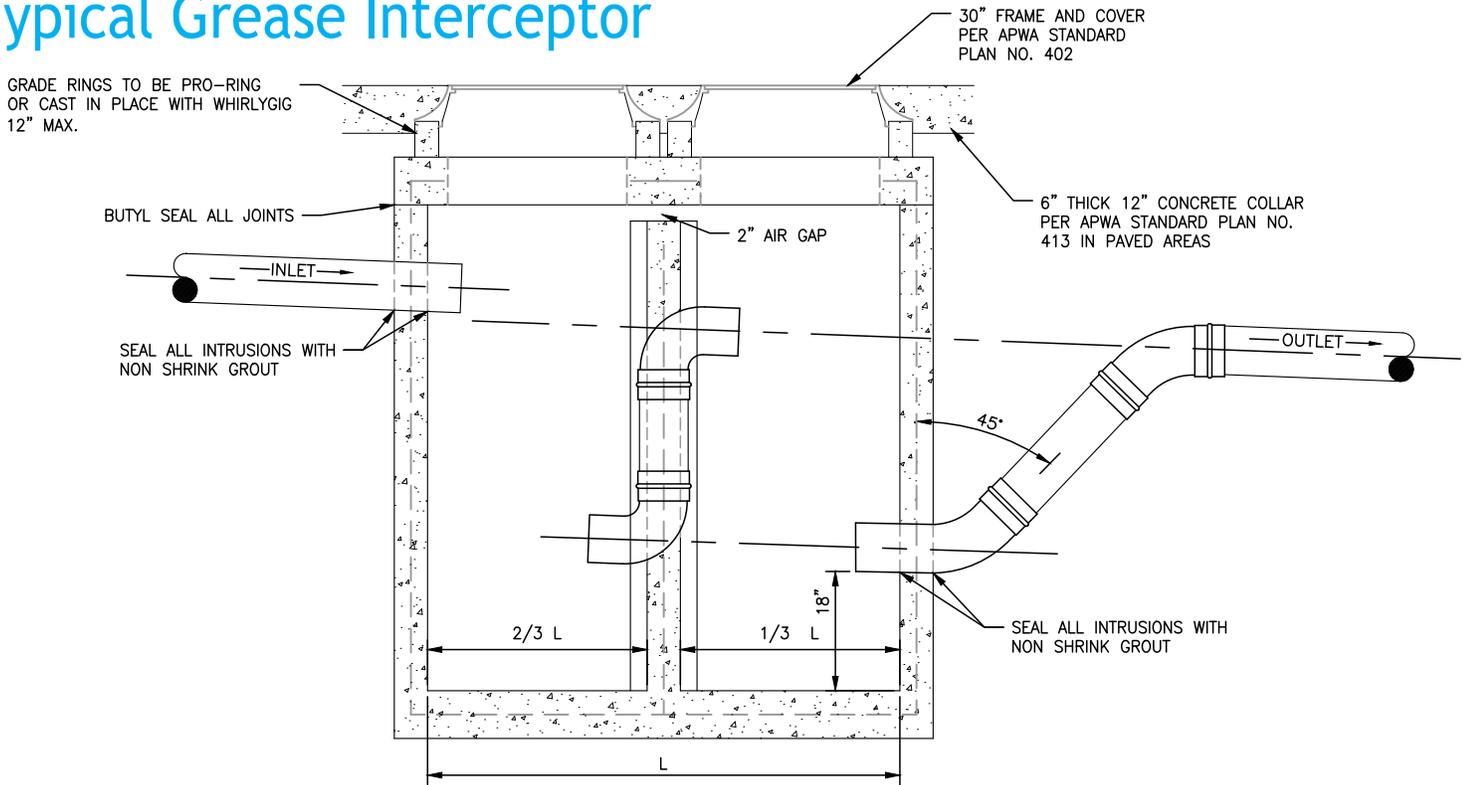
Typical Sewer Repair



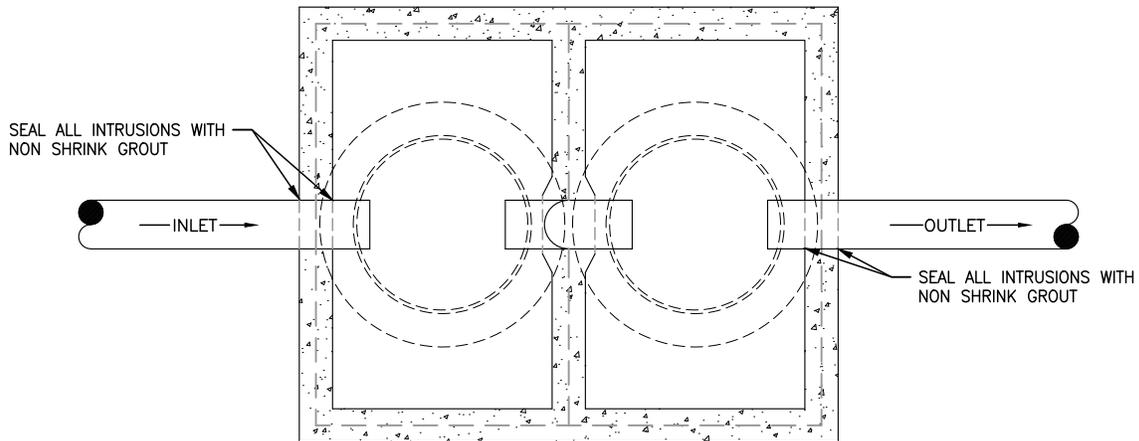
NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. SEE TYPICAL TRENCH SPECIFICATIONS FOR BEDDING AND BACKFILL.
3. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO NOSE-ON AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. SEWER SHALL BE VIDEO INSPECTED BEFORE AND AFTER REPAIR AND VIDEO PROVIDED TO GHID IN DIGITAL FORMAT.
5. IF EXCAVATION IS WITHIN 2 FEET OF A BELL CONTRACTOR TO REMOVE BELL AND EXTEND REPAIR TO CUT.

Typical Grease Interceptor



SECTION

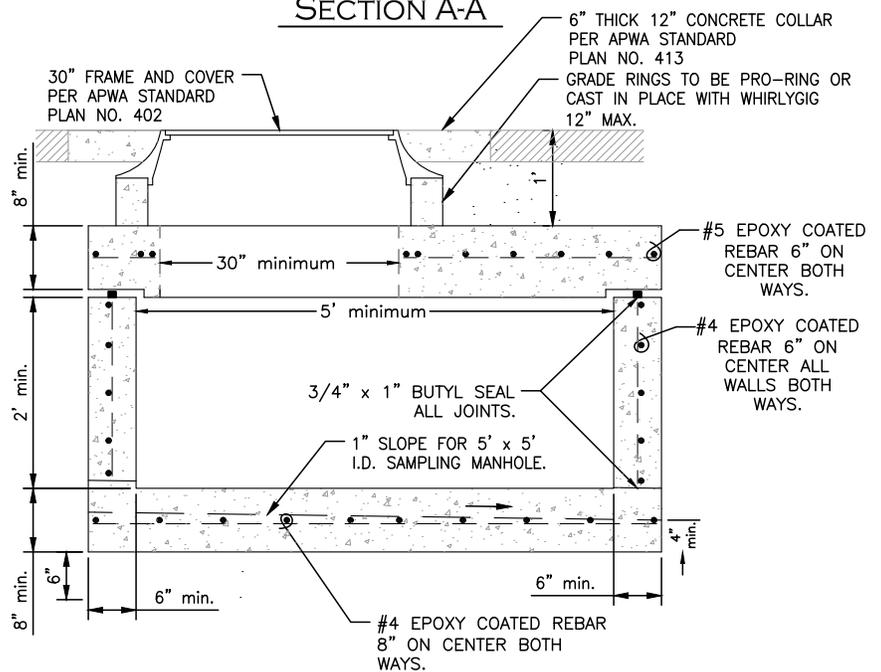
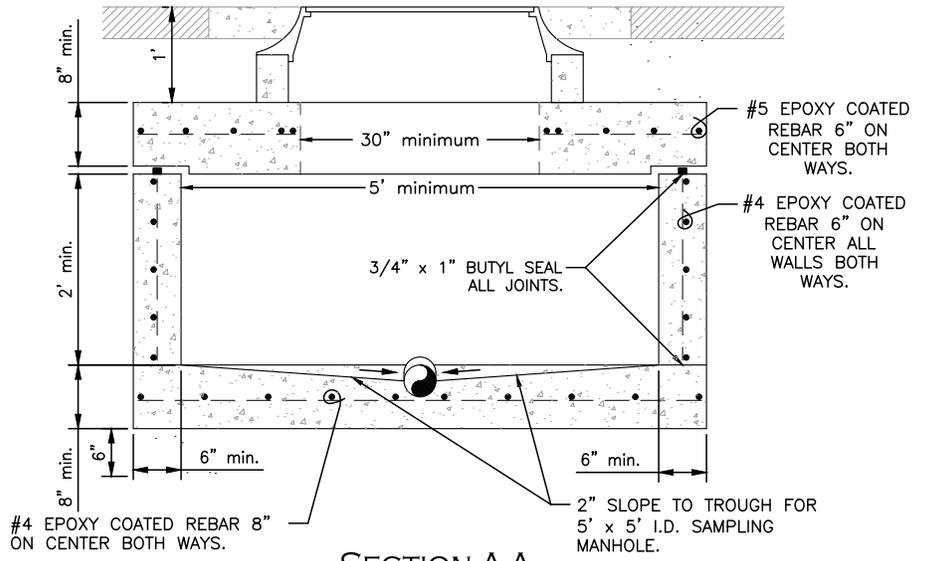
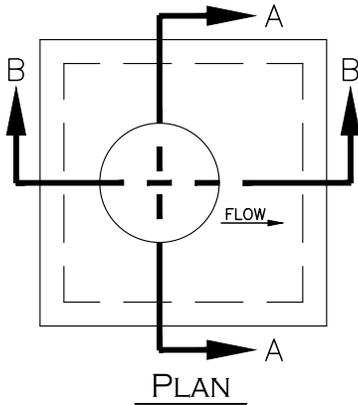


PLAN

NOTES:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. 1,000 GALLON MINIMUM OUTDOOR GREASE INTERCEPTOR. THIS INTERCEPTOR IS NOT A REPLACEMENT FOR AN APPROPRIATELY SIZED AND LOCATED INDOOR GREASE INTERCEPTOR. INDOOR GREASE INTERCEPTORS SHALL COMPLY WITH ALL CURRENT W.V.C. AND I.P.C. REQUIREMENTS AND SPECIFICATIONS AND BE PLUMBING AND DRAINAGE INSTITUTE CERTIFIED.
3. COVER SHALL BE FLUSH WITH FINISH GRADE.
4. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER RING AND COVER. IF MORE RISE IS REQUIRED, A SHELL SECTION WITH CENTER WALL SHALL BE INSTALLED.
5. SANITARY SEWER (S.S.) SHALL NOT RUN THROUGH THE SAMPLING MANHOLE AND/OR GREASE INTERCEPTOR. S.S. SHALL BE CONNECTED TO THE SEWER LATERAL DOWNSTREAM FROM THE SAMPLING MANHOLE.
6. FOUNDATION OF 1" MINUS GRAVEL 1.5' DEEP UNDER VAULT IS REQUIRED.
7. MANHOLE BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557. 3/4" MINUS GRAVEL BACKFILL IS REQUIRED 12" ON SIDES OF VAULT TO THE TOP OF THE PIPE ZONE.
8. BETWEEN TWO DIFFERENT MATERIALS, SUCH AS CLAY TO P.V.C., USE FLEX SEAL ADJUSTABLE REPAIR COUPLINGS ("SHIELDED FERNCO") OR EQUAL (NO-HUB BANDS ARE NOT ALLOWED).
9. FOR INSPECTION, FILL GREASE INTERCEPTOR WITH WATER ABOVE INLET AND OUTLET WATER TIGHT GROUT JOINTS.
10. PIPE SHALL BE P.V.C. SDR 35.
11. GREASE INTERCEPTOR SHALL BE SUITABLE FOR H-20 LOADINGS.
12. GREASE INTERCEPTOR SHALL BE VENTED THROUGH BUILDING PLUMBING.
13. GREASE TRAP AND SAMPLING MANHOLE MUST BE ACCESSIBLE AND MUST NOT BE PLACED IN PARKING STALLS.

Typical Sampling Manhole



NOTE:

1. SEE PAGE 14 FOR GENERAL NOTES.
2. THE EXISTING SEWER COLLECTION SYSTEM SHALL REMAIN IN SERVICE DURING CONSTRUCTION.
3. FOUNDATION OF 1" MINUS GRAVEL 1.5' DEEP UNDER BASE IS REQUIRED.
4. MANHOLE BACKFILL SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557. 3/4" MINUS GRAVEL BACKFILL IS REQUIRED 12" ON SIDES OF MANHOLE TO THE TOP OF THE PIPE ZONE.
5. TYPE OF PIPE SHALL BE P.V.C. SDR-35.
6. BETWEEN TWO DIFFERENT MATERIALS, SUCH AS CLAY TO P.V.C., USE FERNCO COUPLERS OR EQUAL (NO-HUB BANDS ARE NOT ALLOWED).
7. BENDS TOTALING 90° MUST BE BACKED BY A CLEANOUT.
8. SEWER LATERALS MAY RUN UNDER DRIVE APPROACH, PERMITTING TOP OF CLEANOUT IS NOT UNDER CONCRETE.
9. ALL LATERAL PLUGS SHALL BE SLIP IN SOLID PLASTIC PLUGS (BRANDT PLUGS ARE NOT ALLOWED).
10. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO M.H. INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
11. SANITARY SEWER SHALL NOT RUN THROUGH THE SAMPLING MANHOLE AND/OR GREASE TRAP. SANITARY SEWER SHALL BE CONNECTED TO THE SEWER LATERAL DOWNSTREAM FROM THE SAMPLING MANHOLE.
12. SAMPLING MANHOLE SHALL BE SUITABLE FOR H-20 LOADINGS.
13. GREASE TRAP AND SAMPLING MANHOLE MUST BE ACCESSIBLE AND MUST NOT BE PLACED IN PARKING STALLS.

Inspections & Testing

Pre-Inspection Requirements

Work may commence when the following items are completed:

- GHID has been provided with the contractor's License and Permit Bond, General Liability Insurance Certificate, Workers Compensation and Employer's Liability Certificate or State Of Utah approved waiver.
 - \$10,000.00 License and Permit Bond required.
 - General Liability Insurance Certificate. Original, PDF, and faxed copies are acceptable.
 - \$1,000,000.00 Minimum coverage for work being performed within the district unless specified otherwise in the Development and Service Agreement.
 - Granger Hunter Improvement District (GHID) shall be named as the Certificate Holder and Additional Insured.
 - Workers Compensation or a State of Utah approved waiver. Original, PDF, and faxed copies are acceptable. Alternatively, this coverage may be shown on the General Liability Insurance Certificate. Original, PDF, and faxed copies are acceptable.
- The project has a "GHID Final Approval" stamped on the drawing with a date and signature from an approved GHID representative.
- All applicable connection and/or inspection fees are paid in full.
- A preconstruction meeting has taken place with the Developer and its Contractors who will be installing the utilities, and one or more GHID Representatives. **(Note: It is the Developer/Contractors responsibility to schedule a preconstruction meeting.)**

Inspection Requirements

- Developer/Contractor must give GHID a minimum of 24 hours' notice prior to all inspections. When scheduling inspections please note that:
 - GHID's inspection hours are from 8:00 AM to 4:00 PM Monday – Thursday, excluding all holidays.
 - Inspections shall be scheduled by calling GHID's office at 801-968-3551.
 - No inspections will be scheduled from voice mail messages. If necessary, please leave a message to call you back.
 - Additional inspection fees may be assessed if a GHID representative is dispatched and the job is not inspection ready. Provide at least 24 hours' notice for cancellations to avoid additional fees.
- All work completed that has not been inspected will be required to be uncovered and inspected prior to any final acceptance given for the project. Please note that:
 - Projects that have not been given a final acceptance letter will not be allowed to connect to GHID's water and sewer Utilities, and/or,
 - Projects that are connected to GHID's Utilities will be considered to be in default, and the connection will be terminated until final acceptance is given.
- In the event a stop work order is issued, the Developer/Contractor shall stop work and comply with all requirements set forth by GHID inspectors.
- Owner is responsible to submit backflow reports to GHID Water Quality Department within 10 days of initial use and annually thereafter.

- Owner is responsible to submit backflow reports to GHID Water Quality Department within 10 days of initial use and annually thereafter.
- Contractors must sign up for service before meters are installed or provided. <https://www.ghid.gov/sign-up-for-service> for service agreement. The District will set meters less than 3-inches or provide meters 3-inches and greater. Contractor to coordinate pickup of meter and coordinate installation of the MXU.
- Prior to Final Acceptance of the project, the applicant must submit a digital copy of field verified As-Built Plans in PDF and DWG format spatially referenced to NAD 1983 State Plane Utah Central FIPS 4302 (feet) and tied to the nearest existing Salt Lake County benchmark monument. Digital As-Built Plans shall have separate layers for culinary waterlines, culinary water services, fire lines, fire hydrants, valves, sanitary sewer lines, sanitary sewer manholes, sanitary sewer laterals, sanitary sewer clean-outs, and pretreatment infrastructure. As-Built Plans can be submitted to plans@ghid.gov.

Water Shutdown Requirements

Water shutdowns may commence when all of the following items are completed:

- Developer/Contractor has satisfied all pre-inspection requirements (see pre-inspection requirements for details).
- Developer/Contractor has given Granger Hunter Improvement District (GHID) a minimum of 10 business days' notice prior to any scheduled water shutdown.
 - If any problems arise with the scheduled water shutdown, GHID shall notify the contractor within the 10 business day time frame.
 - Proper notice and approval must be given for all water shutdowns (private and public).
 - All water shutdowns shall be scheduled on a Tuesday, Wednesday, or Thursday between the hours of 8:00 Am to 4:00 Pm. Any deviance from these dates and times will constitute an after-hours shutdown and may require additional notification time for approvals.
- GHID has approved the proposed water shutdown:
 - Developer/Contractor shall give all affected parties (i.e. residences, businesses, etc.) a minimum of 48 hours written notice prior to the scheduled shutdown.
 - It is the Developer/Contractor's responsibility to meet all reasonable needs required by all affected parties (i.e. residences, businesses, etc.) prior to the scheduled water shutdown.
 - Only approved GHID personnel shall open or close all public water valves

Disinfection & Testing

Disinfection and testing of water mainlines shall conform to AWWA C600, C651 and APWA 33 13 00 Specifications (current version) in addition to the following requirements and exceptions:

- Contractors are not to operate public mainline valves. Private valves may be opened and closed by the Contractor, but shall be coordinated with GHID staff. GHID staff will be responsible for opening and closing all public mainline valves.
- Once the line has been filled and chlorinated, the line must remain static for a minimum of 24 hours to allow the disinfection process to occur.
- Care must be taken when disposing of chlorinated water. Contractor shall be required to neutralize the chlorinated water before discharging.
- After flushing is completed, GHID staff will take a chlorine residual test. If amounts do not meet GHID standards, additional flushing will be required.

- Bacteriological samples shall be obtained by GHID staff. Frequency of samples shall be a minimum of 1 sample per 1,000 feet of pipeline. If sample(s) are positive, the Contractor shall repeat chlorination and flushing steps and shall be responsible for all retesting costs.
- Pressure testing is required by the Contractor on all water lines. A hydrostatic pressure of 200 psi must be maintained for two hours. All components for the pressure test must be supplied by the Contractor.

Sewer Testing

Sewer mainline testing shall conform to the [APWA 33 08 00](#) Specification (current version) in addition to the following requirements and exceptions:

- Contractors are required to provide a means of protecting GHID's Sewer System prior to and during construction. This can include: Test balls, and false bottoms in addition to any other reasonable means as requested by the inspector.

Prior to performing any testing it is recommended that the sewer line is cleaned and vacuumed.

- Deflection testing
Mandrel testing. Mandrel shall be 95% of the diameter of the pipe that is being tested. If there are any sections of the pipe being tested that fail for any reason it is the responsibility of the contractor to make those repairs. After completion of any such repairs the section of pipe must be retested.
- Video Inspection
CCTV Inspection of all sewer mains is required. This is a way of visually inspecting the quality of workmanship, in addition to any locating irregularities. This also allows GHID to record the position in which the sewer laterals connect into the Sewer main. Provide Pre and Post Video Inspections for all Sewer Liners.
- Air Test
All contractors shall provide air test on 8" mains for 12 minutes at 5 psi and 10-12" mains for 25 minutes at 5 psi. The maximum permissible drop is 0.5 psi in that duration. A visual water test on 6" or smaller for 2 hours is permissible. Any pipe larger than 12", the inspector will determine the best testing method per ASTM F1417.

Abandonments

Permanent Water Abandonment

- Mainline – To be abandoned per District Engineer's instructions and WVC standards.
- Lateral – To be abandoned at main. Corp stop to be shut off and 1' minimum physical disconnection per GHID and WVC standards.

Permanent Sewer Abandonment

- Mainline - To be abandoned per District Engineer's instructions.
- Lateral – To be abandoned at main. CIPP with pre and post inspection video or physical disconnect and cap at the main with concrete. Brandt plugs not accepted.

Temporary Water and Sewer Disconnect

- To be capped at a point that is clear of future construction and marked with a 2x4.

All abandoned lines and manholes to be inspected prior to being buried.



NOTE: It is the contractor's sole responsibility to comply with all State of Utah, Salt Lake County, West Valley City, and GHID requirements and specifications. For GHID requirements and specifications please go to our website (www.ghid.gov) or call or email the Engineering Department (801-968-3551) (plans@ghid.gov) or visit our office (2888 South 3600 West).

Engineering Office Hours

Monday – Thursday 6:30 AM to 5:00 PM

GHID Lobby Hours

Monday – Thursday 8:00 AM to 5:00 PM

Inspection Hours

Monday – Thursday 7:30 AM to 4:00 PM

Engineering Contact

Phone Number: (801)968-3551 (opt 4)

Email: plans@ghid.gov