SILVER LAKE WATER AND SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO: 835

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER AND SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, AMENDING ARTICLE II OF CHAPTER 6.20 OF THE DISTRICT CODE, ENTITLED "WATER SYSTEMS", AMENDING ARTICLE III OF CHAPTER 6.20 OF THE DISTRICT CODE, ENTITLED "SANITARY SEWER SYSTEMS", AMENDING ARTICLE V OF CHAPTER 6.20 OF THE DISTRICT CODE, ENTITLED "CROSS CONNECTION CONTROL", AMENDING ARTICLE VI OF CHAPTER 6.20 OF THE DISTRICT CODE, ENTITLED "STANDARD DETAILS", AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, on April 27, 2017, the Commissioners of Silver Lake Water and Sewer District (District) adopted Resolution No. 735, relating to the District Standards for Water and Sewer Infrastructure Systems; and

WHEREAS, this Resolution was later codified in Chapter 6.20 of the District Code; and

WHEREAS, on February 25, 2021, the District Commissioners adopted Resolution No. 807, amending Article I of Chapter 6.20 of the District's Code, entitled "General Conditions"; and

WHEREAS, State law authorizes the District to update its Design and Construction Standards for Water and Sewer Infrastructure Systems (District Standards) on a periodic basis; and

WHEREAS, the Commissioners have determined that it would be in the best interest of the District, its employees, and its customers to update its District Standards, policies and procedures relating to Water and Sewer Infrastructure; and

WHEREAS, District staff have reviewed, changed, and updated the 2017 District Standards; and

WHEREAS, updates to District regulations are categorically exempt from requiring a SEPA threshold determination per WAC 197-11-800 (19a); and

WHEREAS, District staff recommend adoption of the updated 2022 District Standards for Water and Sewer Infrastructure Systems; and

WHEREAS, these updated District Standards have been presented to the Commissioners and the Commissioners have reviewed these Standards; and

WHEREAS, the Commissioners desire to amend Chapter 6.20 of the District Code to update the policies and procedures relating to Water and Sewer Infrastructure.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of Silver Lake Water and Sewer District, as follows:

Section 1: Article II of Chapter 6.20 of the District's Code, currently entitled "Water Systems" is hereby amended as set forth in Exhibit 1 of the attached 2022 District Standards, hereby incorporated by reference.

Section 2: Article III of Chapter 6.20 of the District's Code, currently entitled "Sanitary Sewer Systems" is hereby amended as set forth in Exhibit 2 of the attached 2022 District Standards, hereby incorporated by reference.

Section 3: Article V of Chapter 6.20 of the District's Code, currently entitled "Cross Connection Control" is hereby amended as set forth in Exhibit 3 of the attached 2022 District Standards, hereby incorporated by reference.

Section 4: Article IV of Chapter 6.20 of the District's Code, currently entitled "Standard Details" is hereby amended as set forth in Exhibit 4 of the attached 2022 District Standards, hereby incorporated by reference.

Section 5: The 2022 Sewer CCTV Inspection Requirements are hereby adopted as set forth in Exhibit 5 of the attached 2022 District Standards, hereby incorporated by reference.

Section 6: The General Manager is authorized to administratively approve future minor changes that do not affect the intent or substantial content of the 2022 District Standards.

Section 7: This resolution and implementation of the 2022 District Standards shall be effective on the date of adoption as set forth below.

ADOPTED by the Board of Commissioners, at a special open public meeting of the Silver Lake Water and Sewer District, Snohomish County, Washington this 22nd day of November 2022.

President and Commissioner

Vice President and Commissioner

Secretary and Commissioner

CERTIFICATION

I, the undersigned, Secretary of the Board of Commissioners of Silver Lake Water and Sewer District, Snohomish County, Washington (the "District"), hereby certify as follows:

1. The attached copy of Resolution No. 835 (the "Resolution") is a full, true and correct copy of the Resolution duly adopted at a special meeting of the Board of Commissioners of the District, held at the regular meeting place thereof on November 22, 2022, as that Resolution appears on the minute book of the District; and the Resolution will be in full force and effect immediately following its adoption; and

2. A quorum of the members of the Board of Commissioners was present throughout the meeting and a majority of those members present voted in the proper manner for the adoption of the Resolution.

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of November 2022.

SILVER LAKE WATER AND SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON

Anne Backstrom, Secretary

Silver Lake Water & Sewer District

2022 DISTRICT STANDARDS AND DETAILS

FOR THE CONSTRUCTION OF:

- **WATER SYSTEMS**
- **SANITARY SEWER SYSTEMS**
- **CROSS CONNECTION CONTROL**

Exhibit 1

Article II. Water Systems

6.20.300 Objective.

This article is intended to present information and provide an outline of the minimum general standards required by Silver Lake Water and Sewer District for developer constructed water main extensions and improvements which are to be transferred to and operated by the district.

6.20.310 General.

Detailed plans shall be submitted for the district's review which provide the locations, size, and type of the proposed water system and points of connection. These plans shall be separate from sewer plans and shall conform to the current district plan preparation requirements.

Computations and other data used for design of the water system shall be submitted to the district for approval as appropriate and required by the District.

The water system facilities shall be designed and constructed in conformance with the current State Department of Health Water System Design Manual and WSDOT Standard Specifications for Road, Bridge, and Municipal Construction and amendments thereto, revised as to form to make reference to local governments and as modified by the district's requirements and standards.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WEF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints.

Except as otherwise noted herein, all work shall be accomplished as recommended in applicable American Water Works Association (AWWA) standards, and according to the recommendations of the manufacturer of the material or equipment concerned.

All piping, plumbing and connection materials (i.e. solder) installed to provide water for human consumption that is connected to the district's water system shall be lead free.

The location of the water mains, valves, hydrants, and principal fittings including modifications shall be staked by the developer. No deviation shall be made from the required line or grade unless otherwise approved by the District. The developer shall verify and protect all underground and surface utilities encountered during the progress of this work.

Before final acceptance of the water system by the District, all pipes, assemblies, and other appurtenances shall be cleaned of all debris and foreign material, and tested and disinfected to District and AWWA standards. The impacted public Right-of-Way area shall be constructed or restored to the satisfaction of the Land Use Agency.

The District shall own, operate, and maintain the public water system within the public Right-of-Way (ROW) and/or dedicated District utility easement including the main line, service line and water meter. The private water system on the backside of the water meter, or within a building or beyond the ROW or easement line if not metered, shall be the responsibility of the property owner, including all internal and external backflow assemblies.

6.20.320 General requirements.

(1) Work shall be performed only by contractors experienced in installing public water mains in accordance with the requirements of the project Developer Extension Agreement and all required permits, licenses, and regulations of the land use agency.

(2) Prior to any work being performed, a copy of the survey cut sheets and proposed construction schedule shall be provided to the District.

(3) All materials shall be new and undamaged.

(4) Developer shall obtain approval of materials to be used from the district through a submittal review process prior to ordering of materials.

(6) Water mains, service lines and meters shall be installed only in dedicated existing or future rights-of-way, or dedicated utility easements that have been or will be granted to the district.

(7) Existing facilities shall be addressed in accordance with District Code Section 6.20.210.

(8) Water quality sampling stations shall be installed at locations as shown on the approved construction plans or as designated by the District, and in accordance with District Standard Details.

(9) Dead-end water mains are not permitted except where the district is satisfied that it would be impractical to extend the line at a future date. Where deemed appropriate by the District, water mains or a dedicated utility easement shall extend to the boundary line of developable neighboring properties for a future extension.

(10) No dead-end water mains over eight inches shall be allowed without a planned or potential future extension, and a two-inch blowoff assembly shall be provided at the end of water mains eight inches and smaller. A fire hydrant shall be installed on larger size mains to accommodate flushing velocities.

(11) District water service lines over 60 feet long within the Right-of-Way or dedicated utility easement, and private water system lines over 200 feet long from the District water meter, are prohibited. A water main extension would be required to provide service beyond those limits unless otherwise approved by the District.

(12) If a new water main is installed along a frontage with existing service lines, all impacted service lines shall be reconnected to the new main and upgraded to current District standards from the main to the meter at the developer's expense. The Developer is responsible for installing new service lines to the meter, and District staff will make any necessary connections or upgrades to the meter.

(13) All eight-inch and smaller water mains shall have minimum three-foot-six-inch cover from finished grade except four-foot cover in easements. All 12-inch and larger water mains shall have a minimum of four-foot cover from finished grade. The maximum shall be seven-foot cover unless approved by the district.

(14) Water mains shall generally be located parallel to and 10 feet northerly or easterly of street centerline.

(15) Valves shall be installed at intervals not to exceed 1,000 feet. Valves shall be installed on each leg of all tees and crosses, except fire hydrant tees unless required by the district, and at each end of easements.

(16) Separation between water and sewer mains shall be in accordance with the current State Department of Ecology Criteria for Sewage Works Design. There shall be a minimum of five feet of horizontal separation between District water mains and storm water or other utility lines unless approved by the District.

(17) Provide bends in field to suit construction and in accordance with pipe manufacturer's recommendations so as not to exceed allowable deflection at pipe joints. As-built conditions shall be documented prior to backfilling trench.

(18) All public water mains shall be restrained joint construction unless otherwise approved by the District.

(19) Cross Connection Control shall be provided on all water service connections in accordance with District Code Chapter 6.20, Article V.

(20) Developer shall notify the district a minimum of 48 hours in advance and obtain approval prior to any water shut-off or turn-on affecting the water system.

(21) Water main shut downs, cut in connections and wet taps shall only be allowed on a non-holiday Tuesday through Thursday unless otherwise approved by the District.

(22) Road restoration shall be per Snohomish County, City and/or State design and construction standards. Developer shall become familiar with all County, City, and State conditions of required permits and shall adhere to all conditions and requirements.

6.20.330 Materials and Installation.

(1) *Water Mains and Fittings.* Water mains to be installed shall be ductile iron pipe for all sizes, unless otherwise approved by the District. PVC C900 DR 18 or HDPE DR 9 pipe may be used for water mains when approved by the District and warranted, such as installation by directional drilling, corrosive environments, or in the vicinity of electrical transmission lines.

All ductile iron water pipe shall be delivered to the site with wrapping to cover the ends of the pipe or with pipe plugs. Either method used shall remain in unbroken condition until the pipe is installed.

The ductile iron pipe shall conform to AWWA C151 and shall be Class 52. The pipe shall be cement lined to a minimum thickness of one-sixteenth-inch meeting NSF standards for potable water and the exterior shall be coated with an asphaltic coating.

Each length shall be plainly marked with the manufacturer's identification and class of pipe. The pipe shall be furnished with mechanical joint or push-on type joint, except where plans call for flanged ends. Joints shall conform to AWWA C111.

Restrained joint pipe shall be used on all public water mains unless otherwise approved by the District. Restrained joint pipe shall be push-on joint pipe with Field Lok, TR Flex or District approve equal gaskets.

All pipe shall be joined by the manufacturer's standard coupling, be all of one manufacturer, and be carefully installed in complete compliance with the manufacturer's recommendations. Welded HDPE pipe connections and joints shall only be made by certified personnel.

Joints shall be "made up" in accordance with the manufacturer's recommendations. Standard joint materials, including restrained gaskets, shall be furnished with the pipe. Material shall be suitable for the specified pipe size and pressures.

All fittings shall be short-bodied, ductile iron complying with AWWA C110 or C153 for 350 psi pressure rated mechanical joint fittings and 250 psi pressure rated flanged fittings. All fittings shall be cement mortar lined per the ductile iron pipe specifications and either mechanical joint or flanged.

A Locate Box per District Standard Details shall be installed on water mains located in unpaved easement areas at each bend and/or every 300 feet.

Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, or approved equal.

All couplings shall be restrained joint ductile iron mechanical joint sleeves.

The pipe and fittings shall be inspected for defects before installation. All lumps, blisters and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and dry, and free from oil and grease before the pipe is laid.

Every precaution shall be taken to prevent foreign material from entering the pipe or joint while it is being placed in the line. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. If water is in the trench when work resumes, the seal shall remain in place until the trench is pumped completely dry. No pipe shall be laid in water or when trench conditions are unsuitable.

The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe or cement lining, and so as to leave a smooth end at right angles to the axis of the pipe. When a pipe length is cut, the outer edge of the cut shall be beveled to prevent damage to the gasket during jointing of the pipes.

Pipe shall be laid with bell ends facing uphill in the direction of the laying, unless approved otherwise by the District. Pipes shall be at grade prior to inserting the spigot into the bell. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and pipe forced home prior to any final deflection adjustments. Wherever it is necessary to deflect pipe from a straight line, the amount of deflection allowed shall not exceed pipe manufacturer's recommendations. The pipe shall be secured in place with compacted select backfill in accordance with District Standard Details.

For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before jointing and shall be jointed according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom, and sides, so pressure on gasket is even.

For connection of push-on type joints, the jointing shall be done according to manufacturer's recommendations, with special care used in cleaning gasket seat to prevent any dirt or sand from getting between the gasket and pipe. Lubricant to be used on the gasket shall be non-toxic and free from contamination.

Valves, fittings, plugs, and caps shall be set and jointed to pipe in the manner as required. All dead ends on new mains shall be closed with mechanical joint caps.

Fittings at horizontal and vertical bends shall be anchored with thrust blocks made of cast-in-place 3,000 psi strength concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. The concrete thrust blocks shall be in place and cured for a minimum 24 hours before beginning the pressure test.

If temporary thrust blocking is needed to take immediate load, such as in making live connections, the Contractor shall supply and place all bracing, blocking and/or ecology blocks as approved by the District. A visqueen barrier shall be provided to protect fittings, bolts and other appurtenances from direct contact with the concrete.

All of the new piping, valves and blocking shall have been installed, disinfected, and tested up to the point of cutting into existing lines before the tapped or cut in connection is made. Forty-eight-hour notice shall be given to the district in advance of any requested shut down for new connections.

(2) *Bedding and Backfill*. All water pipe shall be bedded with pea gravel or Gravel Backfill for Pipe Zone Bedding. The pipe shall be bedded from a depth of four inches below the pipe to 12 inches above the pipe. The bedding material shall extend across the full width of the trench and shall be compacted under the haunches of the pipe.

Clay or bentonite dams shall be installed across the trench and to the full depth of the granular material in all areas of steep slopes, high groundwater, stream crossings and wetlands to prevent migration of water along the pipeline. Drainage facilities shall be installed to accommodate water buildup behind the dams in accordance with District Standard Details.

Backfill in roadway sections or structural areas shall be placed and compacted to a minimum of 95 percent of the Modified Proctor dry maximum density per ASTM D1557 in accordance with District Standard Details, as well as Snohomish County, City and/or State requirements.

Backfill in unpaved easements or non-structural areas shall be placed and compacted to a minimum of 90 percent of the Modified Proctor dry maximum density per ASTM D1557. Recycled concrete is not allowed for use in district trench sections, no exceptions.

Backfill compaction shall occur in sufficiently thin lifts to achieve the density requirements specified. Copies of the compaction results shall be provided to the District prior to final acceptance.

When metallic pipes are backfilled or in contact with corrosive or cementitious material (i.e. CDF), the metallic pipe shall be wrapped using American V-Bio Poly Encasement or equal and the pipes bedded and covered with 12" of clean, imported material.

(3) *Valves.* All valves 12 inches and smaller shall be resilient seat gate valves. All valves larger than 12 inches shall be butterfly valves.

(a) *Resilient Seat Gate Valves.* The gate valves shall be ductile iron body valves, iron disk completely encapsulated with polyurethane rubber and bronze, non-rising stem with "O" ring seals conforming to AWWA C509 or C515. The valves shall open counterclockwise and be furnished with two-inch square operating nuts except valves in vaults shall be furnished with handwheels. All surfaces, interior and exterior shall be fusion bonded epoxy coated, acceptable for potable water.

Gate valves shall be Clow, M&H, Kennedy, Mueller, American Flow Control, or approved equal. All valves shall be rated at a minimum of 200 psi.

(b) *Butterfly Valves.* Butterfly valves shall conform to AWWA C504 for flanged and C111 for MJ, Class 150B or 250B. If the District allows the use of butterfly valves based on design requirements and/or anticipated operating pressure, a flanged 250B valve may require an adaptor for the bolt pattern.

Butterfly valves shall be Pratt Groundhog Class 150B, M & H Style 4500 Class 150B or 250B, Mueller Lineseal III Class 150B or Lineseal XPII Class 250B, or approved equal.

(c) *Tapping Sleeves and Tapping Valves.* A stainless-steel tapping sleeve and tee shall be used for all tapped connections and manufactured by JCM Industries Model No. 432 or 462, Romac, or Smith Blair. The tapping sleeve and valve shall be tested to 100 psi prior to tapping the main.

The tapping sleeves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two sections for ease of installation and shall be assembled around the main without interrupting service.

Tapping valves shall be provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings to permit entry of the tapping machine cutters. In all other respects, the tapping valves shall conform to the resilient seat gate valves herein specified with regards to operation and materials.

Size-on-size connections on existing cast iron pipe shall be cut-in connections only. Precautions shall be taken as directed by the District to avoid damaging existing cast iron pipe when making connections, such as not over-tightening bolts.

The installation contractor for the tapping sleeves and valves shall be approved by the district.

(d) *All Valves.* The valves shall be set with stems vertical. The axis of the valve box shall be common with the axis projected off the valve stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

All valves with operating nuts located more than four feet below finished grade shall be equipped with extension stems to bring the operating nut to within 18 inches of the finished grade.

At the top of the extension stem, there shall be a two-inch standard operating nut, complete with a centering flange that closely fits the five-inch pipe encasement of the extension stem. The valve box shall be set in a telescoping fashion around the five-inch pipe cut to the correct length to allow future adjustment up or down. Cast iron soil pipe shall be used to extend the top valve box section to grade in deep areas.

Each valve shall be provided with an adjustable two-piece cast iron valve box of five inches minimum inside diameter. Valve boxes shall have a top section with an 18-inch minimum length. The valve boxes and covers shall be in accordance with the District Standard Details.

Valves located in easements or outside of paved areas shall have concrete collars with a minimum size of two-foot diameter by four inches thick.

(e) *Valve Markers.* Provide a four foot long minimum blue Carsonite valve marker post for each valve outside of asphalt. Markers shall be placed at the edge of the right-of-way opposite the valve and set so as to leave two feet of the post exposed above grade. Valve markers shall be installed and marked with the distance to valve being referenced for all valves in unpaved areas. The distance to the nearest foot to the valve shall be clearly stenciled on the side facing the valve in black numerals two inches in height.

(f) *Valve Box Adjustment*. Water valve covers shall be adjusted to final grade after asphalt paving is completed on new development construction. Existing water valve covers within the impacted

development work area shall be replaced and upgraded to current standards in accordance with the District Standard Details.

(4) *Fire Hydrants.*

Fire hydrants are required approximately every 600 feet in residential areas and/or located no more than 350 feet from the back of any proposed lot. Fire hydrants are required every 300 feet in commercial areas, or as required by the Fire Marshal. Distances shall be measured linearly along street or road. There shall be a minimum of three feet of clearance in all directions as measured from the operating nut of the hydrant.

Only one fire hydrant shall be installed on any dead-end water main.

New fire hydrants are not allowed on existing water mains smaller than eight-inch. The developer will be required to upgrade the existing water main to provide adequate fire flow as determined by the Fire Marshal.

Existing fire hydrants within the development project site area or frontage shall be upgraded to current district standards at the developer's expense.

Hydrant pipe runs longer than 50 feet are not allowed unless otherwise approved by the District. Pipes connecting hydrants to mains shall be six inches in diameter with restrained joints. No horizontal or vertical bends are allowed in the pipe run between the main line and the hydrant. If approved, hydrant runs longer than 50 feet shall use eight-inch pipe.

All fire hydrants shall be approved by the National Board of Fire Underwriters and conform to AWWA C502, break-away type, in which the valve will remain closed if the barrel is broken. The hydrant barrel shall have a diameter of not less than seven inches, and the valve diameter shall be not less than five and one-quarter inches.

Each hydrant shall be equipped with two two-and-one-half-inch hose ports (National Standard Thread), and one four-and-one-half-inch pumper connection (National Standard Thread). The pumper port shall be oriented to be perpendicular to the primary direction of traffic flow. A permanent anodized short profile style Storz hydrant adapter and anodized Storz blind flange shall be installed on the pumper port. The size of the adapter shall as required by the local Fire Marshal.

Each hydrant shall be equipped with a suitable positive acting drain valve and one-and-one-quarter-inch pentagonal operating nut (counter-clockwise opening).

Fire hydrants shall be Mueller Centurion, Clow Medallion, or East Jordan Watermaster 5CD250.

The holding spools between the gate valve and fire hydrant shall be made from six-inch Class 52 ductile iron pipe. The hydrant and gate valve shall be anchored in place using holding spools and mechanical joint restraint devices. Holding spools shall be one piece unless the length is in excess of 17 feet or if approved by the district. The joints shall be supplied with a mechanical joint sleeve and mechanical joint restraint device, or with Field Lok gaskets.

The fire hydrants shall be painted with two coats of yellow enamel paint in a color formula to be provide by the District. Distance to the hydrant valve shall be clearly stenciled in black numerals two inches in height on the fire hydrant below the pumper port. Align the stenciled distance on the hydrant to face the hydrant valve. The top of fire hydrant shall be painted per Fire Marshal requirements.

Between the time that the fire hydrant is installed and the completed facility is placed in operation, the fire hydrant shall at all times be covered in a suitable manner to clearly indicate that the fire hydrant is not in service.

(5) *Blow-Offs and Air Relief Assemblies.* A two-inch blowoff assembly shall be installed in a District approved location at the terminus of all dead-end water mains eight-inch diameter and smaller. Water mains greater than eight-inch diameter shall have a fire hydrant assembly installed at the terminus of dead-end mains.

A one-inch or two-inch air and vacuum release valve as required in the District Standard Details shall be installed at principal high points in the water system.

The installation of these items shall include connection piping, gate valve, valve box, and all accessories.

(6) *Pressure Reducing Valves.* If extensions require main line pressure reducing valves as determined by the district, then such entire installation, including strainers, valves, piping, vaults, and drain lines shall be installed by the developer in accordance with District Standard Details. The pressure reducing installation shall be a prefabricated and plumbed vault and shall include two Cla-Val globe type pressure reducing valves, sized for the area to be served downstream of the installation.

6.20.340 Water Service Connections.

(1) *Connection Requirements.* Individual water lines to each service location shall be installed and connected to the new or existing water mains and tested prior to final project acceptance. A permit application and payment of applicable General Facility Charges are required for all water connections prior to the District providing service in accordance with District Code Sections 6.20.220 and 9.05.070.

Existing developed parcels making application to connect to only District water or sewer service will be required to connect to both sewer and water at the same time if services are available, such as the presence of an existing water main along the frontage or sewer lateral to the property line. This requirement may be waived at the discretion of the District if a Developer Extension is required for utility service in accordance with District Code Chapter 6.15.

Cross Connection Control shall be provided on all water service connections in accordance with District Code Chapter 6.20, Article V.

(a) *Residential.* Each lot or unit of an attached or detached single family residential structure with independent interior plumbing systems constructed under the current International Residential Code, including but not limited to duplexes, townhomes, and mobile homes, shall be served with an

individual water service line and a metered connection without shared service lines unless otherwise approved or noted below.

Accessory dwelling units (ADU's) constructed as a separate structure in a new development project, or on an existing developed lot that may be subdivided in the future, shall be served with a separate individual water service line and metered connection.

Attached ADU's, or detached ADU's constructed on an existing developed lot that cannot be subdivided, may share a water service line and metered connection with District approval.

(b) *Commercial and Multi-Family*. Commercial or multi-family structures with shared interior plumbing systems constructed under the current International Building Code can be served with a single metered domestic water service connection per building.

(c) *Mixed Use*. If residential, commercial and/or multifamily uses are located within the same building, separate residential, commercial and/or domestic service lines and metered connections are required for each use classification, and the interior plumbing systems shall be separated accordingly.

(d) *Fire Protection*. Building fire protection systems shall be installed as required by the Fire Marshal. Residential fire sprinklers may be supplied with either a dedicated service line, or a common-supply or flow-through type system on a combined fire / domestic service line, in accordance with District Standard Details. Commercial and multifamily fire service lines shall be separate connections from domestic use and sized in accordance with current Fire and Building Code requirements.

(e) *Temporary Services*. Metered temporary water services for construction or irrigation uses may be approved at the discretion of the District and in accordance with District Code Section 6.20.230. These services may be plumbed off an approved permanent domestic service line with a branched or bullhorn connection and an appropriate backflow assembly, but must be removed at the end of the development two-year warranty period.

(2) *Service Line Material and Installation.* New service lines from existing mains may be installed by District staff or the developer's contractor. In either case, District staff shall make the tapped connections on the existing water main. The developer shall be responsible for all costs associated with the service line installation whether the work is done by District staff or a private contractor.

Upon completion of the installation of the water main but before testing and disinfection, water service lines shall be installed from the water main to the property line as shown on approved construction plans and in accordance with the District Standard Details. All water services shall end within public right-of-way or a dedicated District utility easement.

Service lines for residential property up to one-inch meter installation shall be Type "K" one-inch (minimum size) continuous copper service lines meeting the ASTM Specifications B-88-47. Services up to two-inch meter installation shall be two-inch diameter Type "K" copper or brass. Larger service lines shall be of the type and style as designated in the approved construction plans.

Corporation stops and the single meter shut-off valves shall be Mueller, Ford, or A.Y. McDonald with the type and style noted on the standard details. Included as a part of the service connection shall be the furnishing and installation of the meter box complete with lid, set flush with the proposed finished grade of the lot in the designated location near the property line, all as shown on the standard details. The angle type of shut-off valve shall be set inside the meter box in a proper position for installation of a future meter by the district.

Service lines between the main and the property line shall be placed at a minimum three-foot depth for its full length, taking into consideration the final finished grade of the proposed street and any drainage facilities. If the minimum depth cannot be achieved, such as under a swale or over a storm drainage detention vault, the service line may be installed in Schedule 80 PVC conduit or District approved equivalent.

Upon completion of each service line as indicated herein, the developer shall flush the service line to remove the debris that may interfere with the future meter installation, and further verify that the service line has full pressure and flow to the meter box.

New water service lines that are not in active use (i.e. temporary irrigation) at the end of the Developer Extension two-year warranty period shall be removed at the main line pipe at the developer's expense.

(3) *Water Meters.* Meter services and meter boxes shall be located along the frontage of the structure unless otherwise approved by the District. Meter boxes shall be set to final grade after installation of the adjacent sidewalk and initial base pavement layer. All grade adjustments shall be made prior to final pressure testing of the system, except as approved by the district. Service inlets shall be centered at inlet end of box and faced toward outlet end of box parallel with long sides.

All residential, commercial, and multifamily meters, and private service lines for domestic and fire protection uses, shall be the minimum size per the current Building, Fire and /or Uniform Plumbing Codes in accordance with the proposed use, occupancy, and number of fixture units.

If fire sprinklers are required on single family residential construction, including duplexes and townhomes, a minimum one-inch meter is required by the District.

(a) *Meter Size Up To Two Inches*. New meters one inch and smaller will be installed by the district at the developer's expense upon approval of a connection permit and payment of appropriate fees and connection charges.

Meters greater than one inch and up to two inches in size shall be furnished and installed by the district upon approval of a connection permit and payment of appropriate fees and connection charges, and installation shall be paid by the developer on a time and material basis.

(b) *Meter Size Greater Than Two Inches*. The Developer shall purchase and supply all meters larger than two inches from a manufacturer designated by the District. The District will supply and install the meter communication endpoint device. Meter information shall be submitted to the District for approval prior to ordering. The meters shall be installed by the Developer and locked off by the

District until approved for service. All associated valves, piping, vaults or meter boxes, and drain lines shall be furnished and installed by the developer in accordance with District Standard Details.

Water meters and boxes shall be adjusted to the final grade of the developed site and/or building connection prior to the end of the Developer Extension two-year warranty period at the developer's expense.

6.20.345 Water pipe testing and disinfecting.

(1) *Pressure Testing.* All pipelines shall be pressure tested and disinfected prior to acceptance of work. A fire hydrant meter shall be required and procured from the district for all water utilized for flushing pipelines. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the developer. The developer shall provide an oil-filled pressure gauge with a range of zero to 300 psi.

In all instances, the contractor shall utilize a Washington State approved double check valve type backflow prevention assembly to protect the potable water supply while filling, flushing, and disinfecting the particular water main. The double check valve assembly shall have been tested within the last 30 days by a Washington State-certified BAT whenever used to connect to the water system, both prior to and during the project. The contractor shall provide a test certificate to the district.

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required by the District, the developer shall furnish and install temporary blocking.

As soon as pipe is secured against movement under pressure, it may be filled with water. Satisfactory performance of air valves shall be checked while the line is filling. A temporary air vent will be required if the fill point is higher than the line being filled.

The developer shall pre-flush all water mains after water has remained in the main for 24 hours and before pressure testing the main unless otherwise approved by the District.

After the pipe is filled with water and all air expelled, it shall be charged by a pump to a hydrostatic test pressure of 250 psi, measured at the high point on the pipeline and this pressure shall be maintained for a period of not less than 30 minutes to ensure the integrity of the thrust and anchor blocks. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrostatic tests shall be performed on every complete section of water main between two valves, and each valve shall withstand the same test pressure as the pipe with no pressure active in the section of pipe beyond the closed valve.

Feed for the pump shall be drawn from a clean container wherein the actual amount of makeup water utilized can be measured periodically during the test period.

A separate 200 psi pressure test for 60 minutes will be required after all water services are cut to grade with angle stops or setters installed in the meter boxes.

In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline. The leakage test shall be conducted at 200 psi for a period of not less than 60 minutes. The allowable leakage rate per 1,000 feet of each size pipeline is as follows:

Pipe Size	Allowable Leakage Gal. per Hour per 1,000 Ft. @ 200 psi
4”	0.21
6"	0.32
8"	0.42
10"	0.53
12"	0.63
16"	0.85

Defective materials or workmanship discovered as a result of the tests shall be replaced by the developer at their expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be rerun at the developer’s expense until a satisfactory test is obtained.

(2) *Disinfection.* Before pipelines are placed in service, the water mains and appurtenances shall be disinfected in accordance with AWWA C651 and in conformance with the requirements of the State of Washington Department of Health Services.

In the process of chlorinating newly laid water pipe, all valves, fire hydrants and other District designated appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

Chlorine shall be applied in the following manner to secure a concentration in the pipe of at least 50 ppm is maintained for a period of 24 hours:

(a) Injection of a sodium hypochlorite solution through a corporation cock at beginning of section after pipe has been filled, and with water exhausting at the end of section at a rate controlled to produce the desired chlorine concentration.

(b) The use of dry chlorinated lime for achieving disinfection is not allowed.

(c) The district shall provide the sodium hypochlorite solution for disinfection purposes. No other source of disinfection shall be allowed.

The developer shall be responsible for flushing all water mains prior to water samples being taken by the district. The water mains shall be flushed at a rate to provide a minimum two and one-half feet per second velocity in the main. Water mains shall be flushed until system achieves less than one ppm chlorine residual level.

In all disinfection processes, the developer shall take particular care in flushing and discharging the chlorinated water from the mains to ensure that the flushed and chlorinated water does no physical or environmental damage to property, streams, storm sewers or any waterways. Flushing water must be disposed of in accordance with Washington State Department of Ecology standards. Flushing water shall require de-chlorination to prevent damage to the affected environment, particularly aquatic and fish life of receiving streams. Discharge of chlorinated flush water to the sanitary sewer system is prohibited, except with district approval.

District Water Quality staff shall designate sampling locations and obtain all disinfection process samples in accordance with AWWA requirements for testing purposes.

After the pipeline has been flushed and the system residual chlorine concentration has been obtained throughout the section of line, the water in the line shall again be left standing for a period of 24 hours. Following this, a water sample will be collected and tested. The line shall not be placed in service or connected to an existing main until a satisfactory bacteriological report has been received.

If disinfection of mains by the above methods proves unsatisfactory and the lab report indicates any type of bacteria count, then the developer shall re-chlorinate using other methods in accordance with AWWA C651, approved by the district.

Only district representatives will be allowed to operate existing and new tie-in valves. The developer's personnel are expressly forbidden to operate any valve on any section of line which has been accepted by the district.

(3) *Early Water System Use.* After the water system is substantially complete and when the use of the water system is requested by the Developer for fire protection or other water uses prior to final project completion, the District may approve the charging of water mains for early fire protection or water use subject to the following conditions:

(a) Pressure test completed
(b) System has been flushed
(c) Results from purity test have been received and are satisfactory
(d) All mainline is installed such to provide adequate flows
(e) All valves and all hydrants are operational
(f) All meter setters and boxes are installed and tested

If the Developer requests this option and meets the above conditions, the District may activate the water system. At this time, a copy of the Final Water Availability Certificate will be sent to the appropriate jurisdiction and Fire Marshal.

Exhibit 2

Article III. Sanitary Sewer Systems

6.20.350 Objective.

This article is intended to present information and provide an outline of the minimum general standards required by Silver Lake Water and Sewer District for developer constructed sanitary sewer line facilities and improvements which are to be transferred to and operated by the district.

6.20.360 General.

Detailed plans shall be submitted for the district's review, which provide the location, size, type and direction of flow of the proposed sewers and the connection with existing sewers. These plans shall be separate from water plans and shall conform to the current district plan preparation requirements.

Construction of new sewer systems or extensions of existing systems will be allowed only if the existing receiving system is capable of supporting the added hydraulic load.

Collector and interceptor sewers shall be designed for the ultimate development of the tributary areas.

Sewer systems shall be designed and constructed to achieve total containment of sanitary wastes and maximum exclusion of infiltration and inflow.

Computations and other data used for design of the sewer system shall be submitted to the district for approval as appropriate and required by the District.

The sewage facilities shall be designed and constructed in conformance with the current State Department of Ecology Criteria for Sewage Works Design and WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, and current amendments thereto, revised as to form to make reference to local governments, and as modified by the district's requirements and standards.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressure or deformation of the pipe, nor seriously impair flow capacity.

All sewers shall be designed to prevent damage from superimposed loads. Proper allowance for loads on the sewer because of the width and depth of trench should be made. When standard-strength sewer pipe is not sufficient, extra-strength pipe shall be used.

Before final acceptance of the sewer system by the District, all pipes, manholes, and other appurtenances shall be cleaned of all debris and foreign material, and tested to District standards. The impacted public Right-of-Way area shall be constructed or restored to the satisfaction of the Land Use Agency.

The District shall own, operate and maintain the public sewer system within the public right-of-way and/or dedicated District utility easement including the main line and lateral pipes. The private side sewer system from the end of the sewer lateral to the structure shall be the responsibility of the property owner.

6.20.370 General requirements.

(1) All discharges to the District sewer system shall meet the requirements of District Code Chapter 6.10.

(2) Work shall be performed only by contractors experienced in laying public sewer mains in accordance with the requirements of the project Developer Extension Agreement and all required permits, licenses, and regulations of the land use agency.

(3) Prior to any work being performed, a copy of the survey cut sheets and proposed construction schedule shall be provided to the District.

(4) All materials shall be new and undamaged.

(5) Developer shall obtain approval of materials to be used from the district through a submittal review process prior to ordering of materials.

(6) Sewer mains and laterals shall be laid only in dedicated existing or future public rights-of-way, or utility easements that have been or will be granted to the district.

(7) All private side sewer connections to the district sewer system shall be a gravity connection unless otherwise approved by the District.

(8) Existing facilities shall be addressed in accordance with District Code Section 6.20.210.

(9) District sewer laterals over 50 feet long within the Right-of-Way or dedicated utility easement, and private side sewer lines over 200 feet long from the end of the District lateral, are prohibited. A sewer main extension would be required to provide service beyond those limits unless otherwise approved by the District.

(10) Separation between water and sewer lines shall be in accordance with the current State Department of Ecology Criteria for Sewage Works Design. There shall be a minimum of five feet of horizontal separation between District sewer mains and storm water or other utility lines unless approved by the District.

(11) Sewer mains shall generally be located parallel to and five feet southerly or westerly of street centerline where possible.

(12) The minimum slope for continual gravity mains shall be one-half (0.5%) percent. The minimum slope for sewer laterals shall be two percent and the maximum shall be 100 percent (45 degrees).

(13) On dead end run gravity mains where no further extension is needed or planned, the minimum slope shall be one percent (1.0%) and wye connections used for laterals.

(14) The maximum distance between manholes shall be 400 feet unless approved by the district.

(15) Manholes shall be eight feet deep unless approved by the district. The minimum depth of a manhole allowed by the District shall be five feet.

(16) Manholes greater than 18 feet deep shall be a minimum of 54 inches inside diameter.

(17) Manholes greater than 25 feet deep should be submitted for preliminary design review prior to final approval by the District. Deep designs will not be approved if alternative service can be provided with shallower gravity service as deemed appropriate for the site by the District.

(18) Manholes shall be provided with a one-tenth foot drop across the channel.

(19) Locking lids shall be provided for all manholes and all manhole lids shall have the word “sewer” cast integrally onto its surface.

(20) All manholes shall be accessible to maintenance vehicles via a drivable surface.

(21) Front lot corners and a property line stake with a 10-foot and 15-foot offset shall be staked prior to construction for sewer lateral location.

(22) Sewers laterals shall be located a minimum of 10 feet from the side lot line and extended past dry utilities unless otherwise approved by the District.

(23) Sewer Pre-Treatment and FOG facilities shall be designed and installed in accordance with District Code Chapter 6.10. A permit application and payment of applicable fees are required for all new installations.

(24) Pipe trenches shall not be backfilled until pipe and bedding installation has been inspected by the district.

(25) Road restoration shall be per Snohomish County, City and/or State design and construction standards. The developer shall become familiar with all County, City and State conditions of required permits, and shall adhere to all conditions and requirements.

6.20.380 Materials and Installation.

(1) *Sewer Mains and Laterals.* See also Sewage Lift Stations, Article IV of this chapter, for additional requirements on Lift Station force mains.

Sewer mains to be installed shall be of material noted below. Pipe material shall be consistent and unchanged between manholes, with the material type determined by the deepest cover requirement.

Purpose	Material	Cover	Max. Slope
Gravity Sewer and Laterals	PVC - ASTM D3034 SDR 35	5' – 18'	18% for all unless otherwise approved. Pipe anchors may be required if over 18%.
	Ductile Iron, Class 52	≥18’ and/or 3’ – 5’	
	C900 - PVC AWWA DR 18	≥18’ and/or 3’ – 5’*	
Force Mains	Ductile Iron or HDPE*	≥4'	

*Locate tape required for shallow C900 or HDPE

PVC pipe shall be a minimum Class S.D.R. 35 and be manufactured in accordance with ASTM D3034. The pipe and fittings shall be furnished with bells and spigots, which are integral with the pipe wall. Pipe and fittings shall be of the same material. Pipe joints shall use flexible elastomeric gaskets conforming to ASTM D3212. Nominal laying lengths shall be 20 feet and 13 feet. PVC C900 pipe shall conform to AWWA C900 DR 18, and shall be installed with locate tape in shallow applications.

Each length shall be plainly marked with the manufacturer’s identification and class of pipe. The pipe shall be furnished with mechanical joint or push-on type joint, except where plans call for flanged ends. Joints shall conform to AWWA C111.

All pipe shall be jointed by the manufacturer’s standard coupling, be all of one manufacturer, be carefully installed in complete compliance with the manufacturer’s recommendations. Welded HDPE pipe connections and joints shall only be made by certified personnel. The interior of the welded joints shall be made flush with the surrounding pipe surface prior to final acceptance.

Ductile iron pipe shall conform to AWWA C151 and shall be Class 52. Pipe and fittings shall be of the same material. The pipe shall be epoxy lined to a nominal thickness of 40 mils with a minimum lining thickness of 30 mils. Products meeting this standard are “Protecto 401” or District approved equal. The exterior shall be coated with an asphaltic coating. If needed, all ductile iron fittings shall be short-bodied complying with AWWA C110 or C153 for 350 psi pressure rated mechanical joint fittings and 250 psi pressure rated flanged fittings. All fittings shall be epoxy lined.

Restrained joint ductile iron or C900 pipe is required for installation in areas of fill or previously disturbed soil for both main line and District owned lateral pipe. Fittings in areas requiring restrained joints shall be

mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, or approved equal for ductile iron pipe. All ductile iron couplings shall be mechanical joint sleeves.

Restrained joint ductile iron pipe shall be push-on joint pipe with Field Lok, TR Flex or District approved equal gaskets. Restrained joint C900 pipe connections shall be approved by the District.

The sewer pipe shall be laid upgrade from point of connection on the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade. When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug.

Wherever movable shoring is used, pipe shall be bedded, backfilled and anchored to the satisfaction of the District before each move. Any indication that joints are not being held shall be sufficient reason for the district to require restraints, whether or not movable shoring is being used.

All gravity pipe shall be laid in straight lines and at uniform rate of grade between manholes. Variance from established line and grade shall not be greater than one-half inch unless the variation results in a level or reverse sloping invert. Any corrections required in line and grade shall be reviewed with the district and shall be made at the expense of the developer.

All extensions, additions and revisions to the sewer system, unless otherwise indicated, shall be made with sewer pipe jointed by means of a flexible gasket, which shall be fabricated and installed in accordance with the manufacturer's specifications.

All joints shall be made up in strict compliance with the manufacturer's recommendations and all sewer pipe manufacture and handling shall meet or exceed the ASTM recommended specifications.

Pipe handling after the gasket has been affixed shall be carefully controlled to avoid disturbing the gasket and knocking it out of position, or loading it with dirt or other foreign material. Any gaskets so disturbed shall be removed, cleaned, relubricated if required, and replaced before the rejoining is attempted.

Care shall be taken to properly align the pipe before joints are entirely forced home. During insertion of the tongue or spigot, the pipe shall be partially supported by hand, sling or crane to minimize unequal lateral pressure on the gasket and to maintain concentricity until the gasket is properly positioned. Since most flexible gasketed joints tend to creep apart when the end pipe is deflected and straightened, such movement shall be held to a minimum once the joint is home.

Sufficient pressure shall be applied in making the joint to assure that it is home, as described in the installation instructions provided by the pipe manufacturer. Sufficient restraint shall be applied to the line to assure that joints once home are held so, until fill material under and alongside the pipe has been sufficiently compacted. At the end of the workday, the last pipe laid shall be blocked in an effective way to prevent creep.

For the joining of dissimilar pipes, suitable adapter couplings shall be used which have been approved by the district.

(2) *Bedding and Backfill.* All gravity sewer pipe shall be bedded with pea gravel. The pipe shall be bedded from a depth of four inches below the pipe to 12 inches above the pipe. The bedding material shall extend across the full width of the trench and shall be compacted under the haunches of the pipe.

Clay or bentonite dams shall be installed across the trench and to the full depth of the granular material in all areas of steep slopes, high groundwater, stream crossings and wetlands to prevent migration of water along the pipeline. Drainage facilities shall be installed to accommodate water buildup behind the dams in accordance with District Standard Details.

Backfill in roadway sections or structural areas shall be placed and compacted to a minimum of 95 percent of the Modified Proctor dry maximum density per ASTM D1557 in accordance with District Standard Details, as well as Snohomish County, City and/or State requirements.

Backfill in unpaved easements or non-structural areas shall be placed and compacted to a minimum of 90 percent of the Modified Proctor dry maximum density per ASTM D1557. Recycled concrete is not allowed for use in district trench sections, no exceptions.

Backfill compaction shall occur in sufficiently thin lifts to achieve the density requirements specified. Copies of the compaction results shall be provided to the District prior to final acceptance.

When metallic pipes are backfilled or in contact with corrosive or cementitious material (i.e. CDF), the metallic pipe shall be wrapped using American V-Bio Poly Encasement or equal and the pipes bedded and covered with 12” of clean, imported material.

(3) *Manholes.* Manholes shall be of the offset type and shall be precast concrete sections with either a cast in place base, or a precast base made from a 3,000 psi structural concrete. Joints between precast wall sections shall be grouted on the exterior and confined O-ring or as otherwise specified.

All sewer mains shall end with a manhole unless otherwise approved by the District. Lamp holes or cleanouts are not allowed on the end of sewer main lines.

The minimum diameter for manholes shall be 48 inches to a depth of 18 feet, and 54 inches for depths of 18 feet and greater. The district may require the diameter to be increased beyond the minimum based on future needs or size of pipe connections in accordance with the District Standard Details. Shallow manholes shall be 54 inches in diameter minimum.

For connections to existing systems, a concrete coring machine suitable for this type of work shall be utilized in making the connection. The connection shall be made with a watertight flexible rubber boot, Kor-N-Seal or District approved equal. Grouted sand collars shall only be used with District approval. The new pipe connection shall be sealed with a watertight plug until the new pipe system has been installed and approved.

Smaller diameter extension pipes shall match the crown elevation of larger existing main line sewer pipes in the manhole. The existing manhole shall be rechanneled as required, and coring through the existing bench may be considered and authorized by the District as appropriate for the conditions..

The developer shall be responsible for any existing defects in the existing manhole unless these defects are witnessed by a representative of the district prior to any work being performed to make the connection. The contractor shall be required to remove any and all deleterious material in the existing manhole and downstream reaches as a result of this work.

Manholes located in easements or outside of paved areas shall have reinforced concrete collars with a minimum size of 48 inches diameter by 12 inches thick.

(a) *Manhole Sections.* Manhole sections shall be placed and aligned so as to provide vertical sides and vertical alignment of the ladder steps. The completed manhole shall be rigid, true to dimension, and be watertight. Rough, uneven surfaces will not be permitted.

(b) *Manhole Steps and Ladders.* Manhole steps shall be polypropylene, Lane International Corp. No. P13938 or equal and installed in accordance with District Standard Details. Ladders shall be polypropylene, Lane International Corp. or equal, and shall be compatible with steps.

(c) *Grade Adjustment.* The manhole shall be set to provide not less than 8 inches or more than 18 inches of adjustment between the top of the cone or slab and the top of the manhole frame.

Manhole adjusting rings shall conform to the ASTM C2, Grade MA. The outside and inside of manhole adjusting rings and the joints of precast concrete sections shall be plastered and troweled smooth with one-half inch (minimum) of mortar to attain a watertight surface. No wood shall be used for adjustment.

(d) *Channels.* Channels shall be made to conform accurately to the sewer grade and shall be brought together smoothly with well-rounded junctions, satisfactory to the district. The channels shall be field poured with concrete, no other fillers are permitted, after the inlet and outlet pipes have been laid and firmly grouted into place at the proper elevation. Allowances shall be made for a one-tenths foot drop in elevation across the manhole in the direction of flow. Channel sides shall be carried up vertically from the invert to three-quarters of the diameter of the various pipes. The concrete shelf shall be warped evenly and sloped three-eighths inch per foot to drain. Rough, uneven surfaces will not be permitted. Channels shall be constructed to allow the installation and use of a mechanical plug or flow meter of the appropriate size. Terminating manholes, where sewer extension may occur, shall be channeled accordingly.

(e) *Drop Manholes.* Drop manholes on new construction require district approval and shall be constructed with an inside drop structure in a 54-inch manhole. Outside drop connections are not allowed. Approval will be limited to future extensions from deep sewers. Where extension from deep sewers is concurrent with deep sewer construction, drop manholes will not be allowed. Drop manholes shall, in all respects, be constructed as a standard manhole with the exception of the drop connection.

(f) *Lift Holes and Steel Loops.* All lift holes shall be completely filled with expanding mortar, smoothed both inside and outside, to ensure watertightness. All steel loops shall be removed, flush with the manhole wall. The stubs shall be covered with mortar and smoothed. Rough, uneven surfaces will not be permitted.

(g) *Frames and Covers.* Frames shall be cast iron and covers shall be ductile iron. Castings shall be free of porosity, shrink cavities, cold shuts or cracks, or any surface defects, which would impair serviceability. Repair of defects by welding, or by the use of "smooth-on" or similar material, will not be permitted. Frames and covers shall be machine finished or ground on seating surfaces so as to assure non-rocking fit in any position and interchangeability of covers. Frames and covers shall be provided with three-bolt locking lids. Rings and covers shall be positioned so one of the three locking bolts is located over the manhole steps and shall be adjusted to conform to the final finished surface grade of the street or easement to the satisfaction of the district. Manhole frames and covers shall be in accordance with District Standard Details. Must meet the (AASHTO) M306 specification and have replaceable lock down nuts.

(h) *Manhole Marker Posts.* A fiberglass manhole marker post shall be located adjacent to all manholes located in easement areas. The marker post shall be green in color, three and three-quarters inches wide (flat), 60 inches long and furnished with a three-inch-by-three-inch high intensity white reflector (250 Candle Power) and a flexible anchor barb. Each post shall include the following decal: "Caution Sewer Manhole. Before digging, Call 811, Utility Underground Location Center." Manhole markers shall be Carsonite Utility Marker CUM 375.

The marker posts shall be set to leave 36 inches of the post exposed above grade.

Distance from the marker to the manhole shall be stenciled on the marker with two-inch letters.

(i) *Manhole Casting Adjustment*. Manhole castings shall be adjusted to final grade after asphalt paving is completed on new development construction. Existing manhole castings within the impacted development work area shall be replaced and upgraded to current standards in accordance with the District Standard Details.

6.20.390 Sewer Laterals and Connections.

(1) *Connection Requirements.* A sewer lateral is the portion of a District owned sewer line between a sewer main and the right-of-way / property line or a dedicated District utility easement boundary. A Developer Extension Agreement may be required for the installation of a new sewer lateral in accordance with District Code Chapter 6.15. All applicable specifications given herein for sewer construction shall be held to apply to sewer laterals.

Existing developed parcels making application to connect to only District water or sewer service will be required to connect to both sewer and water at the same time if services are available, such as the presence of an existing water main along the frontage or sewer lateral to the property line. This requirement may be

waived at the discretion of the District if a Developer Extension is required for utility service in accordance with District Code Chapter 6.15.

(a) *Residential*. Each lot or unit of an attached or detached single family residential structure, including townhomes, constructed under the current International Residential Code with independent interior plumbing systems shall be served with an individual sewer lateral connection without shared service lines unless otherwise approved or noted below.

Duplex structures may share one 6-inch lateral connection between two units.

Accessory dwelling units (ADU's) constructed as a separate structure in a new development project, or on an existing developed lot with either an available sewer lateral or that may be subdivided in the future, shall be served with a separate individual sewer lateral connection.

Attached ADU's, or detached ADU's constructed on an existing developed lot without an available sewer lateral and cannot be subdivided, may share a single sewer lateral connection with District approval.

(b) *Commercial and Multi-Family*. Commercial or multi-family structures constructed under the current International Building Code with shared interior plumbing systems can be served with a single shared lateral connection per building.

(c) *Mixed Use*. If residential, commercial and/or multifamily uses are located within the same building, separate residential, commercial and/or domestic laterals are required for each use classification, and the interior plumbing systems shall be separated accordingly.

(d) *Recreational Vehicle Use*. Recreational Vehicle connections are only allowed as interim facilities for up to 180 days during the construction of a permanent dwelling unit in accordance with City or County land use regulations. Septage and RV holding tank discharges are not allowed within the District.

(2) *Sewer Lateral Material and Installation.* Sewer laterals shall be a minimum six-inch diameter pipe and the same material as the sewer main line unless otherwise approved by the District. Lateral connections shall be installed on the main line at a minimum 24 inch spacing.

Laterals shall be connected to a tee or wye provided in the sewer main where such is available, utilizing approved fittings or adapters. The lateral shall rise at a maximum slope of 45 degrees and a minimum of two percent from the sewer main.

Where no tee or wye is provided or available, a new lateral connection shall be made by machine-made tap and saddle. Inserta Tee, Fowler Manufacturing Company or approved equal may be utilized on concrete pipe only. Romac Style "CB" Sewer Saddle shall be utilized on PVC pipe.

Up to three sewer laterals may installed in a sewer manhole with a minimum two-foot spacing in between each connection point. Manhole laterals shall be installed to match the crown elevation of the sewer main line pipe. The angle of flow between the lateral and main line in a manhole shall not exceed 90 degrees. Manholes shall be channeled accordingly.

Installation of sewer laterals to adjacent parcels along a gravity sewer main extension may be required for the developer to be eligible for a Reimbursement Agreement in accordance with District Code Section 6.15.030.

The minimum lateral depth shall be six feet at the right-of-way / property line or District easement line, except where existing improvements, proposed improvements or topography may dictate otherwise. The elevations of the lateral connections shall be of sufficient depth to serve all existing and potential future basements by gravity unless otherwise approved by the District.

Each sewer lateral shall be provided with a 12-foot-long two-by-four wooden post, which extends from the end of the six-inch pipe. The exposed area of this post shall be painted white and shall be stenciled with "SEWER" in two-inch black letters. A 12-gauge (minimum) wire shall be wrapped around and stapled the full length of the two by four.

No bends are allowed in the lateral between the sewer main line and the end of the District owned pipe unless otherwise approved by the District.

Standing or vertical sewer laterals shall be constructed only with preapproval of the district. Standing sewer laterals may be required, or allowed, at the sole discretion of the district. When allowed, standing sewer laterals will be constructed of the same material as the main line sewer. Standing sewer laterals may be shared between two individual connections with the appropriate alignment.

6.20.400 Testing gravity sewers for acceptance.

At the district's discretion, gravity sewer lines shall be inspected for line and grade by checking each section between manholes for alignment. A full circle of light shall be seen by looking through the pipe at a light held in the manhole at the opposite end of the section of sewer line being inspected. Any corrections required in line and grade shall be made at the expense of the developer. Visual confirmation will require confined space entry compliance and will normally be considered where settlement is suspected.

(1) *Preparation for Testing for Leakage.* The completed gravity sewer, including sewer laterals, shall be tested after installation of all underground utilities and compaction of backfill. Prior to testing, the developer shall be required to clean and flush all gravity sewer lines. This will be permitted prior to paving. The sewer shall then be tested by the low-pressure air test method and/or an infiltration test. In certain conditions an exfiltration test may be required by the district.

The first section of pipe not less than 300 feet in length installed by each crew shall be tested, in order to qualify the crew and/or the material. A successful installation of this first section shall be a prerequisite to further pipe installation by the crew. At the developer's option, crew and/or material qualification testing may be performed at any time during the construction process after at least two feet of backfill has been placed over the pipe.

(2) *CCTV Inspection.* After the gravity sewer lines have been substantially completed, the developer shall perform a complete televised inspection of all main lines and laterals in accordance with current District sewer video requirements. The pipes shall be cleaned, flushed and manholes channeled, prior to the CCTV inspection being performed.

The developer shall perform a complete televised inspection of the sewer pipe and laterals and provide to the district an electronic file with a log of the television inspection. The camera shall be a pan and tilt type equipped with adequate light and focusing to allow inspection of sewer main, laterals and full circumference inspection of main line joints and fittings.

Immediately prior to the televised inspection, the developer shall run water through each sewer line for five to 10 minutes to provide water for detection of any adverse grade sections visible by the presence of ponded water. The camera shall be stopped periodically at the ponded areas and the depth of water shall be measured and recorded. During the inspection, all tees and other fittings shall be logged as to exact location within one percent maximum error in measurement, wherein accuracy is checked with various fittings and the terminating manhole.

The district shall be notified 48 hours prior to any television inspection and this work shall be performed on a schedule to allow the district to witness the inspection. Alternately, the developer may have the District perform the CCTV inspection and pay for the actual costs.

Any defects in material or installation identified by the television inspection shall be repaired as required by the district at the developer's expense.

A final CCTV inspection may be performed on the main line, laterals, and side sewers by the District at the end of the Developer Extension two-year warranty period. If defects are found that need correction, the cost of the final CCTV inspection shall be the responsibility of the developer.

(3) *Low Pressure Air Test.* The developer shall furnish all facilities and personnel for conducting pressure tests. Methods other than low pressure air test shall be subject to the approval of the district. Pressure gauge to be oil filled with a zero to 30 psi read range. The sewer pipe shall be tested for leaks through the use of air (unless exfiltration test is approved) in the following manner:

Following the pipe cleaning, utility installation, and paving, the pipe installation shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches four pounds per square inch greater than the average back pressure of any ground water that may submerge the

pipe. 0.40 pounds per square inch is to be added per one foot of water table over the pipe to a maximum of six psi. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 pounds per square inch while maintaining the stipulated pressure greater than the pipe section's average adjacent groundwater back pressure.

The pipeline shall be considered acceptable if the total rate of air loss from any section tested in its entirety between manholes, cleanouts or pipe ends does not exceed the following table:

Length of 8" Pipe	Length of 6" Pipe (ft)								
	0	50	100	150	200	250	300	350	400
100	5:00	5:00	5:00	5:00	5:00	5:38	6:14	6:12	6:08
150	5:00	5:00	5:00	5:30	6:10	6:30	6:26	6:22	6:18
200	5:00	5:22	6:00	6:40	6:44	6:38	6:34	6:30	6:26
250	5:52	6:32	6:48	6:58	6:50	6:44	6:40	6:36	6:32
300	7:02	7:20	7:10	7:02	6:56	6:50	6:44	6:40	6:36
350	7:34	7:22	7:14	7:06	7:00	6:54	6:50	6:44	6:42
400	7:34	7:24	7:16	7:08	7:02	6:58	6:52	6:48	6:44

Test time in minutes and seconds. Minimum test period is five-minute duration.

Test times will be provided by the engineer for combinations other than eight-inch mains and six-inch laterals.

If the pipe installation fails to meet these requirements, the developer shall determine at his own expense the source or sources of leakage, and shall repair (if the extent and type of repairs proposed by the developer appear reasonable to the district) or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of this low-pressure air test or the alternative water exfiltration test before being considered for acceptance.

Plugs used to close the sewer pipe for the air test shall be securely braced to prevent the unintentional release of a plug. Gauges, air piping manifolds and valves shall be located at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Air testing apparatus shall be equipped with a pressure release device such as a rupture disk or a pressure relief valve designed to relieve pressure on the pipe under test at six psi.

(4) *Deflection Test.* If required by the District after the CCTV inspection, deflection tests shall be performed on all ASTM D3034 PVC gravity sewer mains by pulling a mandrel through the pipe. Unless otherwise

approved by the District, the allowable deflection test limit shall be five percent of the base inside diameter in accordance with APWA test procedures and the nominal mandrel size shown in the following table:

Nominal Pipe Size (in.)	Base Inside Diameter (in.)	Mandrel Size, Diameter (in.)
6	5.74	5.45
8	7.67	7.28
10	9.56	9.08
12	11.36	10.79

Deflection testing is not required for ductile iron or pipe diameters 15 inches and greater.

The sewer lines shall be thoroughly cleaned prior to the deflection test.

6.20.410 Private side sewers.

Private side sewers are located outside of the public right-of-way or District easements and are the extension from the end of the District sewer lateral to the building connection point.

A permit application and payment of applicable General Facility Charges and fees are required for all new side sewer connections, as well as repairs or revisions to existing side sewers, in accordance with District Code Section 6.20.220 and 9.05.070. Construction on private property may be performed by owner if approved by the District.

(1) All sewer service connections to district facilities shall be gravity service unless otherwise approved by the District. If gravity service is not feasible, interior sewage pumps may be authorized by the District and connection shall be made to the sewer system in accordance with the District Standard Details. A Pumping Agreement shall be executed between the District and the property owner and recorded on the property title. No exterior sewage pumps are allowed in the District.

(2) Private side sewer pipe for residential property shall be four inches or larger. Side sewer pipe for duplexes, multifamily, industrial, commercial, etc., shall be six inches or larger.

(3) Pipe material shall be PVC ASTM D3034, and shall be installed at two percent minimum grade. If minimum depths cannot be achieved, the pipe material shall be ductile iron or C900.

(4) Pipe shall be bedded with pea gravel or clean free draining sand.

(5) Side sewers shall be inspected by the district prior to backfilling. Side sewers shall be plugged and tested in the presence of the district inspector by a low-pressure air test or filling with water. Water leakage rate shall not exceed 0.31 gal./hr. for four-inch pipe and 0.47 gal./hr. for six-inch pipe, per 100 feet of pipe.

(6) At the connection point to the building, minimum cover shall be 18 inches over top of pipe from a point located 30 inches out from the structure.

(7) Parallel water and sewer lines shall be 10 feet apart horizontally wherever possible and have a vertical separation of 18 inches if a vertical crossing is necessary.

(8) No more than 100 feet is allowed between cleanouts. If multiple cleanouts are required on a straight section of pipe, they should be evenly spaced, or one cleanout placed near the middle of the run. Cleanouts are required for each combined bend equal to or greater than 90 degrees. Cleanouts shall be installed per District Standard Details.

(9) All pipe joints shall be rubber gasket type. Approved couplings shall be used when transitioning from one pipe type to another, such as from ductile iron or concrete to PVC.

(10) A cleanout shall be installed at the right-of-way or easement line with the installation of the private side sewer pipe in accordance with District Standard Details.

(11) Backwater valves shall be installed on all side sewers where required by the current Uniform Plumbing Code. If required, backwater valves shall be installed inside the structure for all new construction, but may be exterior for retrofit situations in accordance with District Standard Details. A Backwater Valve Agreement shall be executed between the District and the property owner and recorded on the property title.

(12) Prior to final connection to the structure, all side sewer and lateral pipes shall be flushed and cleaned, and all debris removed.

(13) Existing homes served by septic systems converting to district sewer service are to demonstrate proper abandonment of the septic tank to Snohomish Health District standards and WAC 246-272A-0300. The contractor shall provide a copy of documentation regarding sewage pumping to the district.

Exhibit 3

Article V. Cross Connection Control

6.20.550 Definitions.

(1) Unless a different meaning plainly is required, the definitions found in WAC 246-290-010 now in effect or as subsequently amended or reenacted are hereby adopted by reference as if set forth in full herein.

(2) "CCS" is defined as the cross connection control specialists of the Silver Lake Water and Sewer District or a delegated representative.

(3) "Owner" is defined as any person or entity with interest in the title to the property and/or a customer of the district.

(4) *Acronyms for Backflow Preventers.*

"AG" means air gap.

"Assembly" An entire backflow prevention unit. It includes the inlet and outlet shutoffs, as well as test cocks for inspection.

"AVB" means atmospheric vacuum breaker.

"DCVA" means double check valve assembly.

"RPBA" means reduced pressure backflow assembly.

"RPDA" means reduced pressure detector assembly (fire systems).

"SVBA" means spill resistant vacuum breaker assembly.

"PVBA" means pressure vacuum breaker assembly.

(5) *Other Definitions.*

"AHJ" means authority having jurisdiction.

"BAT" means backflow assembly tester.

"(The) District" means the Silver Lake Water and Sewer District.

"Common Supply Fire Service Line" mean a combination domestic and fire service line that is branched after the water meter. One branch supplies a separate fire protection system, and one branch supplies the domestic plumbing system, and the two branches do not connect or intermingle.

"Dedicated Fire Service Line" means a separate dedicated water service line that is used to supply only an internal fire protection system with no connection to the domestic plumbing system.

"Flow Through Fire Service Line" means a combination domestic and fire service line without separate branches for fire and domestic systems, and is interconnected with interior plumbing fixtures to ensure consistent water flow in the network.

"RCW" means the Revised Code of Washington.

"Single Family Residential" means attached or detached single family residential structures, including duplexes and townhomes, constructed under the current International Residential Code with independent interior plumbing systems.

"TI" means tenant improvement.

"UPC" means the Uniform Plumbing Code.

"USC/FCCCHR" means the University of Southern California Foundation for Cross Connection Control and Hydraulic Research.

"WAC" means the Washington Administrative Code.

"WSDOH" means the Washington State Department of Health.

6.20.560 Purpose and scope.

(1) This article establishes minimum standards for the district to protect the public potable water supply from possible contamination or pollution due to backflow or backsiphonage from an owner's private internal system into the public potable water system.

(2) This article establishes minimum cross connection control operating policies and requirements for installation, testing, and maintenance of approved backflow assemblies and describes (other) annual inspection requirements for existing and new backflow assemblies.

(3) The purpose of this article is not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this article. This article is applicable to all connections to the Silver Lake Water and Sewer District water system.

6.20.570 Authority.

This article is authorized by the Federal Safe Drinking Water Act of 1974 (and Amendments of 1996), the statutes of the state of Washington RCW Title 43 and WAC 246-290-490.

6.20.580 Responsibility.

(1) The district CCS will be responsible for administering the provisions of this article.

(2) Proper installation of required backflow assemblies shall be a condition of water service from the district's water supply system to any premises upon which the potential for backflow into the district system exists. Water service may be discontinued or refused until corrective action is taken in accordance with this article.

(3) Upon installation of an approved backflow assembly, the owner shall contact the district requesting inspection of said assembly or assemblies.

(4) Upon approval of the installation by the district, the owner shall have the assembly or assemblies tested by a state of Washington certified BAT and shall submit a copy of the test report to the district in accordance with this article.

(5) The owner shall be subject to all applicable inspection and permitting fees. All tests and reporting by a certified BAT shall be at owner's expense.

(6) The District shall own, operate and maintain the public water system within the public Right-of-Way (ROW) and/or dedicated District utility easement including the main line, service line and water meter. The private water system on the backside of the water meter, within a building or vault, or beyond the ROW or easement line if not metered, shall be the responsibility of the property owner, including all internal and external backflow assemblies.

6.20.590 Failure to comply – Violations – Penalties.

Any person, firm, or corporation who willfully violates any provisions or requirements of this article shall be subject to monetary penalties in accordance with District Code Chapter 9.05 and/or discontinuance of supply of district water to the service connection to the site where the violation exists and discontinuance of service shall remain in effect until corrective action has been completed in accordance with district standards.

6.20.600 Requirements.

(1) *General.*

(a) Compliance with the provisions of this article shall be a condition of receiving or to continue receiving the district's water supply. It is unlawful for any person to allow any contaminants or pollutants to backflow from their facility and/or property into the district distribution system.

(b) All domestic connections, except for residential customer class connections, shall require the installation of an approved RPBA at the service connection or alternate location as approved by the district. The RPBA shall be installed, inspected and tested in accordance with the provisions of this article.

(c) All multifamily customer class connections shall require, at a minimum, the installation of an RPBA at the service connection or alternate location as approved by the district. The RPBA shall be installed, inspected, and tested in accordance with the provisions of this article.

(d) Dedicated or Common Supply fire service lines for single-family residential structures shall have, at a minimum, a DCVA at the service connection or an alternate exterior location as approved by the district. Flow Through fire service lines may not be required to incorporate a backflow assembly if reviewed and approved by the District.

(e) Commercial fire service connections shall be equipped with either an RPBA or RPDA depending upon service size unless otherwise approved by the District. In cases where an appropriately sized RPDA is unavailable, an RPBA shall be installed upstream of the fire system components. Fire protection systems which serve both residential and commercial buildings from the same service connection shall require an RPDA or RPBA. All backflow and detector-check assemblies shall be installed, inspected, and tested in accordance with the provisions of this article.

(f) All temporary construction or hydrant meter connections shall require, at a minimum, the installation of an RPBA at the connection point unless otherwise approved by the district. The RPBA shall be installed, inspected, and tested in accordance with the provisions of this article.

(g) All irrigation services, other than single-family (private) systems, shall be a dedicated and metered connection to the water main. A minimum of a DCVA shall be installed at the service connection. Any irrigation system, including single-family, that uses chemical injection of any kind shall be isolated from the district's water system by an approved RPBA at the service connection (no exceptions). All backflow installations shall be installed, inspected, and tested in accordance with the provisions of this article.

(h) Single-family residences having hard plumbed irrigation systems shall apply one of the following means of backflow protection to protect the district's water supply: DCVA, AVB, PVBA, or SVBA, as appropriate to system design. Protection shall be installed, inspected, and tested in accordance with the provisions of this article.

(i) Backflow protection shall be evaluated and installed as required by the District CCS on buildings with an internal pressure booster pump or where water piping exceeds 30 feet above the finished grade.

(j) The district requires that the public water supply be protected from contamination from cross connections. The owner shall be responsible for water quality beyond the district service meter. This responsibility includes proper installation, annual testing and maintenance of required backflow

assemblies as provided in this article. Fixture isolation assemblies shall be installed in accordance with the UPC and/or AHJ as a condition of service.

(2) *Tenant Improvements.* All TIs that require any modification of the potable water or sewer internal plumbing shall require upgrade of the water and sewer systems to current district standards at the service connection, or alternate location as approved by the district that shall be installed, inspected, and tested in accordance with the provisions of this article.

(3) *Silver Lake Water and Sewer District.*

(a) For premises existing prior to the start of this program, the district will perform evaluations and inspections of plans and/or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction and the time allowed for the correction to be made. A maximum of 90 days will be allowed; however, this time period may be adjusted by the district CCS depending upon all reasonable factors including but not limited to the performance history of the backflow assembly and the degree of hazard involved.

(b) Premises are subject to inspection on or after the expiration date of required action to correct a cross connection. Water service to premises that fail to comply with the district's request shall receive three written notices via regular mail that water service to the premises will be terminated within a period not to exceed a total of 90 calendar days. In the event the owner informs the district of extenuating circumstances as to why the correction has not been completed, the district may grant a time extension up to but not exceeding an additional 30 days.

(c) Monetary penalties in accordance with District Code Chapter 9.05 may be imposed by the District beginning on the second written notice of non-compliance.

(d) If the district determines at any time that a serious threat to the public health exists, the water service may be terminated immediately; provided, however, that notice will be posted on the premises affected at the time said service is terminated and the proper AHJ is notified of the action.

(e) Inspection may be done during the initial installation and during on-site reviews of existing installations.

(4) *Owner.*

(a) An access agreement shall be recorded with the Snohomish County Auditor's office and provided to the district for access to all backflow assemblies inside of a building(s) that are required to protect the public potable water supply from possible contamination.

(b) When a test identifies a backflow assembly is not properly functioning, the owner shall correct the malfunction and have the assembly inspected and retested or replaced until proper backflow protection is restored.

(c) The owner shall be responsible for the elimination or protection of all cross connection on their premises.

(d) The owner after notification by the district shall, at their expense, install any and all required backflow assemblies.

(e) The owner shall, at their expense, be responsible for having all backflow assemblies tested:

(i) At the time of installation;

(ii) After a backflow incident involving the assembly or air gap:

(iii) Annually after installation or more frequently in cases of repeated failure to meet test criteria;

(iv) After an assembly is repaired, reinstalled or relocated; or

(v) An air gap is replumbed or replaced by a district approved assembly. The test shall be performed by a Washington State-certified BAT. The results of the tests shall be reported within 30 days to the district CCS on a form provided by or approved by the district.

(f) The owner shall immediately notify the district CCS of any malfunction of the approved backflow assembly that is revealed by periodic testing. The required repair or replacement of said assembly(ies) shall be completed within 30 days.

(g) The owner shall inform the district of any proposed modifications to their plumbing that creates a possible cross connection and also any existing cross connections of which the owner has actual knowledge but has not been found by the district.

(h) The owner shall install only backflow prevention assemblies from the current list of approved assemblies from the USC/FCCCHR as it exists now or as hereinafter changed, modified, amended, reenacted or recodified.

(i) Unless otherwise approved by the District, any owner having a private well or other auxiliary water source desiring to connect to the districts' water supply shall decommission the well per WAC 173-160-381 as it exists now or as hereinafter changed, modified, amended, reenacted or recodified. If an auxiliary water supply is approved by the District, an RPBA shall be installed at the service connection.

(j) The owner shall provide district personnel access to premises for cross connection inspection at the district's request. Failure to provide access to inspect facilities shall be grounds for termination of water service and/or installation of appropriate backflow assembly behind the meter by district crews at the owners' expense.

6.20.610 Installation and testing – Minimum requirements.

(1) Minimum requirements for the testing of all backflow assemblies shall be in accordance with the current USC/FCCCHR Manual of Cross-Connection Control adopted by reference herein.

(2) Backflow assemblies shall be installed in meter boxes, vaults, or "hot boxes" if greater than two-inch diameter unless otherwise approved by the district. Vaults shall have adequate clearances and depths to allow for inspection and testing. Assemblies that cannot be easily and readily inspected shall be relocated and replumbed as directed by the district. The owner shall contact the district for applicable installation requirements and standards.

(3) All bypass lines parallel to a line on which an approved backflow assembly is installed shall have an approved backflow assembly installed that offers the same level of protection as the assembly required by the district on the main line.

6.20.620 Backflow assemblies.

(1) Classifications of backflow assemblies include but are not limited to: RPBA, RPDA, DCVA, SVBA, or PVBA of make, model, and size included on the current approved backflow assemblies list approved by USC/FCCCHR as it exists now or as hereinafter changed, modified, amended, reenacted or recodified. Washington State has adopted the USC/FCCCHR list of approved backflow assemblies. All major backflow assembly manufacturers display their USC approvals on their respective websites and product literature. Consult manufacturer's data before purchasing any backflow assemblies.

(2) Any existing backflow assembly in use, but not currently listed by the USC/FCCCHR, can continue to be used provided all the following conditions are met:

(a) The assemblies were included on the USC/FCCCHR list of approved backflow assemblies at the time of installation;

(b) The assemblies have been properly maintained;

(c) The assemblies are functioning properly based on inspection by the district and testing by a certified BAT;

(d) The degree of protection of the district's water system is commensurate with the degree of hazard as determined by the district CCS and the provisions of this article.

(3) When an unlisted assembly does not meet the above conditions, is moved, or cannot be repaired using spare parts from the original manufacturer, the assembly shall be replaced by an assembly currently listed as approved by the USC/FCCCHR .

6.20.630 Applicability.

The provisions of this article are applicable to all connections to the district water supply.

6.20.640 Administrative procedures.

(1) In order to carry out the provisions of the district cross connection control policies, rules and procedures set forth in this article, the district has an ongoing compliance program based upon but not limited to the following criteria: proper management of system connections; effective customer education; accurate recordkeeping and notification; development plan review and inspections of new connections; and periodic inspection of existing connections.

(2) *Minimum Requirements.*

(a) These district requirements are provided for clarification and any disagreement between the requirements listed below and requirements listed elsewhere in this article, the more restrictive shall govern.

(b) All nonresidential domestic water services shall be isolated from the public water system by an approved RPBA at the domestic service connection or at an alternate location acceptable to the district.

(c) Dedicated or common supply fire services shall be isolated from the public water system by an approved RPBA or RPDA at the service connection or at an alternate location acceptable to the district.

(d) Premises having an auxiliary water supply (such as an active well(s)) shall be decommissioned per WAC 173-160-381 prior to connecting to the district water system unless otherwise approved. If an auxiliary water supply is approved by the District, an RPBA shall be installed at the service connection.

(e) All commercial and multifamily services shall have an RPBA installed at the service connection.

(f) Nonresidential irrigation services shall be separately metered and shall have a minimum of an approved DCVA installed at the service connection. Irrigation systems that use chemical injection shall be isolated from the district's water system by an approved RPBA at the service connection.

(g) Residential irrigation systems where compressed air is introduced shall have a minimum of an approved DCVA installed at the connection to the irrigation system, blow-out connection must be installed downstream of the DCVA, (AVB systems are not adequate for protection of the public system where compressed air is introduced into the water system).

(h) Residential irrigation systems, which do not fall into the prior category, may have an approved PVBA installed on the system, or properly installed AVB for each zone. AVB installations are subject to periodic inspection by the district CCS.

(i) Premises with water features, ponds, pools, or fountains connected in any way to the district's system shall install a district approved AG at the fill point to the water feature, regardless of any upstream backflow protection. AGs will be annually inspected by a Washington State-certified backflow assembly tester (BAT).

(3) *Compliance Inspection of Existing Buildings, Structures, and Grounds.*

(a) An ongoing inspection program has been established by the district to locate and address cross connection potential to the district's system with priority given on the basis of risk to public health and is conducted as outlined below. The district CCS may perform additional inspections as needed.

(b) The district CCS periodically surveys residential meter routes, looking for irrigation systems, or signs thereof, responds to tips from customers, monitors locate requests, and uses other means with the goal that all connections to the district's water system be in compliance with state and district regulations. The district relies on plan review and premises isolation procedures established in this article to properly protect the public potable water system from other hazards posed by commercial, fire, and multifamily connections. Systems without required cross connection protection, when identified, shall be brought into compliance by the owner.

(c) The district relies on annual test reports to ensure existing irrigation installations are in compliance. The district will endeavor to send notices of the deadline of required annual backflow assembly tests. It is the responsibility of the property owner to submit the annual backflow assembly test report in a timely manner (within 30 days) with or without notice from the district. Property owners who fail to provide annual test results certifying backflow assembly is in compliance with state and district regulations are identified and tracked until satisfactory compliance is achieved or water service is terminated. Non-compliance with reporting requirements may be subject to monetary penalties in accordance with District Code Chapter 9.05.

(d) The district shall respond to customer taste and odor complaints in a prompt and professional manner, understanding that these complaints may be indicative of possible contamination due to a temporary or continuing cross connection event with the public water system. Should a cross connection be identified, it will be tracked until satisfactory compliance is achieved or water service is terminated.

(4) *Residential Education and Awareness.*

(a) The district periodically sends educational pamphlets and/or bill stuffers to all of the water system customers. These include, but are not limited to, the following subjects:

(i) Home irrigation safety;

(ii) Residential fire sprinkler systems;

(iii) Health hazards associated with hose connections (chemical sprayers, radiator flush kits, etc.), utility sinks and other household dangers.

(b) The district also endeavors to provide informational handouts and presentations on cross connections at community events, school programs and with information at District Headquarters.

(5) *Registering of Certified Backflow Assembly Testers.* The district maintains a list of Washington certified BATs to provide to customers. Persons or organizations wishing to be added to this list are required to provide the district with copies of the following:

(a) Proof of current certification by the state of Washington as a BAT for each person authorized to perform tests.

(b) Proof of current annual calibration for all testing equipment.

(c) Proof of current liability insurance in an amount not less than $1,000,000.

(d) Any person providing backflow assembly testing service in the district service area must possess a current BAT certification, current test instrument calibration and all other licenses, permits or certifications required by law.

(6) *Record Keeping and Tracking of Assemblies.* The district meets the record keeping requirements of the state to allow effective monitoring and tracking of customer compliance with the annual backflow assembly testing requirements. Associated record keeping fees may be assessed in accordance with District Code Chapter 9.05. The following information on each backflow assembly shall be submitted electronically to the District through a designed portal, program, or service:

(a) Service address.

(b) Business name (if applicable).

(c) Specific location of each assembly.

(d) Initial inspection information for each location.

(e) Initial installation date.

(f) Water line size.

(g) Water pressure.

(h) Test results for all check valves.

(i) Assembly information (type of assembly, manufacturer, size, serial number, model, and date of test).

(j) Complete testing history (initial and final test results for each year with: pass/fail, test type, date, tester's name and certification number).

(k) Hazard protected (downstream process).

(l) Repair history.

(m) Test kit information.

(n) Tester’s contact and certification information.

Exhibit 4

Article IV. Standard Details

See Attached

DETAIL SHEET LIST	
DEATIL NO.	DETAIL DESCRIPTION
DETAIL LIST	
D1	DETAIL LIST
D2	DETAIL LIST
GENERAL DETAILS	
G1	VERTICAL ANCHOR BLOCK
G2	HORIZONTAL THRUST BLOCK
G3A	ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE
G3B	ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE
G4	SHIPS LADDER
G5	CASING AND CARRIER PIPE
G6	TRENCH SECTION PIPE BEDDING AND TRENCH BACKFILL
G7	UNSUITABLE FOUNDATION EXCAVATION
G8	FLUSH MOUNT SLEEVE
G9	TRENCH DAMS
G10	TYPICAL FENCE
G11	LOCATE BOX
CROSS CONNECTION	
CC1	AUTOMATIC ANTI-SIPHON CONTROL VALVE
CC2	ATMOSPHERIC VACUUM BREAKER
CC3	PRESSURE VACUUM BREAKER
CC4	DOUBLE CHECK VALVE ASSEMBLY (DCVA)
CC5A	PRIVATE FIRE SYSTEM DOUBLE CHECK DETECTOR ASSEMBLY
CC5B	PRIVATE FIRE SYSTEM DCDA (PLAN VIEW)
CC6	REDUCED PRESSURE BACKFLOW ASSEMBLY
CC7	RP BACKFLOW ASSEMBLY 3IN+
CC8	RP DETECTOR ASSEMBLY 3IN+
CC9	DOUBLE CHECK VALVE ASSEMBLY 2-INCH AND SMALLER
WATER DETAILS	
W1	NEW FIRE HYDRANT ASSEMBLY
W2	RELOCATE FIRE HYDRANT ASSEMBLY
W3	FIRE HYDRANT LOCATION IN CUT OR FILL
W4	VALVE BOX
W5	VALVE BOX ADJUSTMENT
W6	VALVE EXTENSION STEM
W7	WET TAP CONNECTION
W8	CUT IN CONNECTION
W9	TESTING CONNECTION DETAIL

Silver Lake Water & Sewer District

DETAIL LIST

DATE: 11-2022

DWG: D1

DETAIL SHEET LIST	
DEATIL NO.	DETAIL DESCRIPTION
W10	1-INCH COMBINATION AIR AND VACUUM RELEASE ASSEMBLY
W11	2-INCH COMBINATION AIR AND VACUUM RELEASE ASSEMBLY
W12	BLOW OFF ASSEMBLY
W13	1-INCH WATER SERVICE
W14	2-INCH WATER SERVICE
W15	1-INCH OR 2-INCH FIRE SERVICE CONNECTION
W16A	METER VAULT ASSEMBLY 3-INCH - 10-INCH PLAN
W16B	METER VAULT ASSEMBLY 3-INCH - 10-INCH ELEVATION
W17	WATER SAMPLE TAP
W18A	PRESSURE REDUCING VALVE AND VAULT
W18B	PRESSURE REDUCING VALVE AND VAULT LEGEND
W19	1 INCH NON-FREEZE YARD HYDRANT
SEWER DETAILS	
S1	SANITARY SEWER MANHOLE SECTION
S2	SANITARY SEWER MAIN AND SIDE SEWER CONNECTIONS
S3	SANITARY SEWER SADDLE MANHOLE
S4	SANITARY SEWER SHALLOW MANHOLE
S5	INSIDE DROP MANHOLE
S6	FORCE MAIN DISCHARGE MANHOLE
S7	STANDARD MANHOLE FRAME AND COVER
S8	ROCK CATCH MANHOLE
S9	MANHOLE ADJUSTMENT DETAIL
S10	SEWER AIR VACUUM RELEASE VAULT
S11	STANDARD SEWER LATERAL
S12	SEWER LATERAL CONNECTION TO EXISTING MAIN
S13	VERTICAL SEWER LATERAL
S14	PRIVATE SIDE SEWER INSTALLATION
S15	PRIVATE VERTICAL RISER SIDE SEWER INSTALLATION
S16	SIDE SEWER CLEANOUT
S17	EXTERIOR PRIVATE BACKWATER VALVE
S18	PRIVATE BACKWATER VALVE INSTALLATION TO SANITARY SEWER
S19	PRESSURE LINE CONNECTION TO GRAVITY SEWER
S20	GREASE INTERCEPTOR
S21	OIL WATER SEPERATOR
S22	SAMPLE CHAMBER FOR GREASE INTERCEPTOR
S23A	FORCE MAIN BYPASS PUMP CONNECTION
S23B	FORCE MAIN BYPASS PUMP CONNECTION BELOW GRADE

Silver Lake Water & Sewer District

DETAIL LIST

DATE: 11-2022

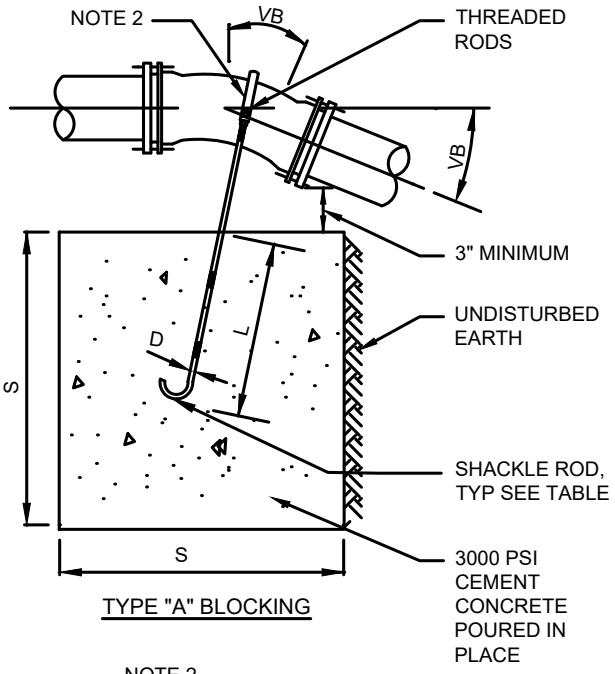
DWG: D2

TYPE "A" BLOCKING
FOR 11 1/4°-22 1/2°-33 3/4° VERTICAL BENDS

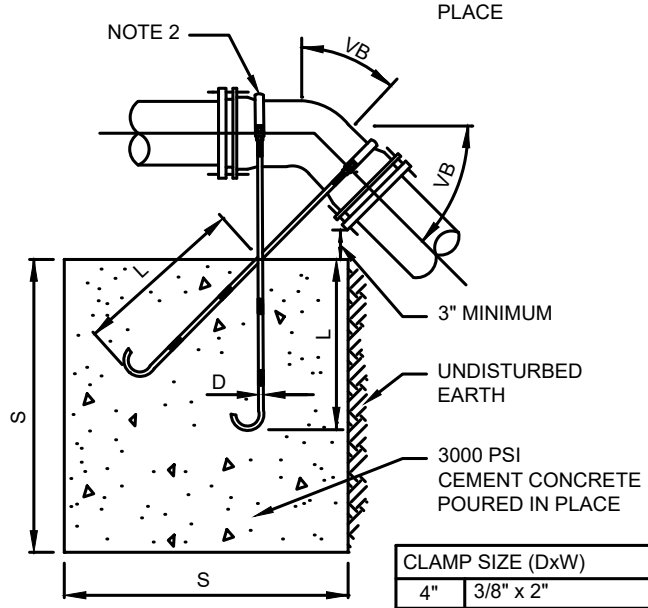
PIPE SIZE NOM. DIAMETER- INCHES	DESIGN PRESSURE PSI	VB VERTICAL BEND DEGREES	S No. OF CU. FT. OF CONC. BLOCKING	D SIDE OF CUBE LIN. FT.	L DIAM. OF THREADED RODS (2) SS INCHES	DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		33 3/4	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		33 3/4	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		33 3/4	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		33 3/4	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		33 3/4	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		33 3/4	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		33 3/4	480	7.9	1 7/8"	5.5

TYPE "B" BLOCKING
FOR - 45° VERTICAL BENDS

		VB	S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5

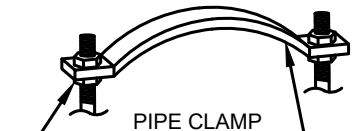


TYPE "A" BLOCKING



TYPE "B" BLOCKING

CLAMP SIZE (DxW)	
4"	3/8" x 2"
6"	1/2" x 2-1/2"
8"	1/2" x 2-1/2"
12"	3/4" x 3"
16"	3/4" x 4"
20"	1" x 5"
24"	1" x 5"



PIPE CLAMP

TIGHTEN CLAMP NUTS AFTER CONCRETE HARDENS

HALF CLAMP OR EQUAL, SEE NOTE 2

NOTES:

1. APPROVAL OF LOCATION FROM THE DISTRICT IS REQUIRED PRIOR TO INSTALLATION.
2. PIPE CLAMP SHALL BE GALVANIZED. BAR AND HARDWARE SHALL BE STAINLESS STEEL.

SCALE: NTS

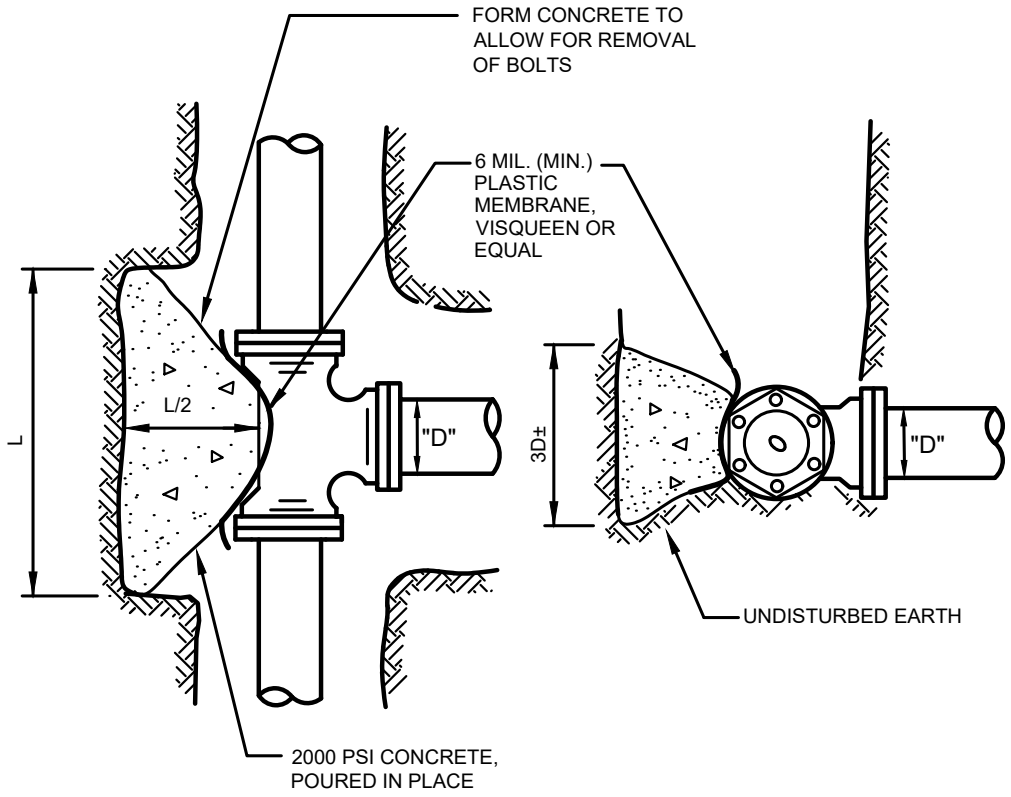
Silver Lake Water & Sewer District

VERTICAL ANCHOR BLOCK

DATE: 11-2022

DWG: G1

MINIMUM BEARING AREA TABLE					
DIAMETER "D"	TEE	90°	45°	22 1/2°	11 1/4°
6"	5 SQ.FT.	7 SQ.FT.	4 SQ.FT.	2 SQ.FT.	1 SQ.FT.
8"	9 SQ.FT.	12 SQ.FT.	7 SQ.FT.	4 SQ.FT.	2 SQ.FT.
10"	14 SQ.FT.	19 SQ.FT.	11 SQ.FT.	6 SQ.FT.	3 SQ.FT.
12"	19 SQ.FT.	27 SQ.FT.	15 SQ.FT.	8 SQ.FT.	4 SQ.FT.
16"	34 SQ.FT.	48 SQ.FT.	26 SQ.FT.	14 SQ.FT.	7 SQ.FT.
18"	43 SQ.FT.	60 SQ.FT.	33 SQ.FT.	17 SQ.FT.	9 SQ.FT.



PLAN **ELEVATION**

NOTES:

1. BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 1500 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.

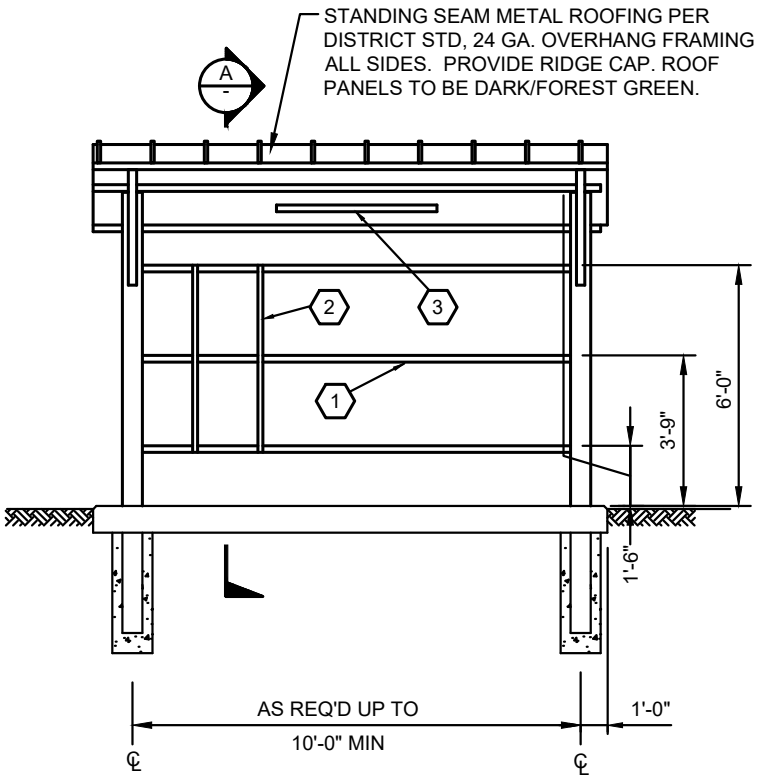
2. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.

SCALE: NTS

Silver Lake Water & Sewer District

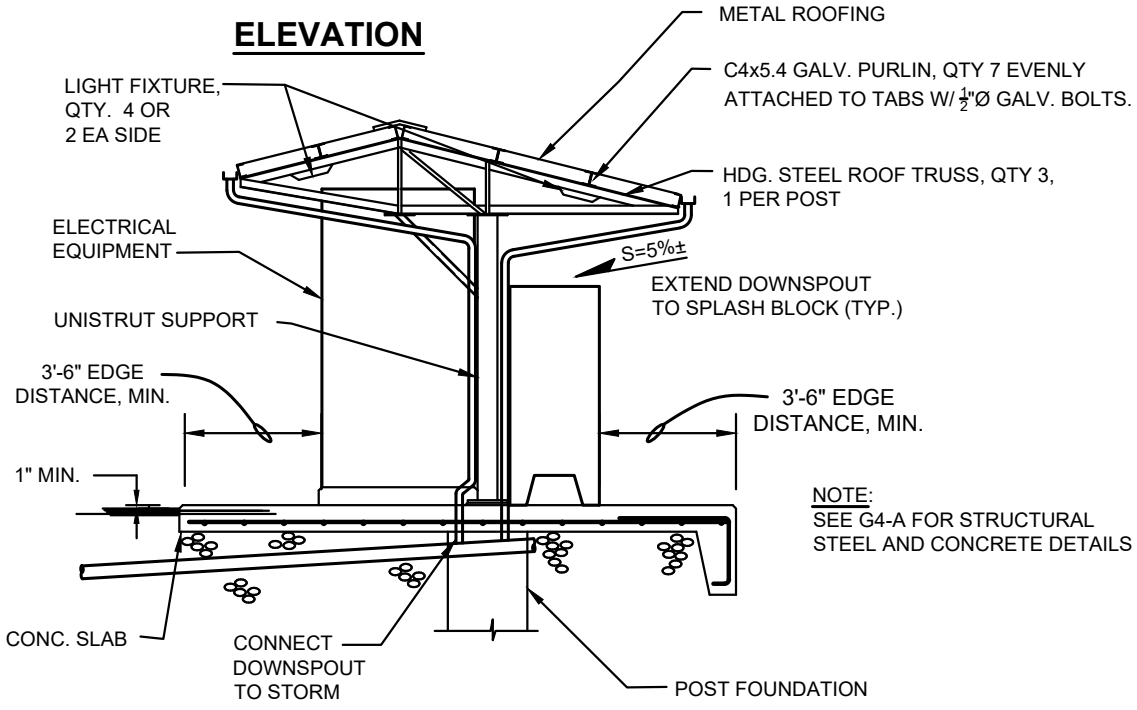
HORIZONTAL THRUST BLOCKS

DATE: 11-2022 | DWG: G2



1. C6x8.2 GALV. CHANNEL RAILS, QTY. 3 (TYP.). ATTACH TO L3x3 CLIP ANGLES W/ 1/2"Ø GALV. BOLTS.
2. 16 GAUGE GALV. UNISTRUT SUPPORT (TYP.), AS REQUIRED.
3. LIGHT FIXTURE, QTY. 2 BETWEEN EA. PAIR OF COLUMNS (1 EA. FRONT & BACK) OR (4 TOTAL, 2 EA SIDE)

ELEVATION



SECTION A

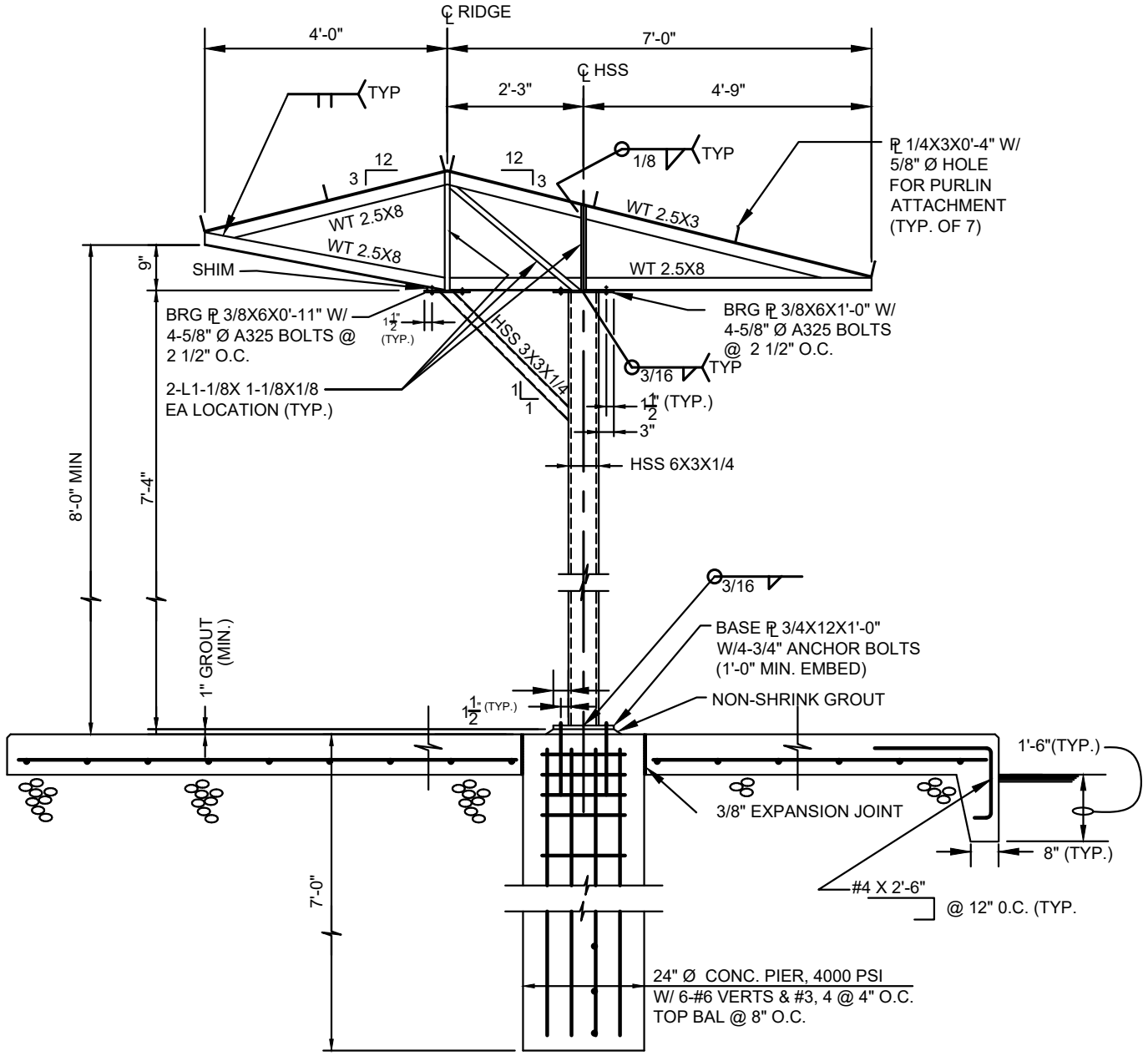
SCALE: NTS

Silver Lake Water & Sewer District

ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE

DATE: 11-2022

DWG: G3A



NOTE: HOT DIP GALVANIZE TRUSS AND POST ASSEMBLIES AFTER FABRICATION.

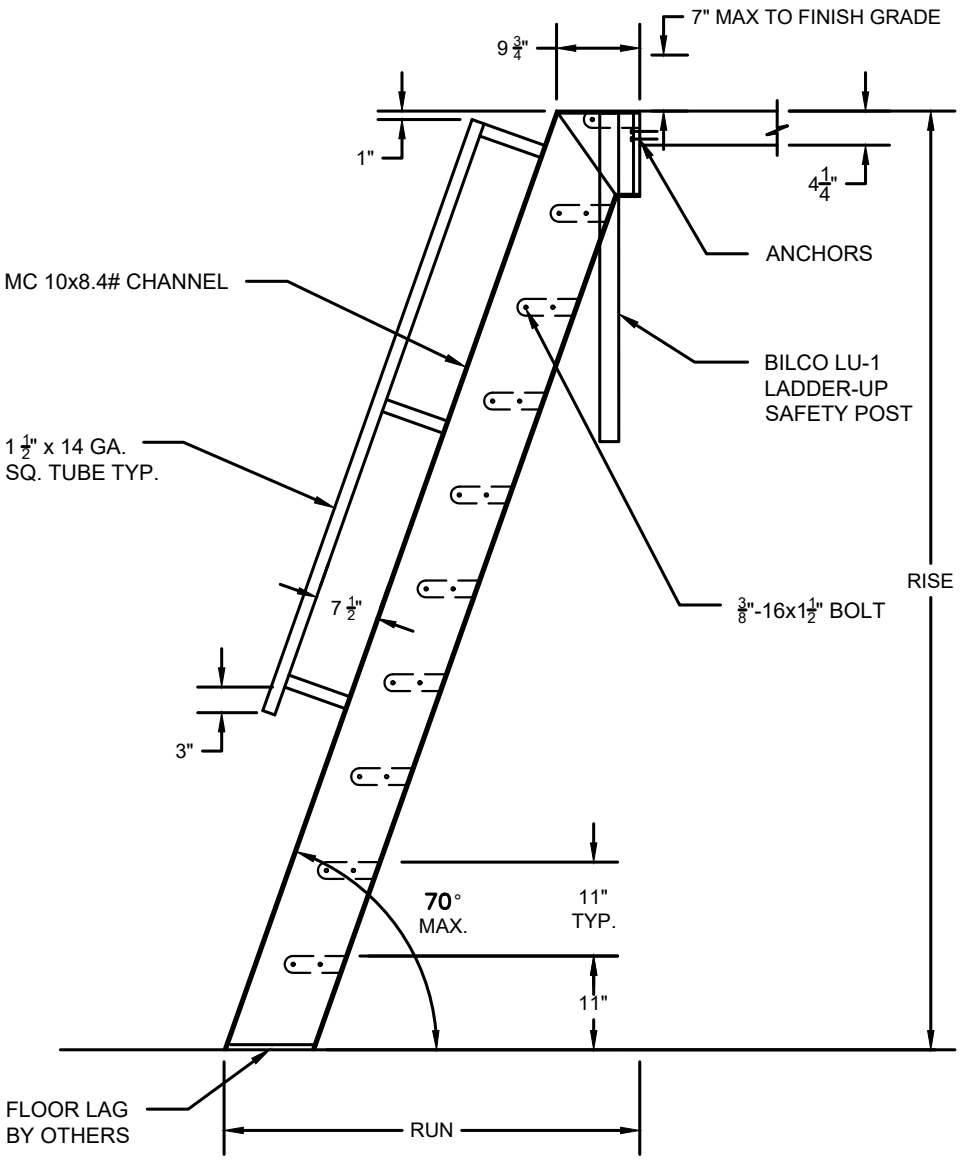
SECTION A

SCALE: NTS

Silver Lake Water & Sewer District

ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE

DATE: 11-2022	DWG: G3B



NOTES:

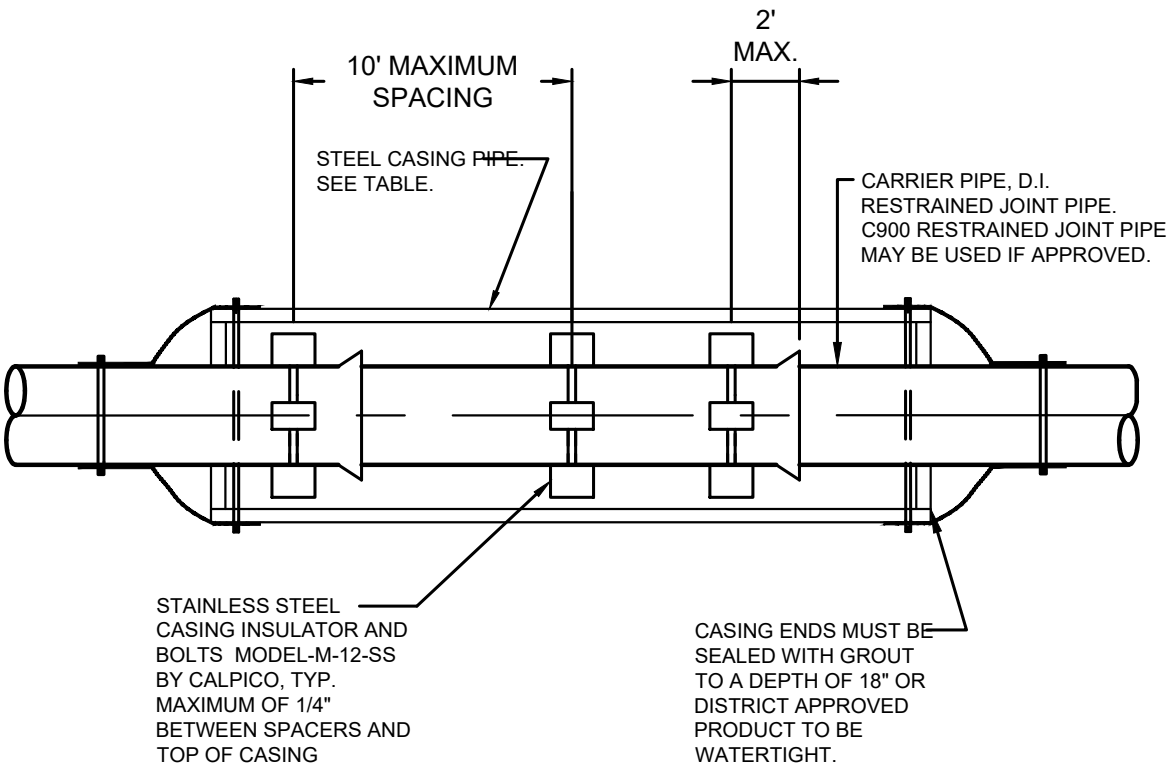
1. REQUIRED FOR ACCESS TO FACILITIES PLACED IN VAULTS WHERE DEPTH FROM SURFACE TO FLOOR EXCEEDS 4 FEET.
2. VAULT SELECTION SIZED TO ALLOW CLEARANCE FOR PLACEMENT OF "SHIP LADDER"
3. SHIP LADDER TO BE GALVANIZED STEEL.
4. SHOP DRAWING APPROVAL OF SLWSD REQUIRED PRIOR TO INSTALLATION.
5. SHIPS LADDER MUST, AT A MINIMUM, ABIDE BY OSHA STANDARDS.
6. TREAD WIDTH SHALL BE MIN. 24"AND MIN. DEPTH OF 6".

SCALE: NTS

Silver Lake Water & Sewer District

SHIPS LADDER

DATE: 11-2022 | DWG: G4



MINIMUM CASING DIAMETER	
CARRIER DIA.(IN.)	DIA.(IN.)
6	12
8	16
10	18
12	20
16	24

CASING SIZE MAY BE ADJUSTED WITH DISTRICT APPROVAL TO FIT AVAILABLE SPACER SIZE.

NOTES:

1. CONTRACTOR TO VERIFY LINE AND GRADE.
2. CARRIER PIPE WITHIN THE LENGTH OF THE ENCASEMENT PIPE SHALL HAVE RESTRAINED JOINTS.
3. REGULATORY AGENCY REQUIREMENTS SHALL SUPERSEDE DISTRICT STANDARDS IF MORE STRINGENT.
4. CASING PIPE SHALL BE SCHEDULE 40 STEEL PIPE, WELDED JOINT, AND MINIMUM YIELD STRENGTH (F) OF 35 KSI.

SCALE: NTS

Silver Lake Water & Sewer District

CASING AND CARRIER PIPES

DATE: 11-2022 | DWG: G5

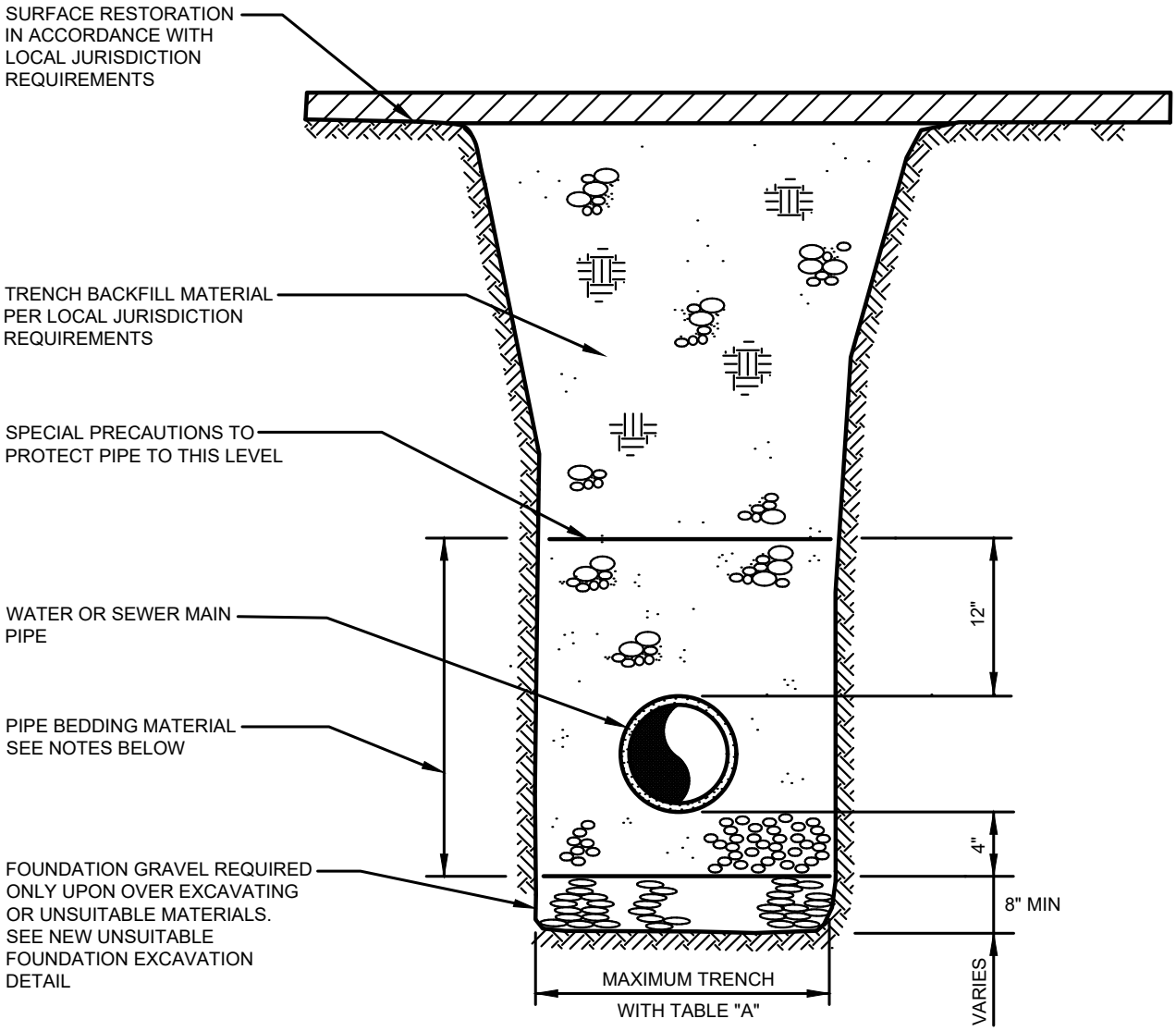


TABLE "A"

6"	PIPE	-2'-6"
8"	PIPE	-2'-6"
10"	PIPE	-3'-0"
12"	PIPE	-3'-0"
16"	PIPE	-3'-6"
18"	PIPE	-4'-0"
24"	PIPE	-4'-0"

SCALE: NTS

NOTES:

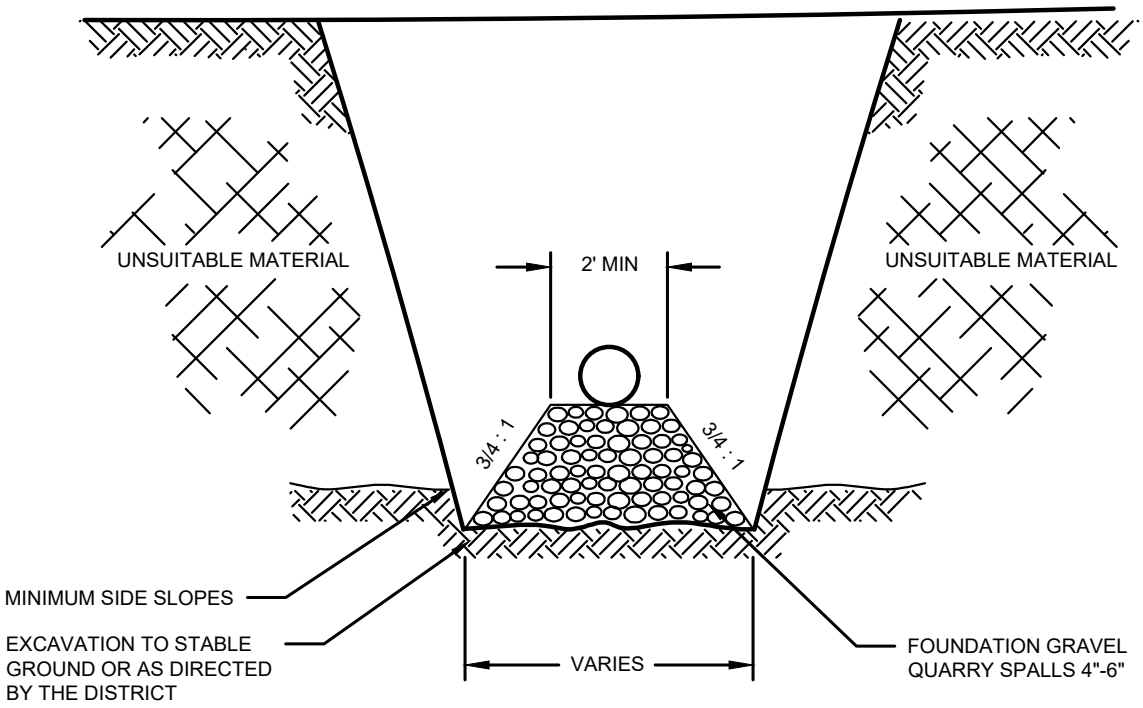
1. ALSO SEE DETAILS G7 AND G9.
2. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. NO TEMPORARY SUPPORTS I.E. BLOCKS, ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
3. BEDDING MATERIAL:
   SEWER - PEA GRAVEL
   WATER - PEA GRAVEL OR WSDOT 9-02.12(3)
4. RECYCLED CONCRETE IS NOT ALLOWED FOR USE IN DISTRICT TRENCH SECTIONS, NO EXCEPTIONS.

Silver Lake Water & Sewer District

TRENCH SECTION PIPE BEDDING AND TRENCH BACKFILL

DATE: 11-2022

DWG: G6



NOTES:

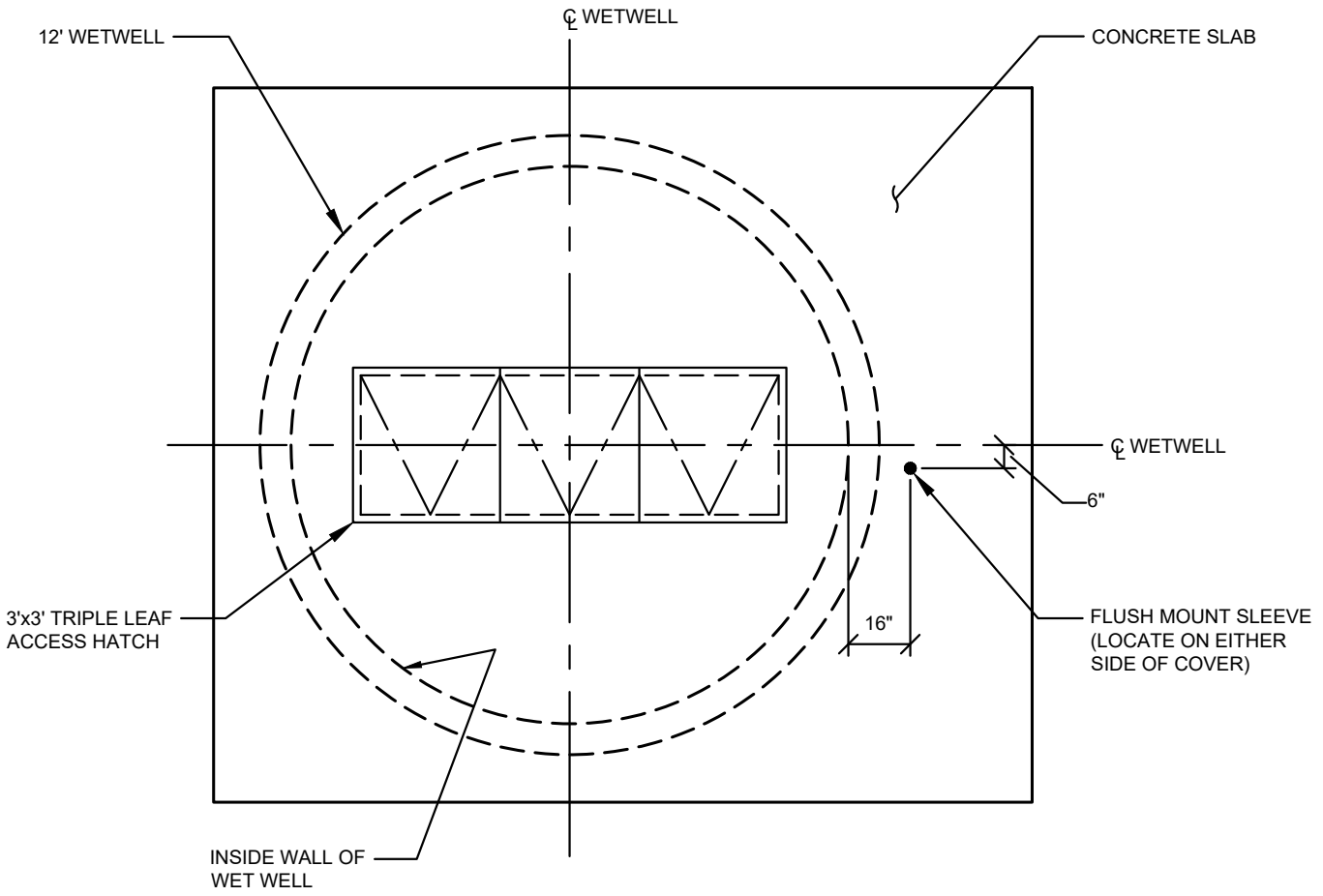
1. OVEREXCAVATION REQUIRED WHEN UNSUITABLE FOUNDATION MATERIALS ENCOUNTERED.
2. STRICTLY COMPLY WITH ALL TRENCH SAFETY SYSTEM REQUIREMENTS.
3. RESTRAINED JOINT PIPE MAY BE REQUIRED AS DIRECTED BY THE DISTRICT.
4. BACKFILL TRENCH IN ACCORDANCE WITH DISTRICT STANDARDS.

SCALE: NTS

Silver Lake Water & Sewer District

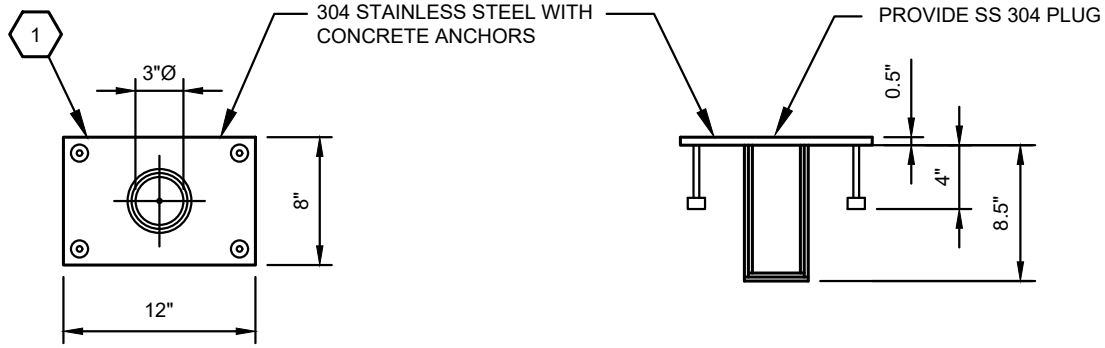
UNSUITABLE FOUNDATION EXCAVATION

DATE: 11-2022	DWG: G7



PLAN

SCALE: 1/4"=1'-0"



PLAN **SECTION**

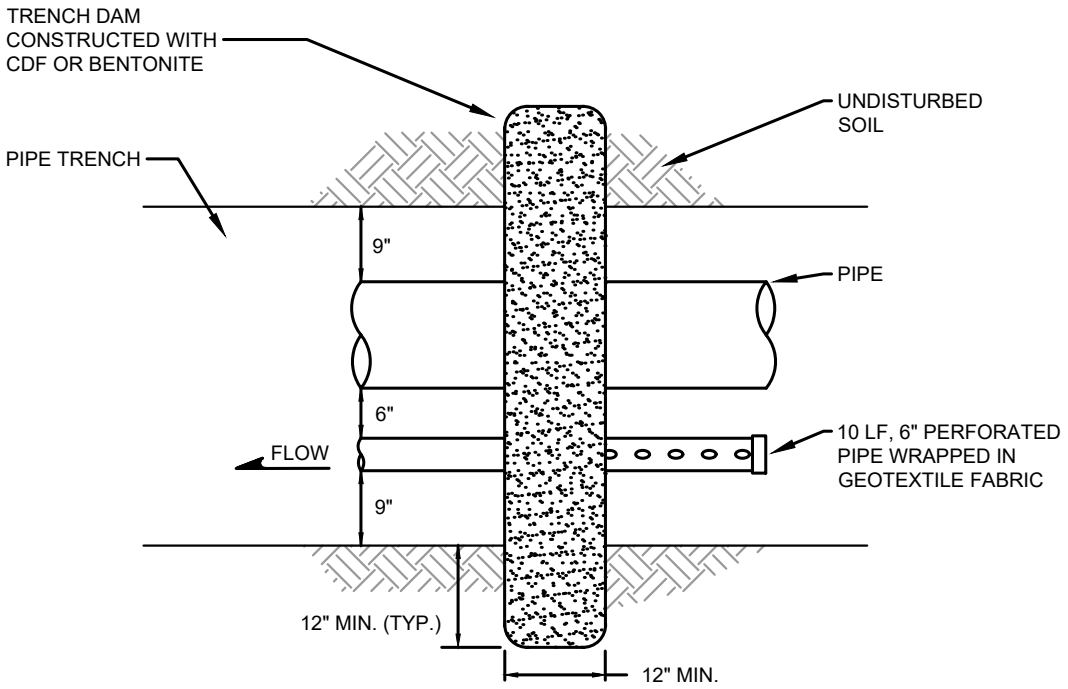
FLUSH MOUNT SLEEVE

1 FLUSH MOUNT SLEEVE MODEL 85-12828 WITH PLUG MODEL 8510827 BY UNIQUE CONCEPTS LTD.

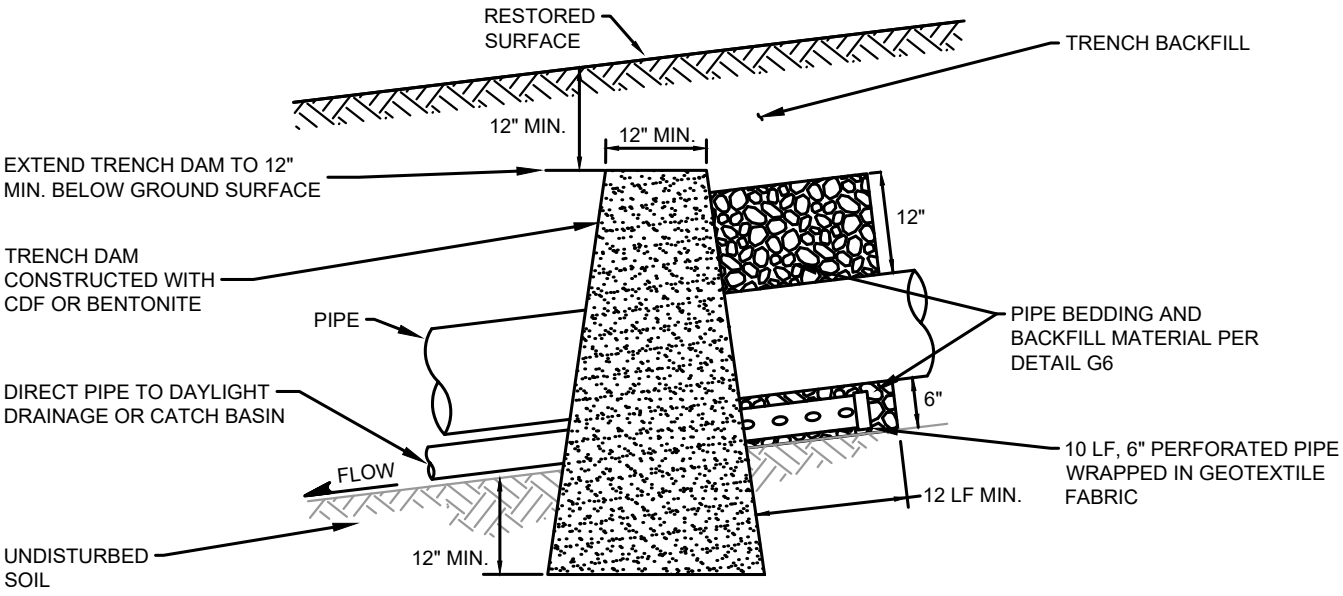
Silver Lake Water & Sewer District

FLUSH MOUNT SLEEVE

DATE: 11-2022	DWG: G8



PLAN VIEW



PROFILE VIEW

NOTES:

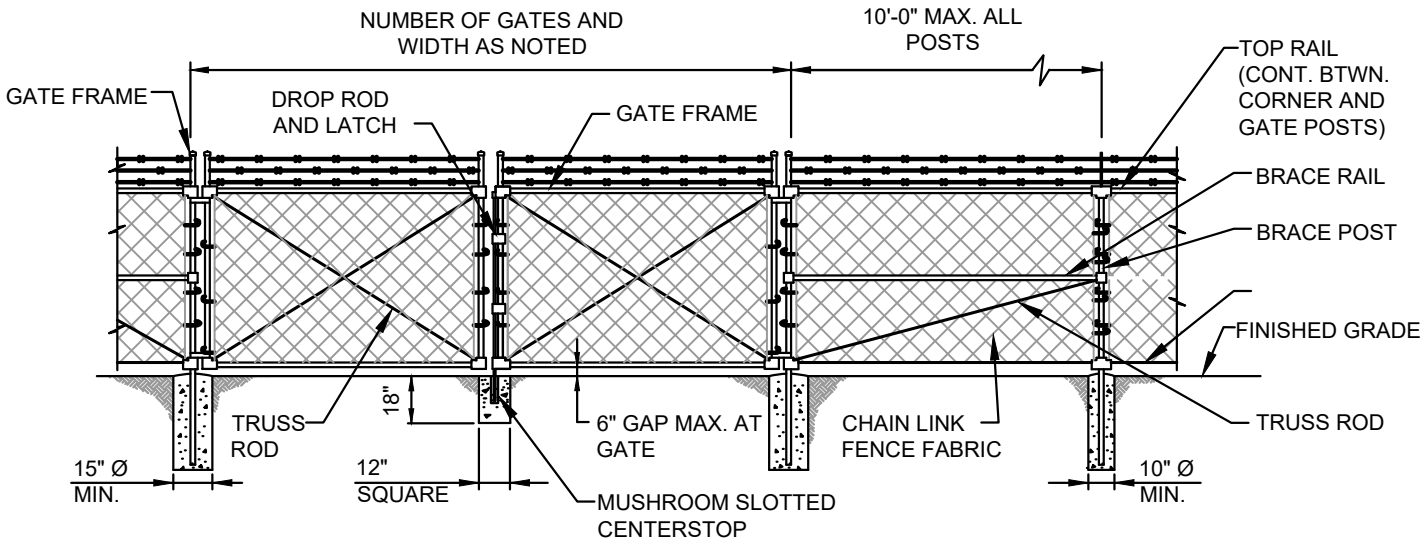
1. INSTALL IN HIGH GROUND WATER AREAS, ADJACENT TO WETLANDS AND STREAM CROSSINGS OR AS SHOWN ON PLANS OR AS DIRECTED BY THE DISTRICT.
2. ELEVATION AT TOP OF TRENCH DAM TO VARY BASED ON WATER TABLE AS DIRECTED BY THE DISTRICT OR TO FULL DEPTH OF GRANULAR MATERIAL.
3. INCREASE TRENCH WIDTH TO ACCOMMODATE DRAIN PIPE.
4. SPACING BETWEEN TRENCH DAMS SHALL BE EQUIVALENT TO SPACING OF SURFACE CATCH BASINS UNLESS OTHERWISE APPROVED BY DISTRICT.

Silver Lake Water & Sewer District

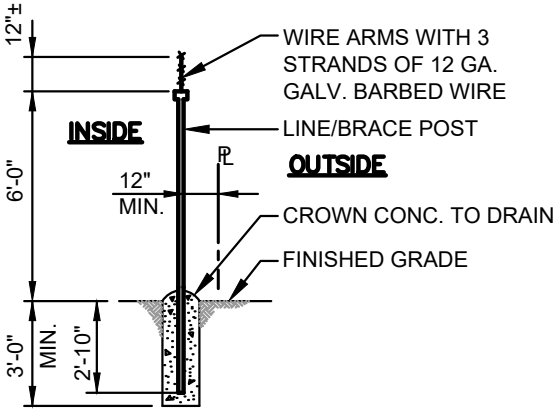
TRENCH DAMS

DATE: 11-2022

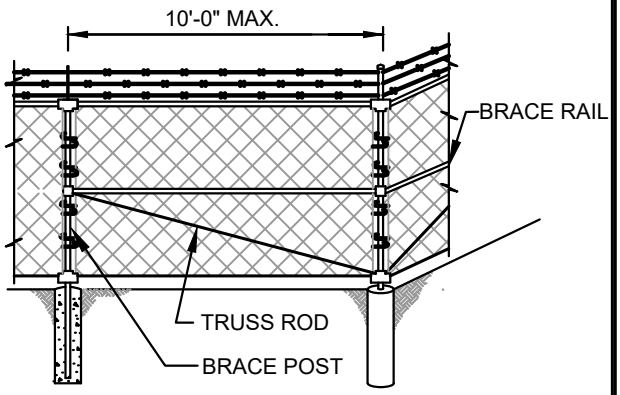
DWG: G9



ELEVATION



SECTION



CORNER POST

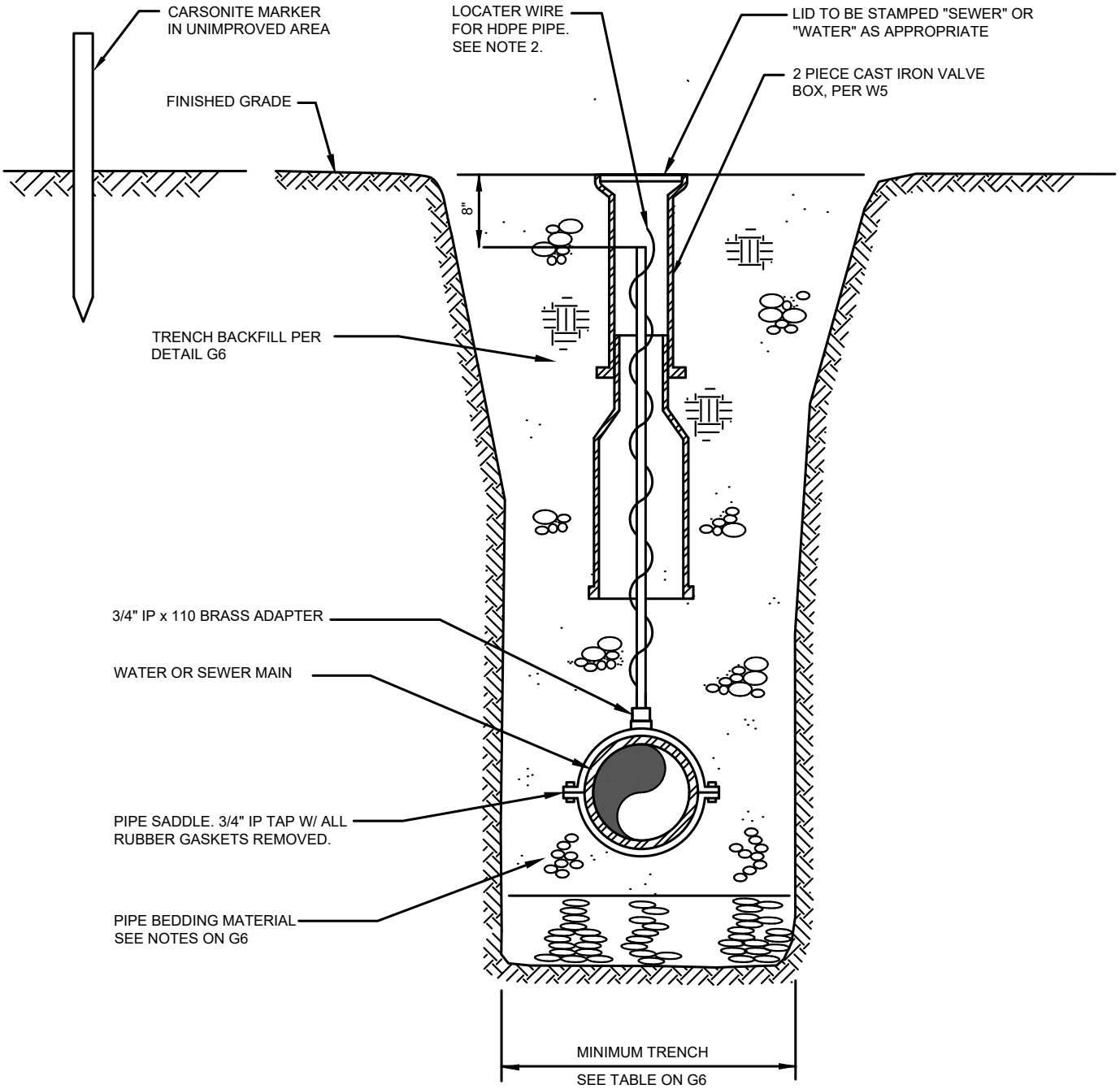
NOTES:

1. SEE SPECIFICATIONS FOR TYPICAL MATERIAL AND INSTALLATION REQUIREMENTS.
2. INSTALL CORNER POSTS WHERE ALIGNMENT CHANGES 30° OR MORE.
3. PROVIDE ALL-BLACK FINISH OVER STANDARD GALVANIZED FINISH: POWDER-COATED EPOXY ON POSTS, RAILS, AND FITTINGS; FUSION-BONDED VINYL ON WIRE FABRIC. PROVIDE BARBED WIRE TWISTED STRANDS. IF ALLOWED BY LAND USE AGENCY.
4. FENCE FABRIC SHALL BE 3-1/2"x5" MESH, 9 GA GALV. WIRE, WITH FACTORY INSTALLED FLAT TUBULAR POLYETHYLENE SLATS (BLACK), VIEWGUARD BY SECURITY CONTRACTOR SERVICES, INC. OR EQUAL.
5. PROVIDE GALV IRON, MUSHROOM TYPE, SLOTTED CENTERSTOP FOR DOUBLE GATE DROP ROD. EMBED IN 12"X12"X18"D CONCRETE FOUNDATION.
6. EXTEND AC. PAVEMENT APPROXIMATELY 6" BEYOND FENCE WHERE FENCE IS LOCATED AT EDGE OF PAVEMENT, TYP.
7. ANGLE BARBED WIRE SUPPORT ARMS VERTICALLY ON ALL LINE AND BRACE POSTS. TERMINATE BARBED WIRE AT EXTENDED CORNER AND GATE POSTS.

Silver Lake Water & Sewer District

TYPICAL FENCE

DATE: 11-2022 | DWG: G10



NOTES:

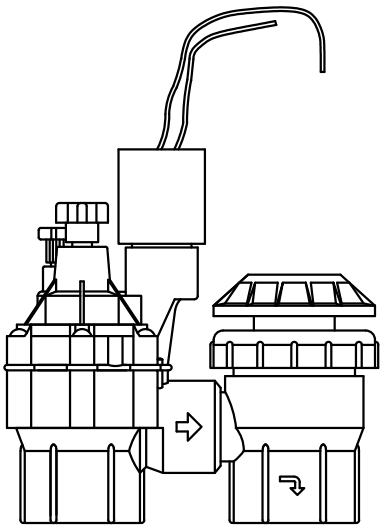
1. LOCATE AT ENDS OF MAIN, ALL HORIZONTAL BENDS AND AT 300 FT. MAX SPACING, OR AS REQUIRED BY DISTRICT
2. ON HDPE PIPE, PROVIDE 12 GAUGE COATED COPPER WIRE BETWEEN LOCATION BOXES. WRAP ALONG PIPE AND UP COPPER PIPE AT EACH END.
3. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH SILVER LAKE WATER AND SEWER DISTRICT STANDARDS AS SHOWN ON DETAIL G6.

Silver Lake Water & Sewer District

LOCATE BOX

DATE: 11-2022

DWG: G11



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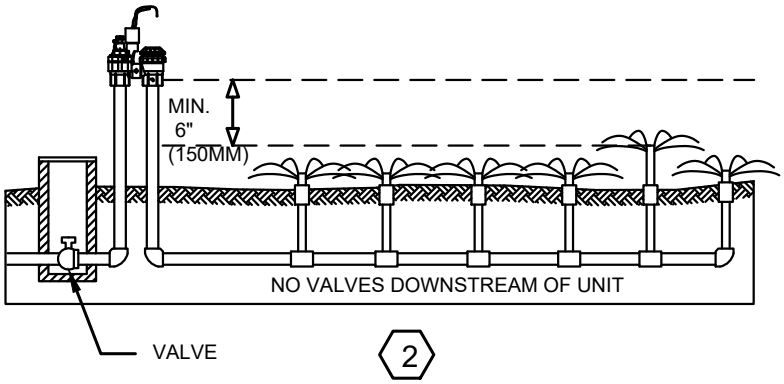
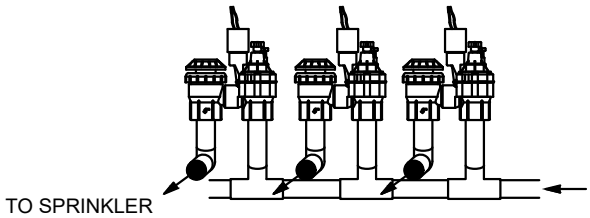


2



3

1 AUTOMATIC ANTI-SIPHON CONTROL VALVE

2 SHOWN IN SINGLE ZONE CONFIGURATION

3 SHOWN IN MANIFOLD CONFIGURATION

NOTES:

1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. NO DOWNSTREAM VALVES ALLOWED.
3. USE 1 AUTOMATIC ANTI-SIPHON CONTROL VALVE PER ZONE.
4. INSTALL AT LEAST 6" ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
5. NEVER INSTALL BELOW GRADE.
6. MUST BE PROTECTED FROM FREEZING.
7. SHALL NOT BE MODIFIED IN ANY WAY.
8. SHALL NOT BE SUBJECT TO BACKPRESSURE.
9. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
10. MAY NOT BE SUBJECT TO MORE THAN 12 HOURS OF CONTINUOUS PRESSSURE.

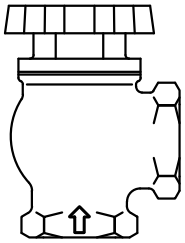
SCALE: NTS

Silver Lake Water & Sewer District

AUTOMATIC ANTI-SIPHON CONTROL VALVE

DATE: 11-2022

DWG: CC1



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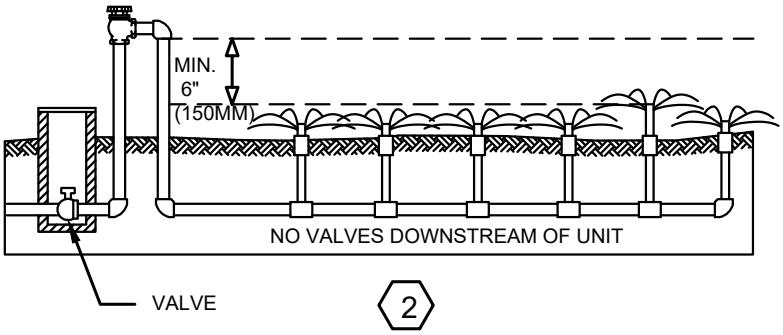


2

1 ATMOSPHERIC VACUUM BREAKER

2 SHOWN IN SINGLE ZONE CONFIGURATION

3 CAN BE USED IN MANIFOLD CONFIGURATION (SEE CC-W1)

NOTES:

1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. NO DOWNSTREAM VALVES ALLOWED.
3. USE 1 ATMOSPHERIC VACUUM BREAKER PER ZONE.
4. INSTALL AT LEAST 6" ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
5. NEVER INSTALL BELOW GRADE.
6. MUST BE PROTECTED FROM FREEZING.
7. SHALL NOT BE MODIFIED IN ANY WAY.
8. SHALL NOT BE SUBJECT TO BACKPRESSURE.
9. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
10. MAY NOT BE SUBJECT TO MORE THAN 12 HOURS OF CONTINUOUS PRESSSURE.

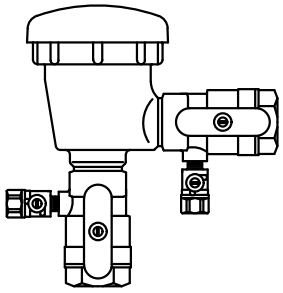
SCALE: NTS

Silver Lake Water & Sewer District

ATMOSPHERIC VACUUM BREAKER

DATE: 11-2022

DWG: CC2



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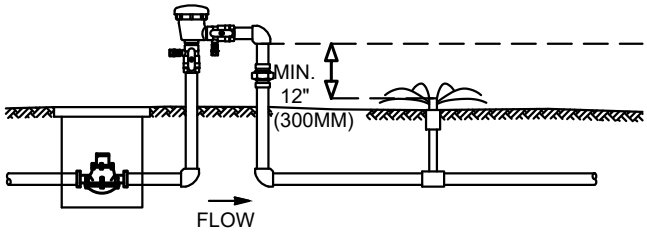


2

1 PRESSURE VACUUM BREAKER

2 MAY BE USED WITH DOWNSTREAM VALVES & MULTIPLE ZONES

NOTES:

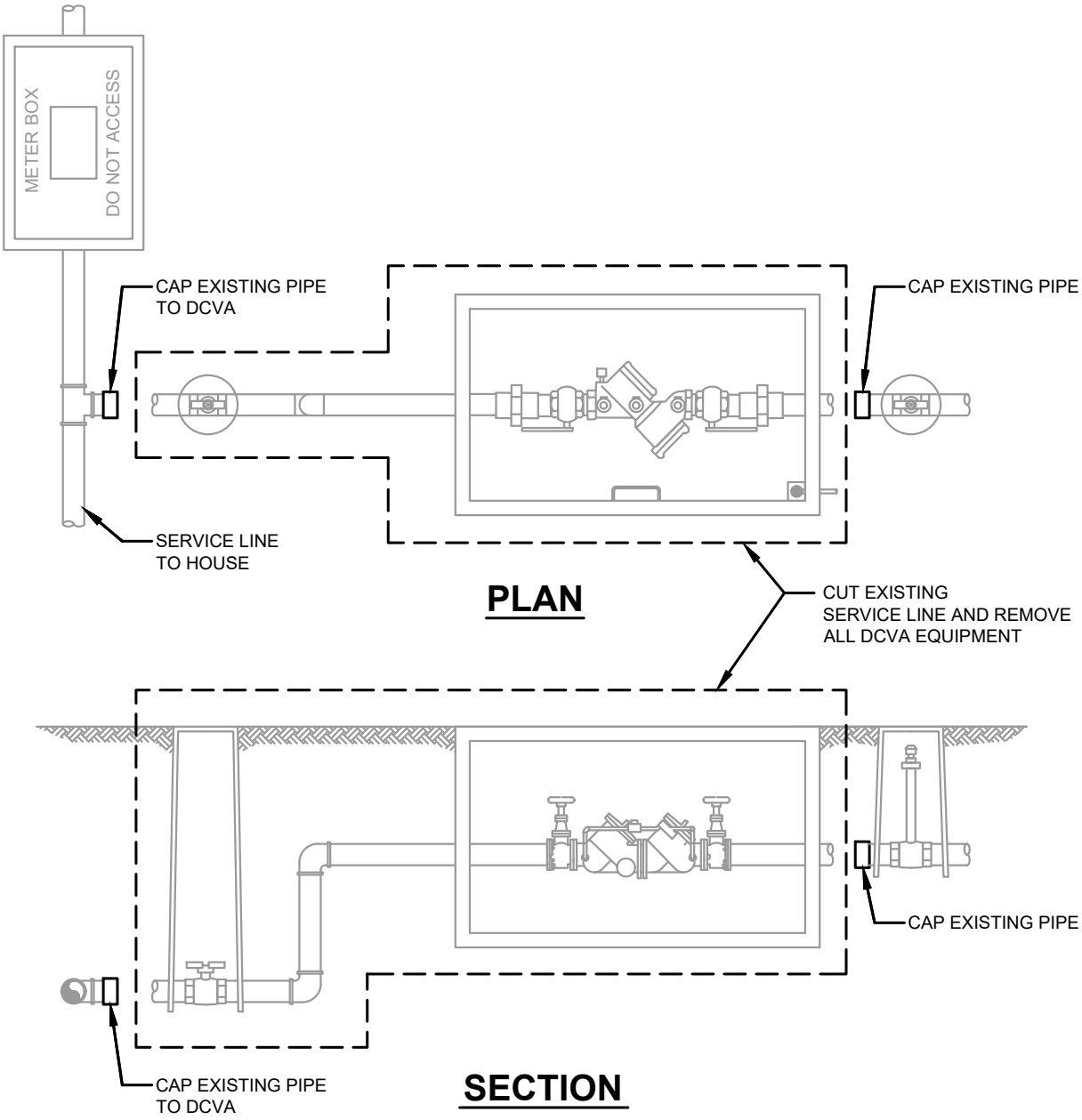
1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. SHALL BE TESTED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER
3. INSTALL AT LEAST 12" ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
4. NEVER INSTALL BELOW GRADE.
5. MUST BE PROTECTED FROM FREEZING.
6. SHALL NOT BE MODIFIED IN ANY WAY.
7. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
8. ASSEMBLY MUST BE APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA.

SCALE: NTS

Silver Lake Water & Sewer District

PRESSURE VACUUM BREAKER

DATE: 11-2022	DWG: CC3



NOTES:

1. ALL DCVA EQUIPMENT SHOWN ABOVE MUST BE REMOVED AND EXISTING PIPE SHALL BE CAPPED.
2. A SILVERLAKE WATER AND SEWER DISTRICT CROSS CONNECTION SPECIALIST MUST INSPECT BEFORE BURYING.
3. FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.

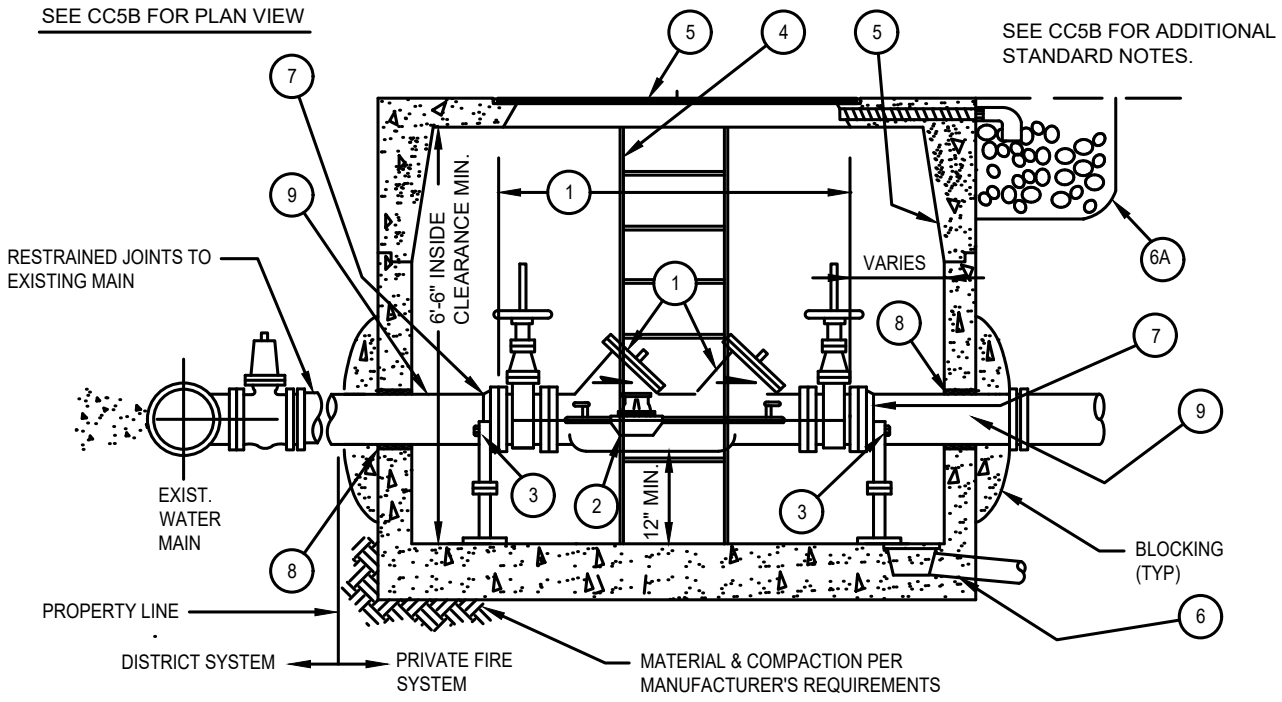
SCALE: NTS

Silver Lake Water & Sewer District

DOUBLE CHECK VALVE ASSEMBLY (DCVA)

DISCONNECTION/REMOVAL FOR ASSEMBLIES 3/4" TO 1"

DATE: 11-2022	DWG: CC4

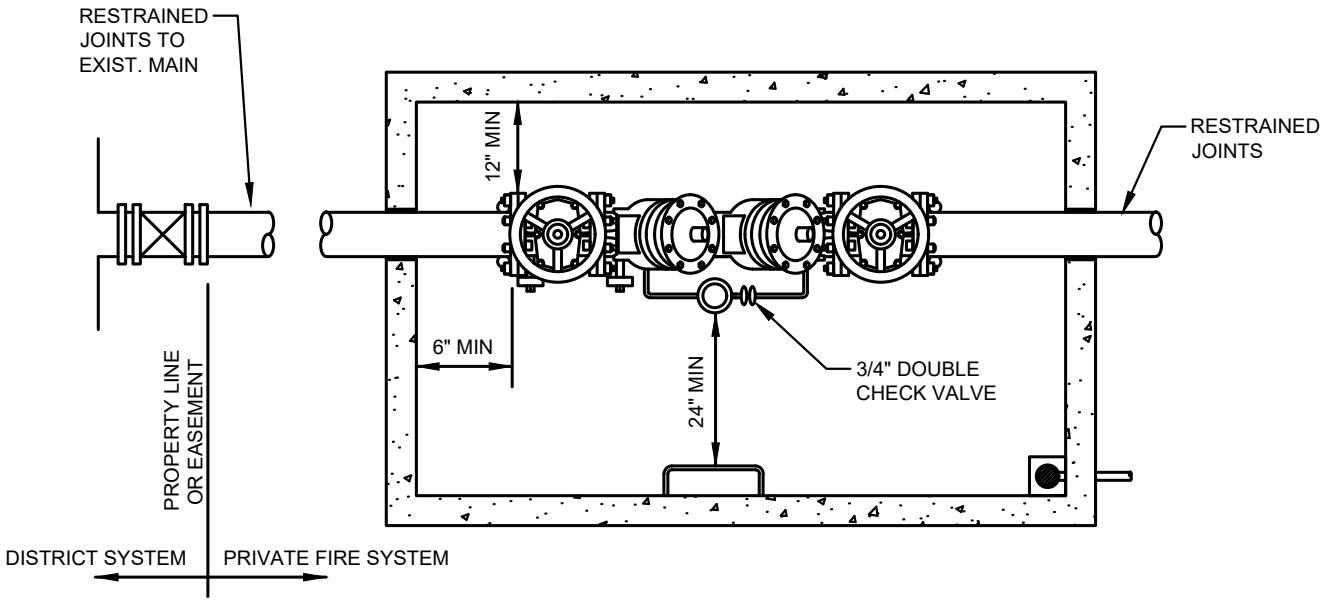


NO.	DESCRIPTION
1	STATE APPROVED DOUBLE CHECK DETECTOR ASSY. FL X FL WITH LOW FLOW BY-PASS METER.
2	5/8" X 3/4" BADGER ADE M25 7 1/2" LAY LENGTH, ORION PIT DATA PROFILE TRANSMITTER, LOW LEAD ALLOY HOUSING, LOW LEAD ALLOY HOUSING BOTTOM WITH PLASTIC LID AND SHROUD. MOUNT RADIO TRANSMITTER THROUGH VAULT LID AS DIRECTED BY THE DISTRICT.
3	ADJUSTABLE PIPE SUPPORT STANDON MODEL S-89 OR EQUAL, AND SHALL BE BOLTED TO THE VALVE FLANGE.
4	INSTALL MANUFACTURER FURNISHED LADDER ON SAME SIDE AS BYPASS METER.
5	UTILITY VAULT, TRAFFIC RATED WITH OFFSET HINGED & LOCKED DIAMOND - PLATE STEEL COVER, DOUBLE DOOR.
6	VAULT DRAIN TO DAYLIGHT, DRAINAGE, PROVIDE SUMP PUMP, OR BE WATER TIGHT.
6A	IF WATER TIGHT LID IS USED INSTALL PVC SHORT NIPPLE & 90° POINTED DOWN IN THE CORNER DRAIN W/1" WASHED DRAIN ROCK POCKET. NOTE: DEPENDING ON MANUFACTURER AND SIZE OF VAULT DRAIN KNOCKOUTS COULD BE ON SIDES OR END OF LID.
7	MEGA-FLANGE ADAPTER WITH SET SCREWS OR APPROVED EQUAL.
8	WATER-TIGHT GROUT, BOTH ENDS OF VAULT.
9	DUCTILE IRON PIPE: 4" CLASS 53, 6"-12" CLASS 52.

Silver Lake Water & Sewer District

PRIVATE FIRE SYSTEM DOUBLE CHECK DETECTOR ASSEMBLY

DATE: 11-2022 | DWG: CC5A



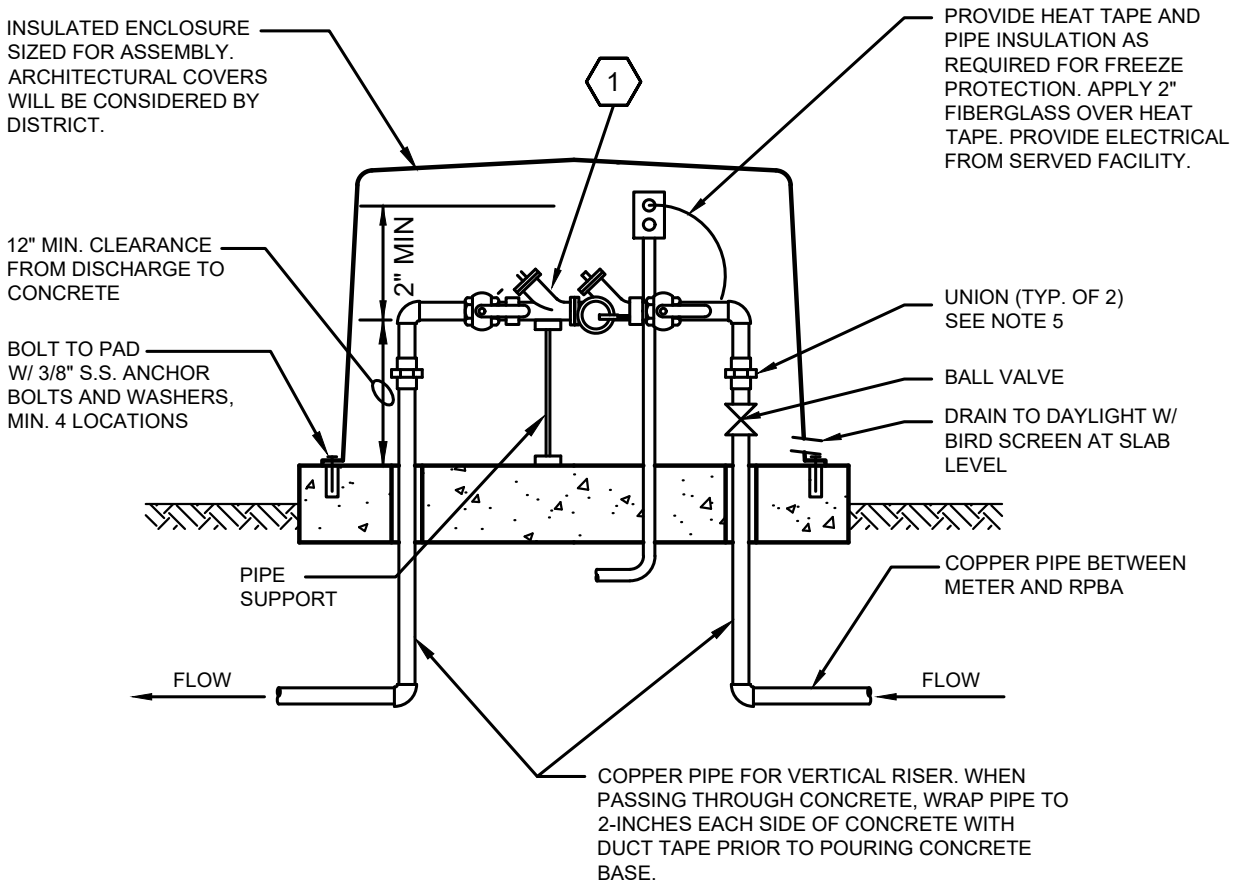
NOTES:

1. DCDA ONLY ALLOWED WITH DISTRICT APPROVAL.
2. BACKFLOW ASSEMBLIES SHALL BE LOCATED AS APPROVED BY THE DISTRICT. THE BY-PASS METER SHALL BE A BADGER ADE M25 WITH BADGER ORION TRANSMITTER MOUNTED THROUGH VAULT LID AS DIRECTED BY THE DISTRICT.
3. BACKFLOW ASSEMBLIES SELECTED FOR INSTALLATION MUST APPEAR ON THE APPROVED LIST FROM THE FOUNDATION FOR CROSS CONNECTION AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA.
4. UPON INSTALLATION OF THE BACKFLOW ASSEMBLY, THE INSTALLER OR DEVELOPER WILL CALL THE DISTRICT FOR AND INSPECTION BY A CROSS CONNECTION CONTROL SPECIALIST.
5. FOLLOWING THE INSPECTION APPROVAL BY THE DISTRICT, THE BACKFLOW ASSEMBLY MUST BE SCHEDULED FOR AN INITIAL TEST BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. THE INITIAL TEST OF THE BACKFLOW ASSEMBLY MUST BE OBSERVED BY A DISTRICT CROSS CONNECTION CONTROL SPECIALIST.
6. THE PROPERTY OWNER IS RESPONSIBLE FOR THE INITIAL AND ANNUAL TESTING OF ANY BACKFLOW ASSEMBLY.
7. THE PROPERTY OWNER IS RESPONSIBLE FOR FREEZE PROTECTION OF ANY BACKFLOW ASSEMBLY.
8. THE INSTALLER OR DEVELOPER MUST PROVIDE TEST COCK PROTECTION WITH PLUGS, CAPS, OR COVERS.
9. PRESSURE TEST & DISINFECT PER AWWA STANDARDS.
10. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH STATE, LOCAL DISTRICT AND SUPPLIED MANUFACTURER STANDARDS.
11. DOUBLE CHECK DETECTOR ASSEMBLY IS CONSIDERED PART OF THE PRIVATE FIRE PROTECTION SYSTEM.
12. INSTALLATION AND TESTING CONDUCTED IN ACCORDANCE WITH STATE AND AWWA STANDARDS.
13. METER TO BE VERIFIED WORKING WHEN DCDA IS TESTED.

Silver Lake Water & Sewer District

PRIVATE FIRE SYSTEM DOUBLE CHECK DETECTOR ASSEMBLY (PLAN VIEW)

DATE: 11-2022 | DWG: CC5B



1 UNIVERSITY OF SOUTHERN CALIFORNIA APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

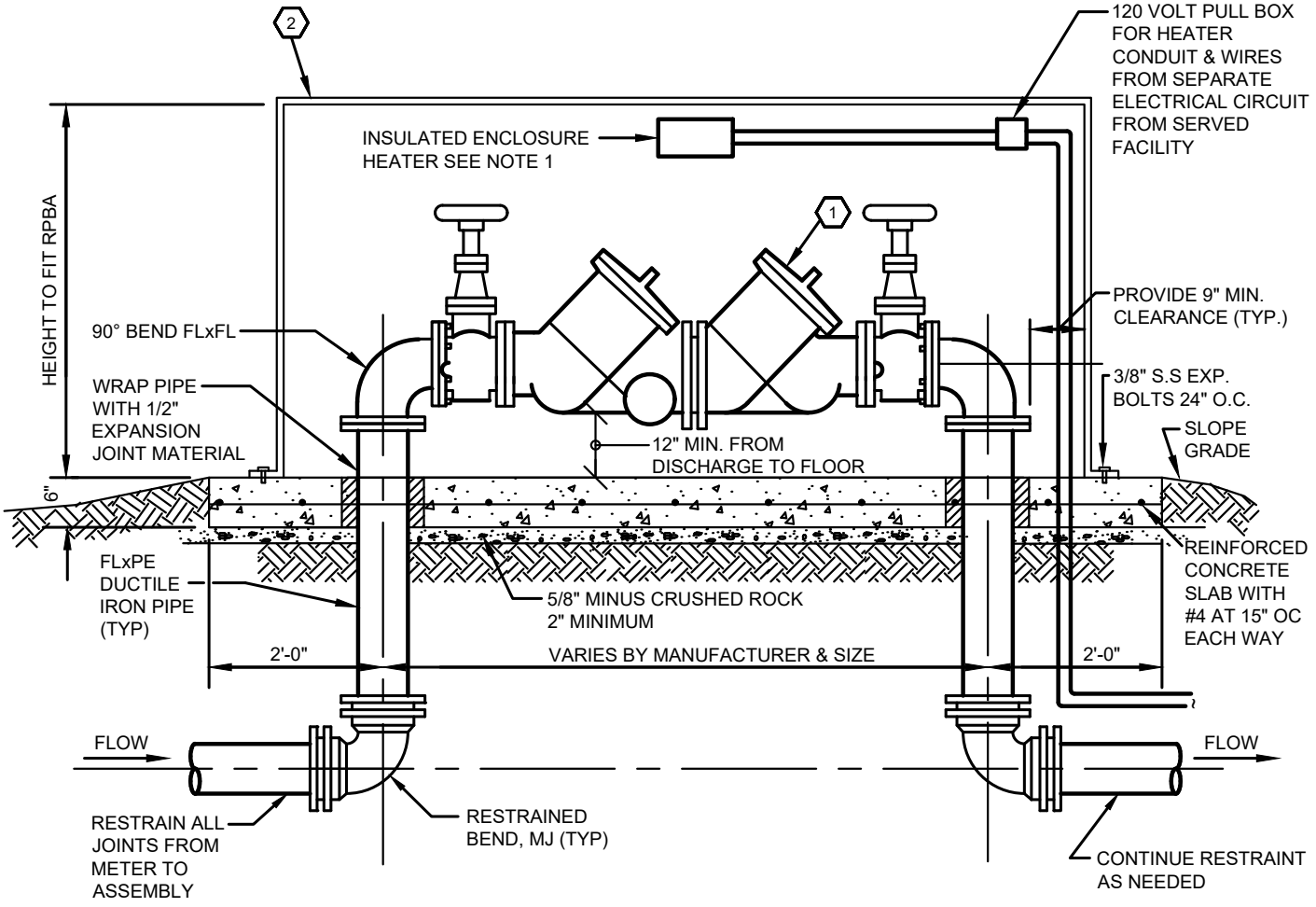
NOTES:

1. CONCRETE TO BE 2500 PSI (MIN.) MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT, AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
4. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
5. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
6. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
7. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, WILL HAVE ADDITIONAL REQUIREMENTS SUCH AS RECORDED ACCESS AGREEMENT AND ADEQUATE ROOM DRAINAGE PER MANUFACTURER'S RECOMMENDATIONS.

Silver Lake Water & Sewer District

REDUCED PRESSURE BACKFLOW ASSEMBLY

DATE: 11-2022	DWG: CC6



1. UNIVERSITY OF SOUTHERN CALIFORNIA APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH RESILIENT SEAT GATE VALVE EACH END.

2. ALUMINUM INSULATED ENCLOSURE MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT EXTEND OUTSIDE OF BOX.

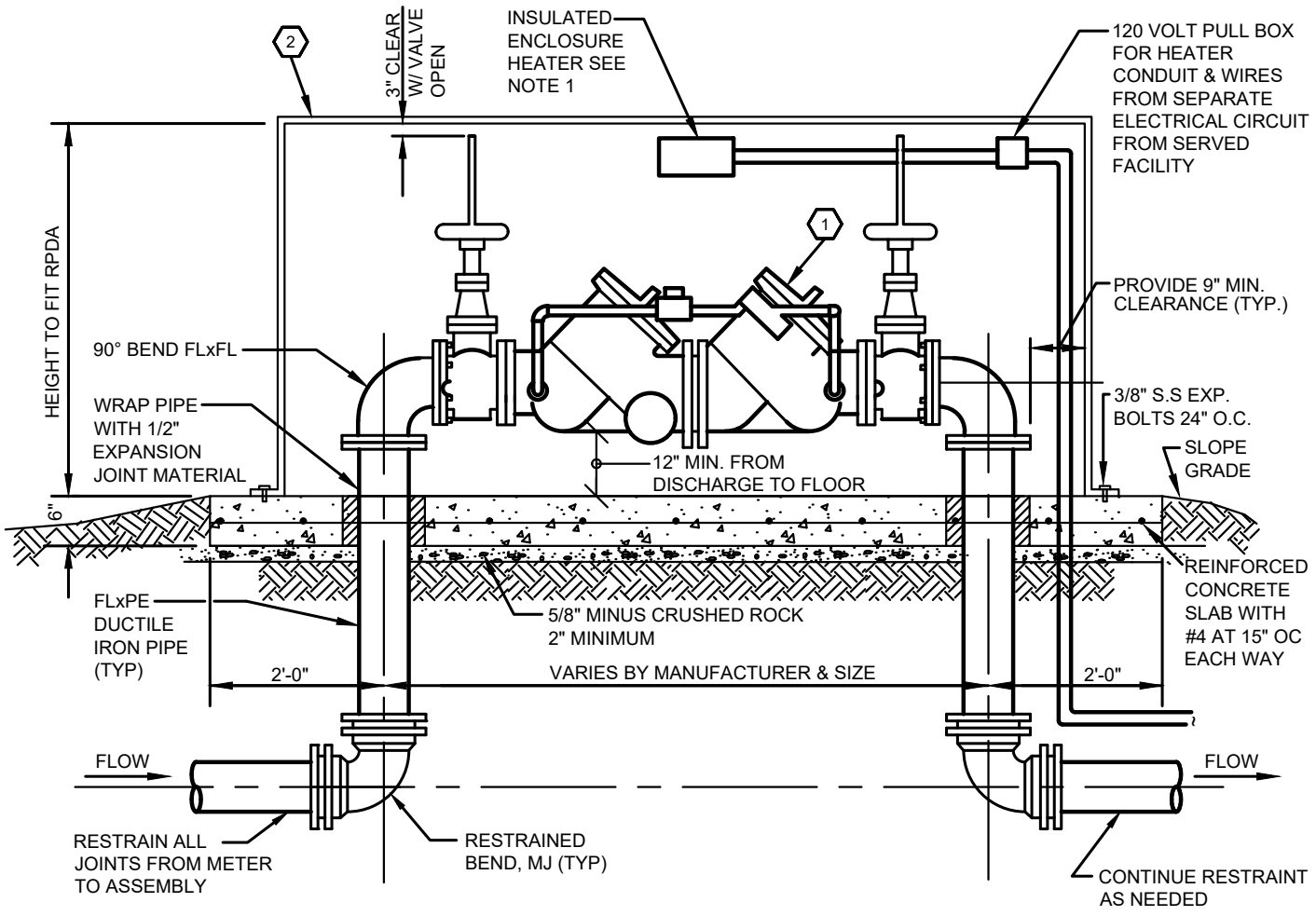
NOTES:

1. INSULATED ENCLOSURE TO BE LOCATED OUTDOORS AND ACCESSIBLE TO DISTRICT. ALTERNATE LOCATION REQUIRES DISTRICT APPROVAL.
2. HEATERS AND WIRING SHALL BE RATED AT 2,000 WATT FOR 8" AND UNDER. 3,000 WATT FOR 10".
3. CONCRETE TO BE 2500 PSI (MIN.) MIX WITH AIR ENTRAINMENT.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT, AND MANUFACTURER STANDARDS.
5. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
6. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
7. DRAIN WITH BIRD SCREEN LOCATED AT SLAB LEVEL (NOT SHOWN FOR CLARITY).
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
9. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, WILL HAVE ADDITIONAL REQUIREMENTS SUCH AS A RECORDED ACCESS AGREEMENT AND ADEQUATE ROOM DRAINAGE PER MANUFACTURER'S RECOMMENDATION.
10. ALL WATER PIPING SHALL BE RESTRAINED JOINT.

Silver Lake Water & Sewer District

REDUCED PRESSURE BACKFLOW ASSEMBLY 3-INCH AND LARGER

DATE: 11-2022 | DWG: CC7



1. UNIVERSITY OF SOUTHERN CALIFORNIA APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) OS&Y RESILIENT SEAT GATE VALVE EACH END AND LOW FLOW METER ASSEMBLY.

2. ALUMINUM INSULATED ENCLOSURE MODELS 4 THOUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT EXTEND OUTSIDE OF BOX.

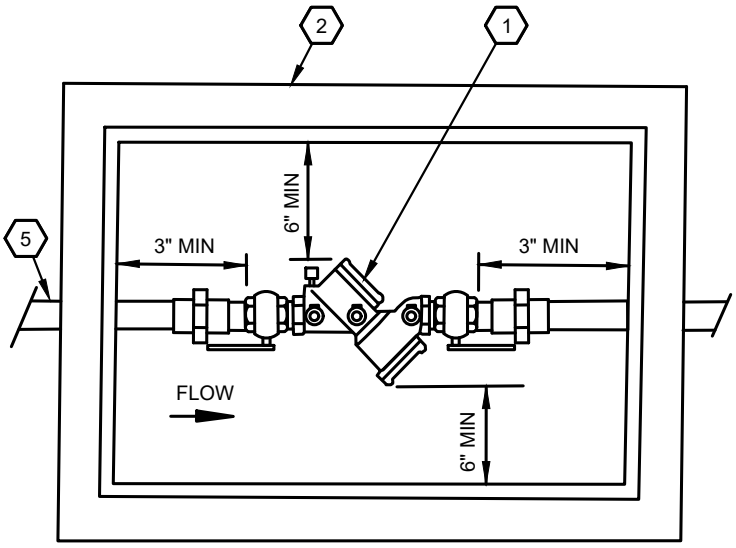
NOTES:

1. INSULATED ENCLOSURE TO BE LOCATED OUTDOORS AND ACCESSIBLE TO DISTRICT. ALTERNATE LOCATION REQUIRES DISTRICT APPROVAL.
2. HEATERS AND WIRING SHALL BE RATED AT 2,000 WATT FOR 8" AND UNDER. 3,000 WATT FOR 10".
3. CONCRETE TO BE 2500 PSI (MIN.) MIX WITH AIR ENTRAINMENT.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT, AND MANUFACTURER STANDARDS.
5. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
6. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
7. DRAIN TO DAYLIGHT WITH BIRD SCREEN LOCATED AT SLAB LEVEL (SIZED PER MANUFACTURER'S RECOMMENDATION).
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
9. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, WILL HAVE ADDITIONAL REQUIREMENTS SUCH AS A RECORDED ACCESS AGREEMENT AND ADEQUATE ROOM DRAINAGE PER MANUFACTURER'S RECOMMENDATIONS.
10. ALL WATER PIPING SHALL BE RESTRAINED JOINT.

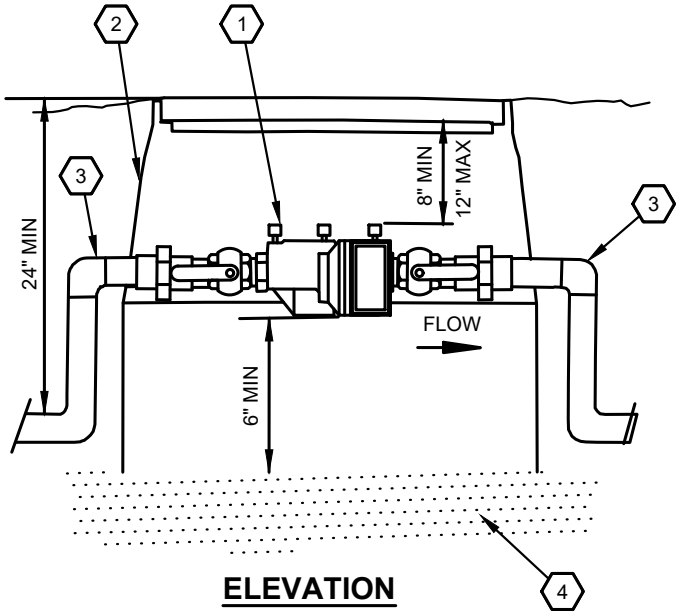
Silver Lake Water & Sewer District

REDUCED PRESSURE DETECTOR ASSEMBLY 3-INCH AND LARGER

DATE: 11-2022 | DWG: CC8



PLAN



ELEVATION

1. DOUBLE CHECK VALVE ASSEMBLY (DCVA) MUST BE APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA.
2. OLDCASTLE CARSON BCF HEAVYWALL METER BOX WITH COMPOSITE SOLID LID OR DISTRICT APPROVED ALTERNATE.
3. BENDS MAY BE LOCATED INSIDE OR OUTSIDE OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPPERATION AND DCVA REPAIR OR MAINTENANCE.
4. PROVIDE 6" MIN OF FREE DRAINING BACKFILL BELOW BOX (WASHED DRAIN ROCK OR PEA GRAVEL, NO FINES). BOTTOM OF BOX TO BE OPEN TO DRAIN.

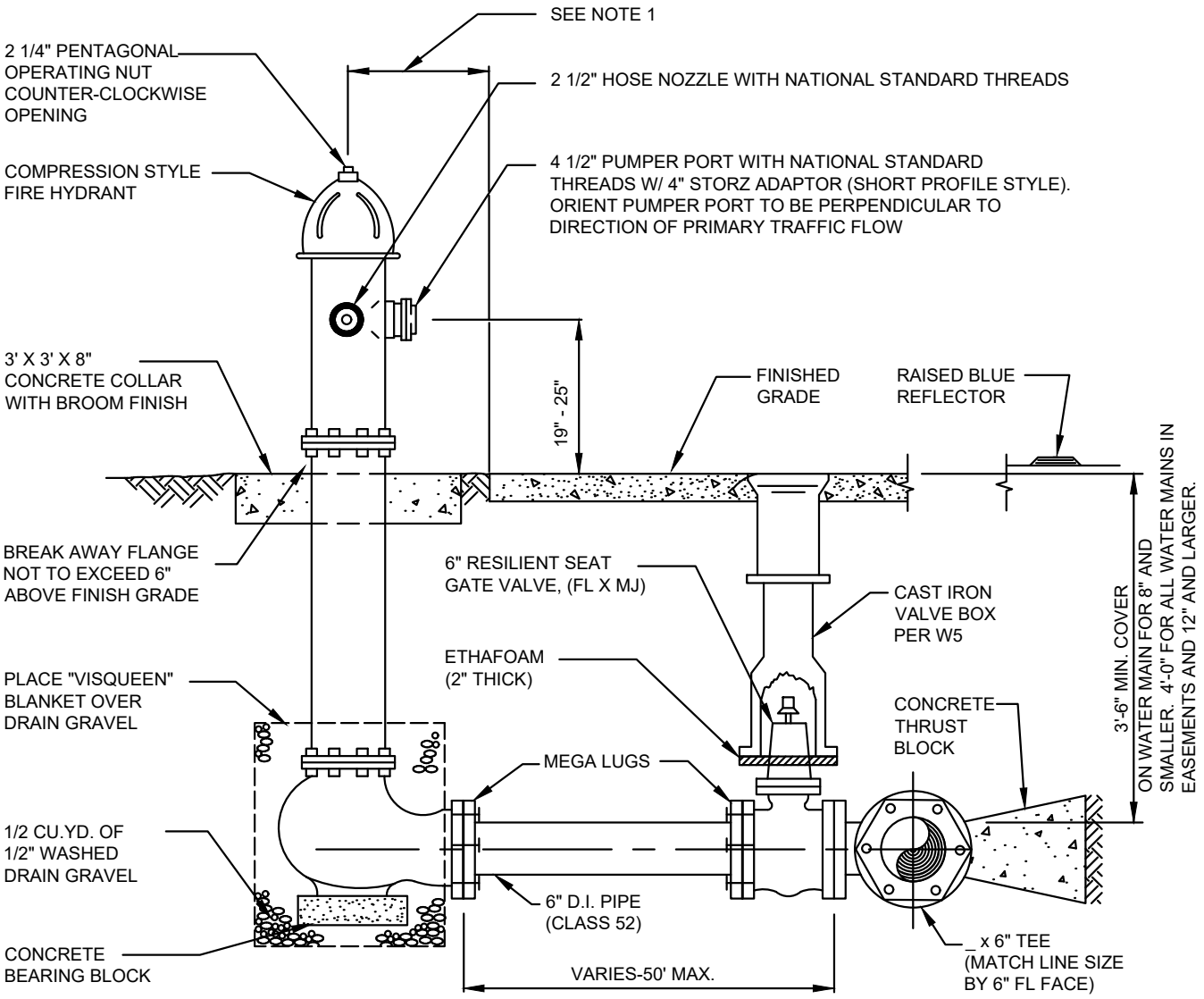
NOTES:

1. ALL TEST COCKS SHALL POINT UPWARDS AND HAVE BRASS PLUGS.
2. DCVA SHALL BE CENTERED IN BOX.
3. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
4. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCVA INSTALLATION IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
5. DCVA IS CONSIDERED PART OF A PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
6. INSTALL DCVA USING UNIONS ON EACH END OF ASSEMBLY. UNIONS TO BE EXPOSED INSIDE OF BOX.
7. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND DCVA.
9. IRRIGATION BLOW-OUTS TO BE INSTALLED DOWNSTREAM OF DCVA.
10. FIRE SYSTEM DCVA NOT ALLOWED IN GREEN METER BOXES.
11. INSTALL DCVA DIRECTLY BEHIND THE METER UNLESS DISTRICT APPROVES ALTERNATE LOCATION.

Silver Lake Water & Sewer District

DOUBLE CHECK VALVE ASSEMBLY 2-INCH AND SMALLER

DATE: 11-2022	DWG: CC9



NOTES:

1. 1'-6" FROM BACK OF SIDEWALK OR 3' FROM BACK OF CURB OR EDGE OF PAVEMENT.
2. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT.
3. PAINT FIRE HYDRANT WITH TWO COATS YELLOW PAINT, COLOR FORMULA TO BE PROVIDED BY DISTRICT AND TOP OF HYDRANT COLOR DETERMINED BY SERVICE LEVEL GPM IN ACCORDANCE WITH FIRE MARSHALL REQUIREMENTS.
4. PAINT FOOTAGE TO VALVE WITH 2" HIGH BLACK LETTERS ON HYDRANT UNDER PORT FACING GV.
5. REMOVE ALL CHAINS FOR FIRE HYDRANT CAPS.
6. ACCEPTABLE HYDRANTS:
   CLOW MEDALLION
   MUELLER CENTURION
   EAST JORDAN WATERMASTER 5CD250
7. INSTALL BLUE FIRE HYDRANT REFLECTOR. OFFSET 1 FOOT FROM ROAD CENTERLINE ON FIRE HYDRANT SIDE OF THE CENTERLINE.
8. VERTICAL EXTENSIONS NOT ALLOWED ON NEW CONSTRUCTION.
9. HYDRANTS NOT IN SERVICE SHALL BE COVERED UNTIL APPROVED FOR USE BY THE DISTRICT

SCALE: NTS

Silver Lake Water & Sewer District

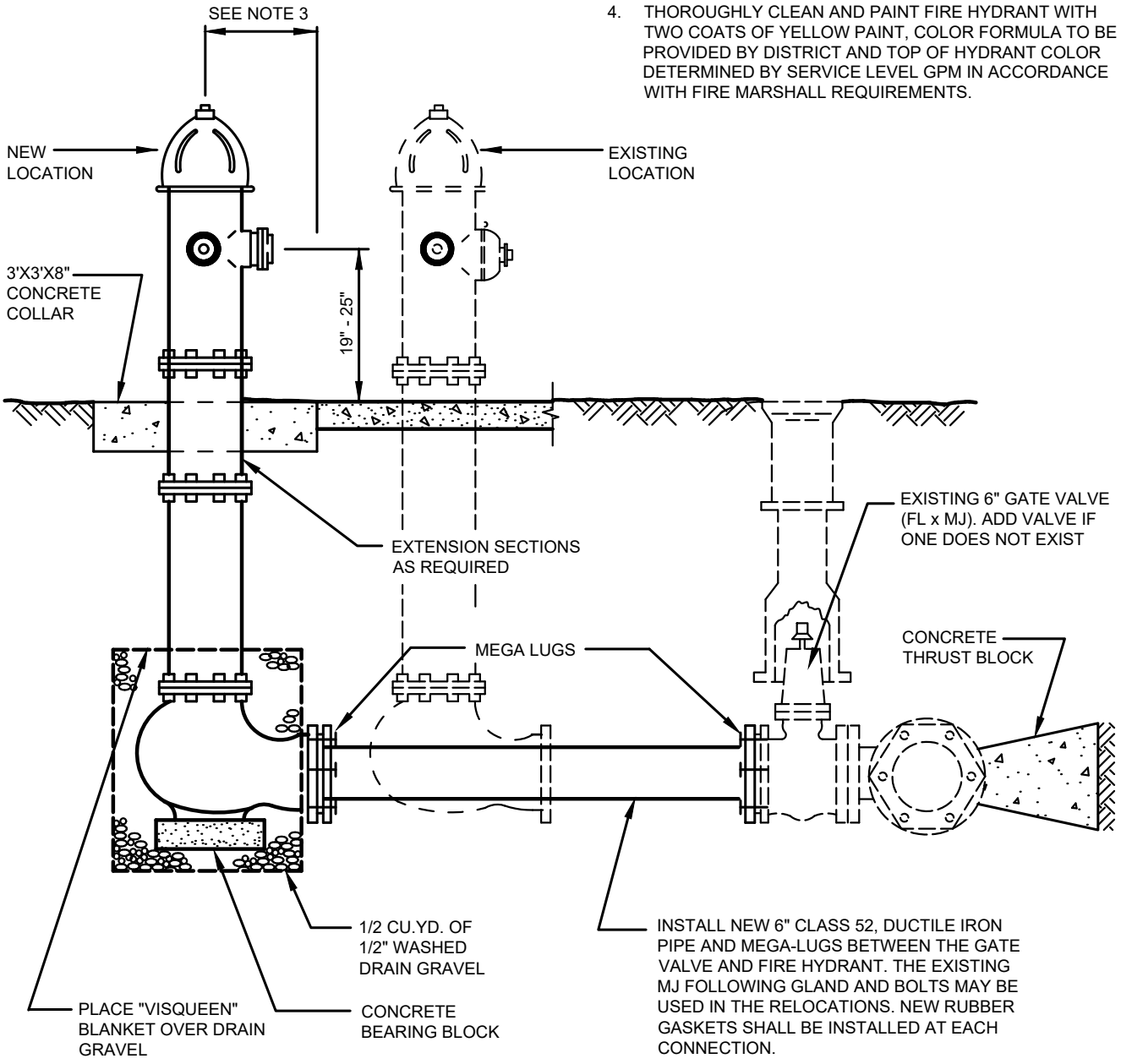
NEW FIRE HYDRANT ASSEMBLY

DATE: 11-2022

DWG: W1

NOTES:

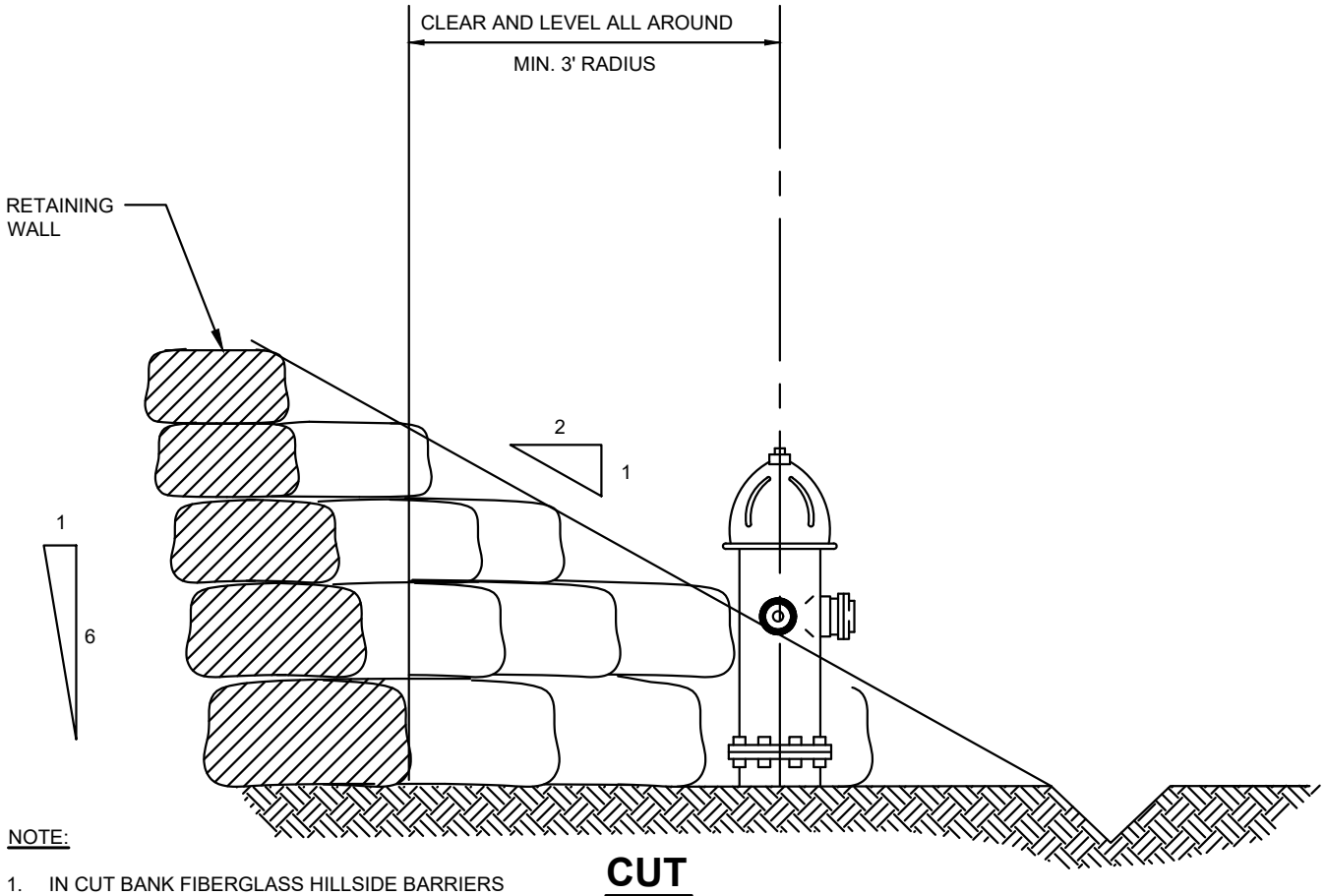
1. FIRE HYDRANT MUST MEET SILVER LAKE WATER AND SEWER DISTRICT REQUIREMENTS FOR NEW HYDRANTS (SEE W1). REPLACE WITH NEW FIRE HYDRANT IF REQUIRED.
2. NO RELOCATIONS ALLOWED ON 4" WATER MAINS.
3. 1'-6" FROM BACK OF SIDEWALK OR 3' FROM BACK OF CURB OR EDGE OF PAVEMENT.
4. THOROUGHLY CLEAN AND PAINT FIRE HYDRANT WITH TWO COATS OF YELLOW PAINT, COLOR FORMULA TO BE PROVIDED BY DISTRICT AND TOP OF HYDRANT COLOR DETERMINED BY SERVICE LEVEL GPM IN ACCORDANCE WITH FIRE MARSHALL REQUIREMENTS.



Silver Lake Water & Sewer District

RELOCATE FIRE HYDRANT ASSEMBLY

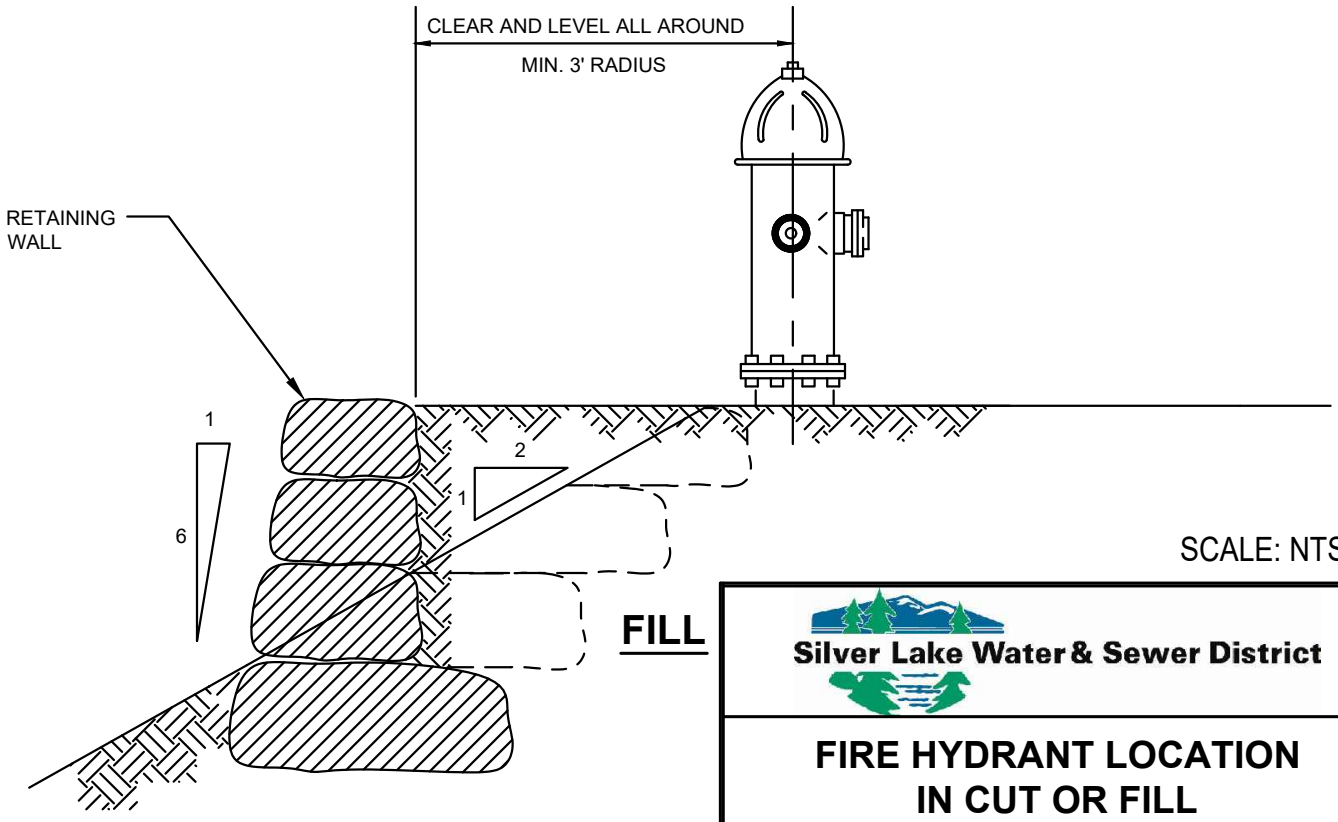
DATE: 11-2022	DWG: W2



NOTE:

1. IN CUT BANK FIBERGLASS HILLSIDE BARRIERS CAN BE CONSIDERED. PROGLASS, INC. OR EQUAL.

CUT



FILL

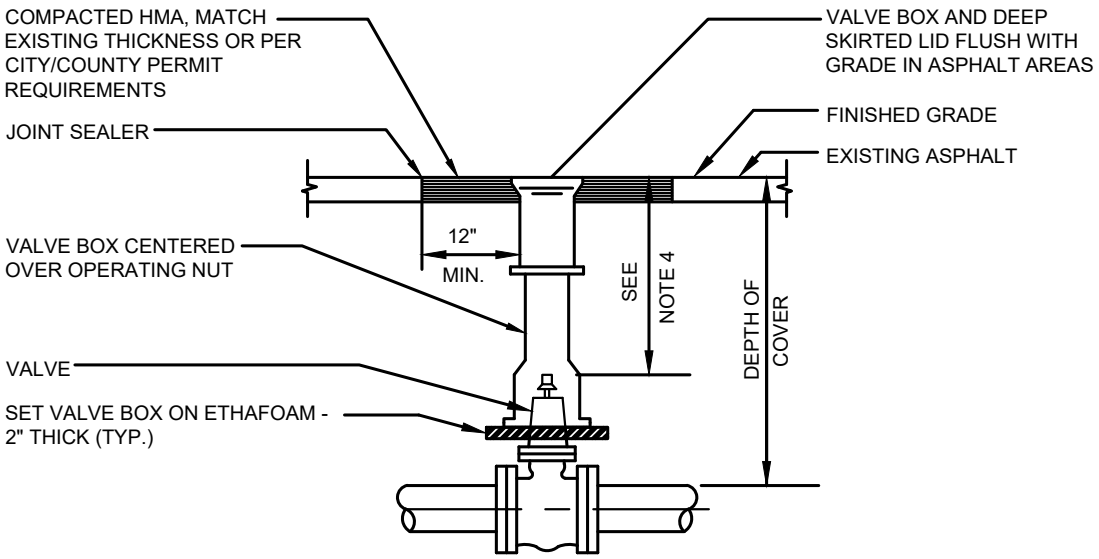
SCALE: NTS

Silver Lake Water & Sewer District

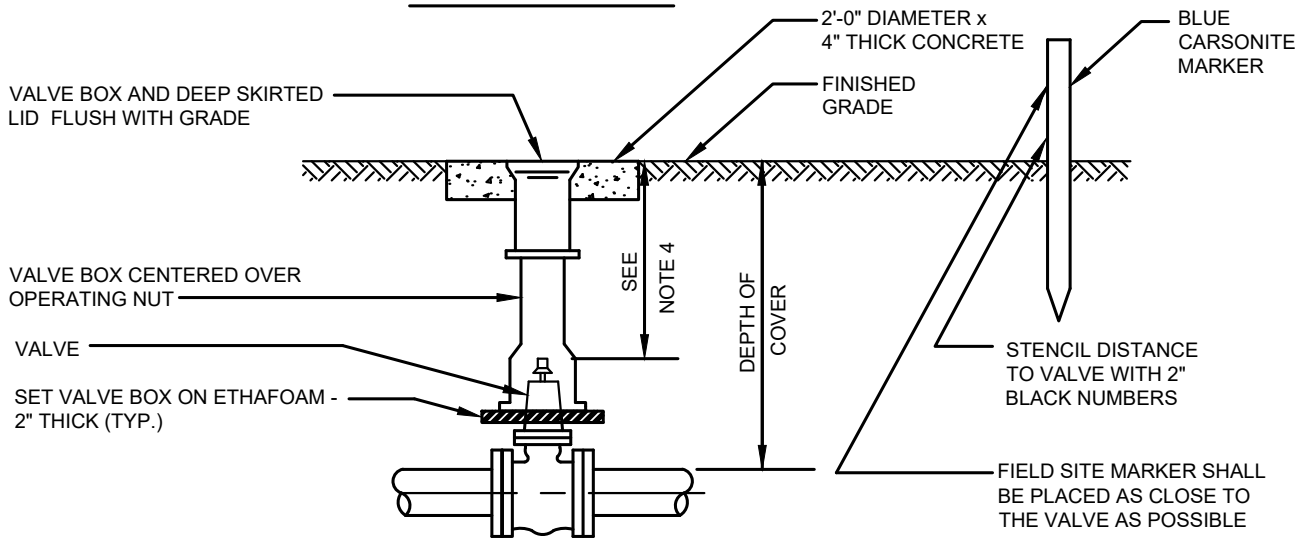
FIRE HYDRANT LOCATION IN CUT OR FILL

DATE: 11-2022

DWG: W3



VALVE BOX IN ASPHALT AREA



VALVE BOX IN UNIMPROVED AREA (VALVE MARKER REQUIRED)

NOTES:

1. EACH VALVE SHALL BE PROVIDED WITH AN ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH.

2. VALVE BOX COVERS ARE BASED ON DIFFERENT SPEED ROADWAYS AS FOLLOWS:

VALVE BOX COVER BASED ON ROADWAY SPEED		
	25 MPH OR LESS	25 MPH OR GREATER
VALVE BOX TOP	EAST JORDAN NO. 85557016	EAST JORDAN NO. 85557016
VALVE BOX COVER	EAST JORDAN NO. 06800001 OLYMPIC FOUNDARY NO. 940	EAST JORDAN NO. 06800045
VALVE BOX BOTTOM	EAST JORDAN NO. 85556024U	EAST JORDAN NO. 85556024U

3. 18" MINIMUM, 24" MAXIMUM FOR OPERATOR NUT IF EXTENSION IS REQUIRED, SEE DETAIL W6.

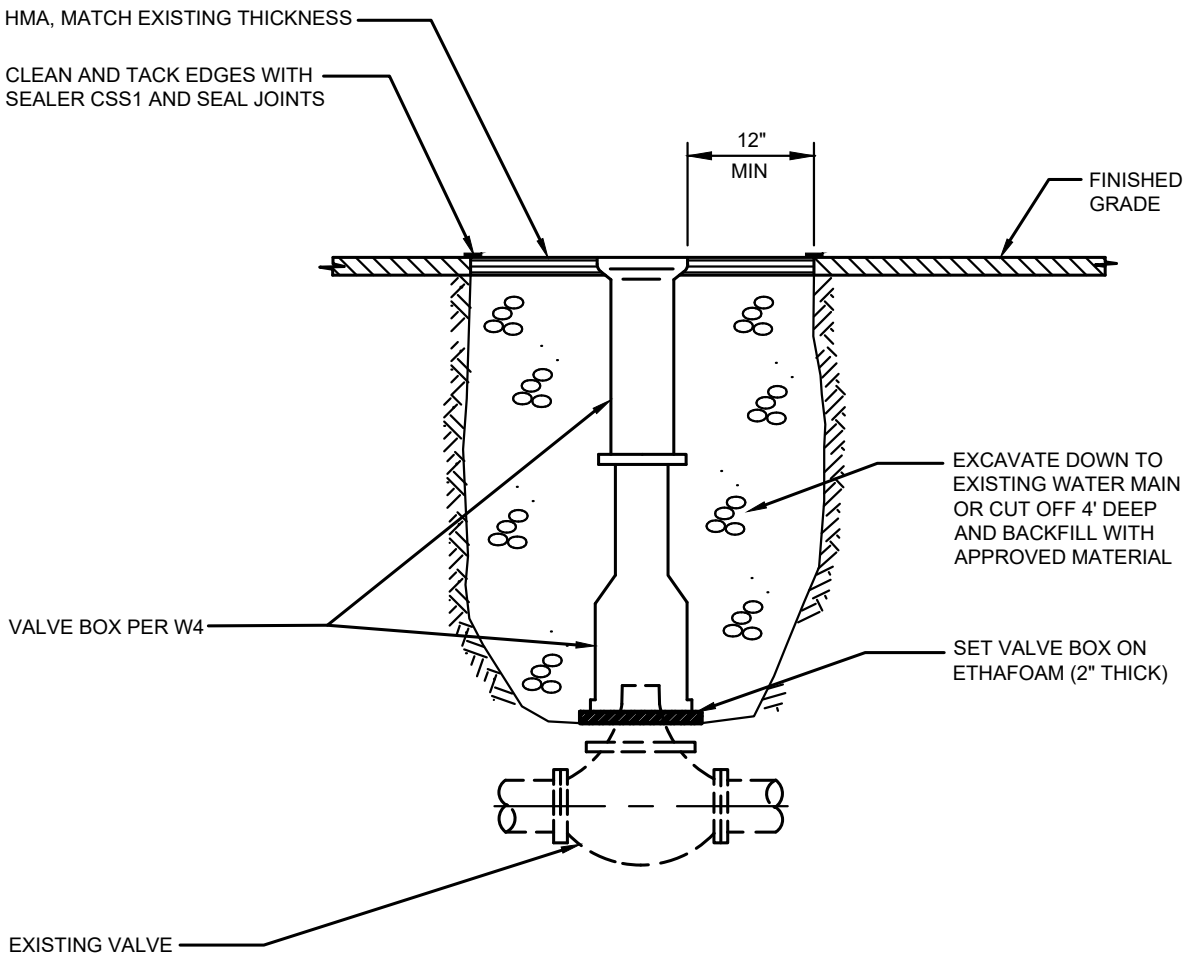
4. VALVE BOX EARS OR NOTCHES SHALL BE PLACED IN LINE WITH THE PIPE IT SERVES.

Silver Lake Water & Sewer District

VALVE BOX

DATE: 11-2022

DWG:W4



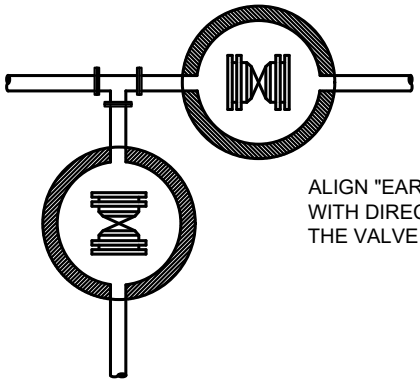
NOTES:

1. ALL EXISTING VALVE BOXES SHALL BE REPLACED WITH CURRENT STANDARD PER DETAIL W4 AND ADJUSTED TO GRADE AS NEEDED.
2. ALIGNMENT OF THE VALVE BOX SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND CARE SHALL BE TAKEN TO ENSURE THAT THE VALVE IS OPERABLE.
3. VALVE BOX EARS SHALL BE PLACES IN LINE WITH THE ASSOCIATED WATER MAIN.

Silver Lake Water & Sewer District

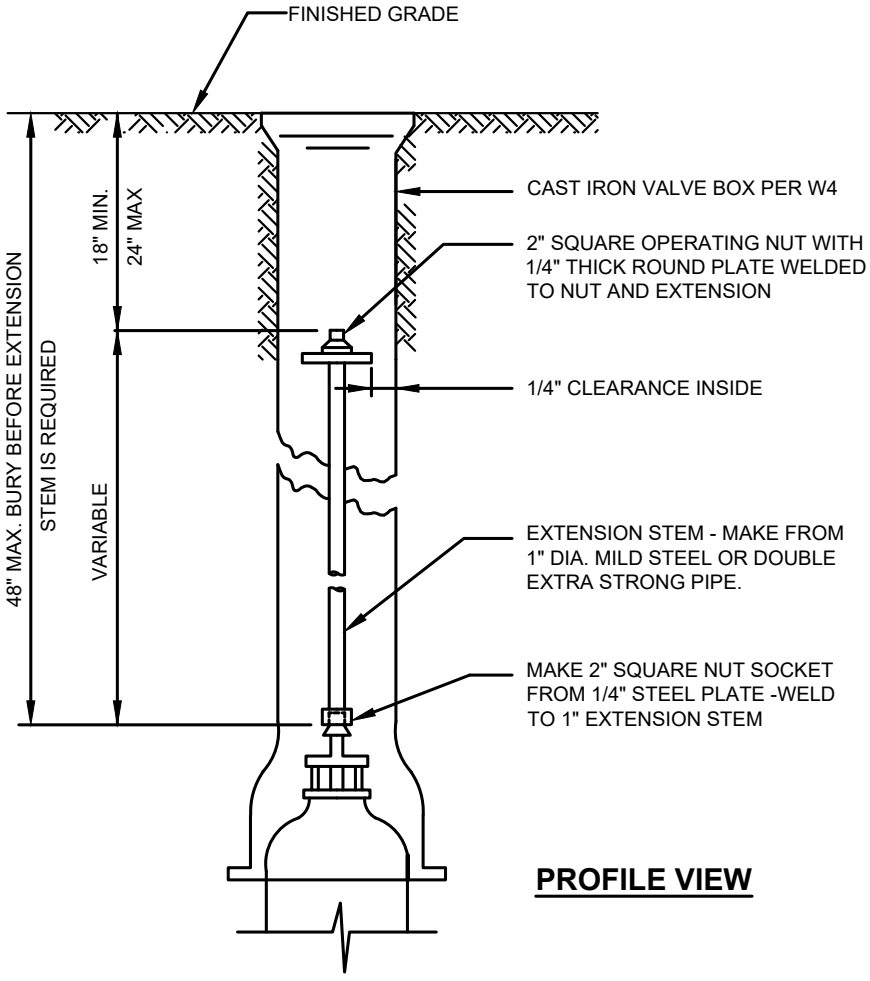
VALVE BOX ADJUSTMENT

DATE: 11-2022	DWG: W5



ALIGN "EARS" ON VALVE BOX TOP
WITH DIRECTION OF PIPE BRANCH
THE VALVE OPENS AND CLOSES.

PLAN VIEW

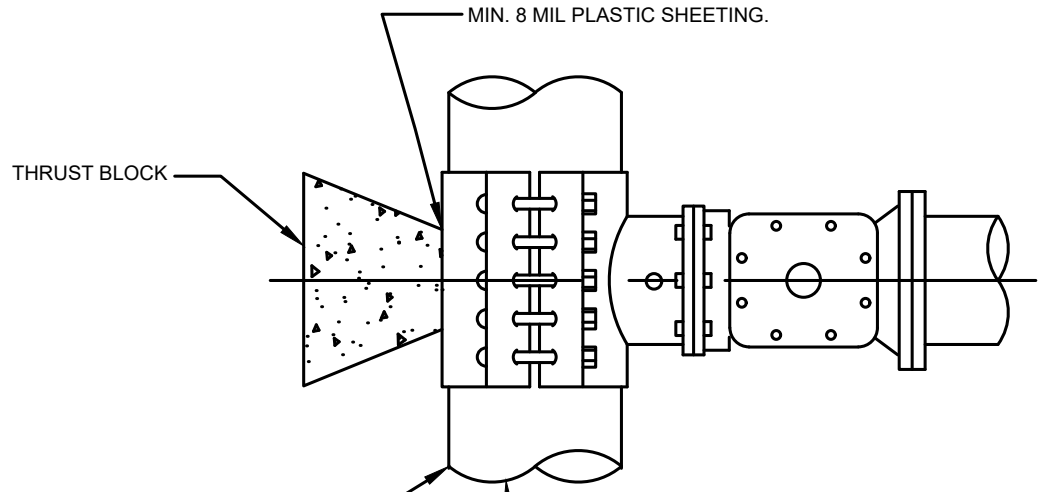


PROFILE VIEW

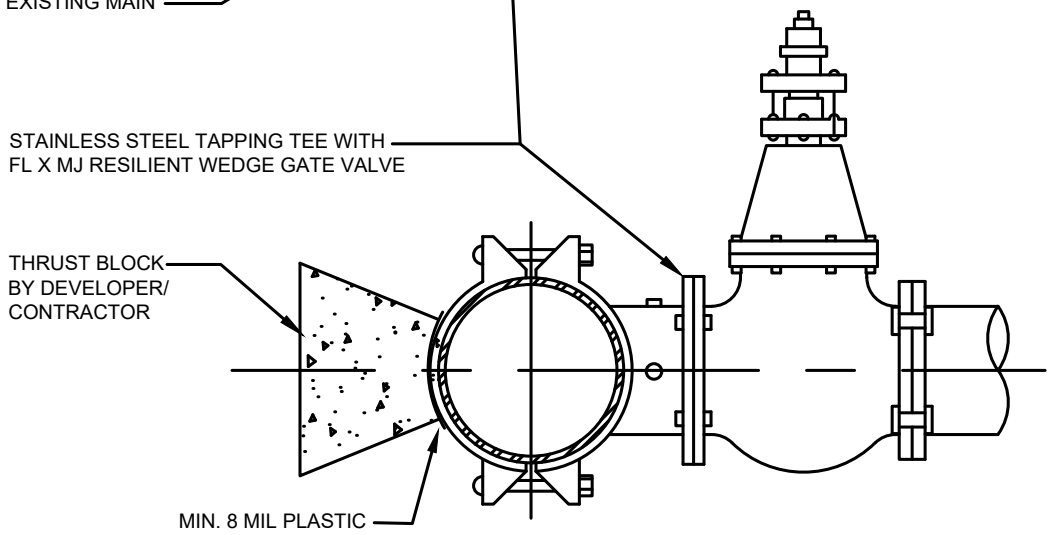
Silver Lake Water & Sewer District

VALVE EXTENSION STEM

DATE: 11-2022	DWG: W6



PLAN



ELEVATION

NOTES:

1. STAINLESS STEEL TAPPING TEE SHALL BE ROMAC, SMITH BLAIR, OR JCM INDUSTRIES MODEL NO. 432 OR 462.

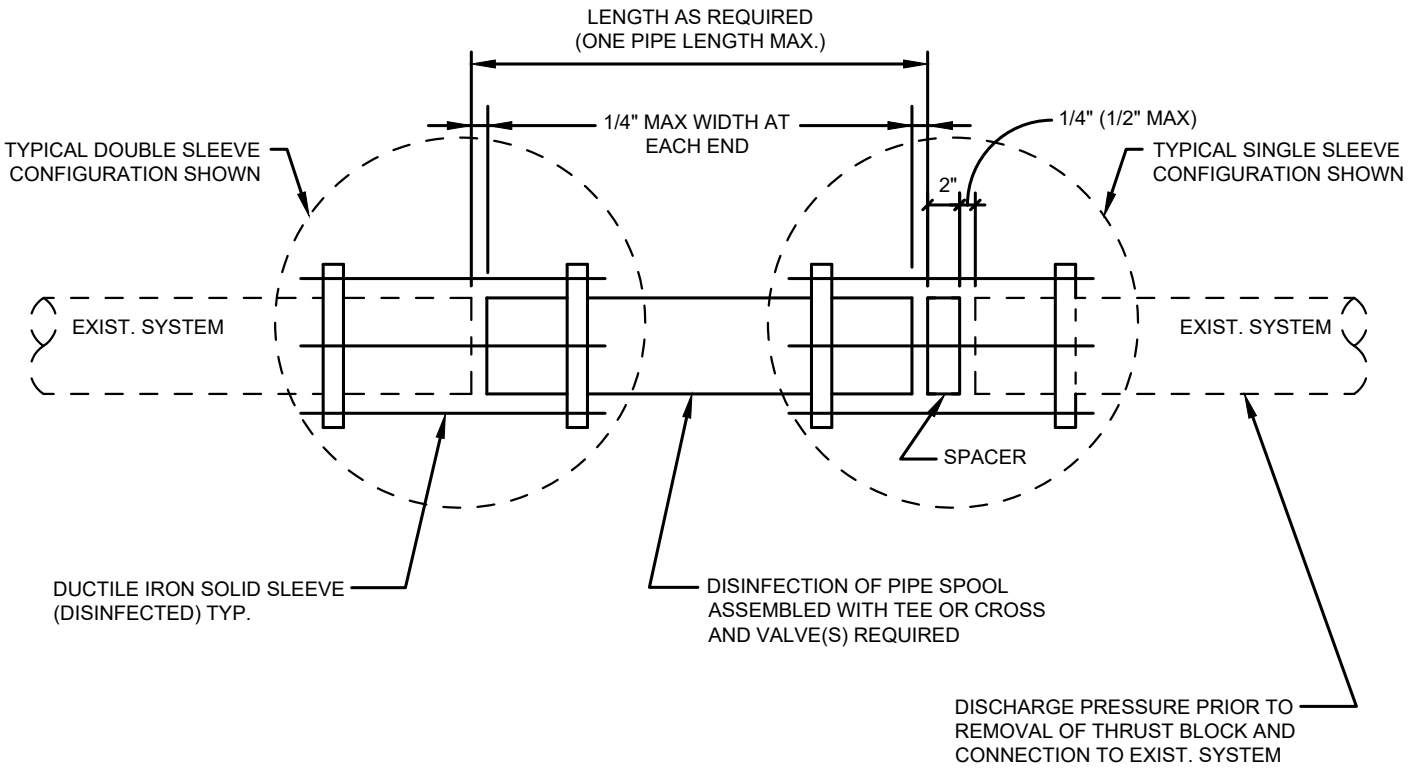
O.D. RANGES (INCHES)	
6" - 6.59-6.99	
8" - 8.62-9.06	FOR LARGER SIZES
12" - 12.90-13.30	CONSULT THE DISTRICT
16" - 17.15-17.55	

2. TAP TO BE INSTALLED AT DEVELOPERS EXPENSE BY APPROVED TAPPING CONTRACTOR UNDER DISTRICT OBSERVATION.
3. TAPPING TEES SHALL BE AIR PRESSURE TESTED TO 100 PSI PRIOR TO TAPPING MAIN.
4. CONNECTIONS ONLY ALLOWED ON A NON HOLIDAY TUESDAY-THURSDAY UNLESS OTHERWISE APPROVED BY DISTRICT.
5. WET TAPS ARE NOT ALLOWED FOR SIZE ON SIZE CONNECTIONS TO CAST IRON PIPE; SHALL BE CUT-IN ONLY.

Silver Lake Water & Sewer District

WET TAP CONNECTION

DATE: 11-2022 | DWG: W7



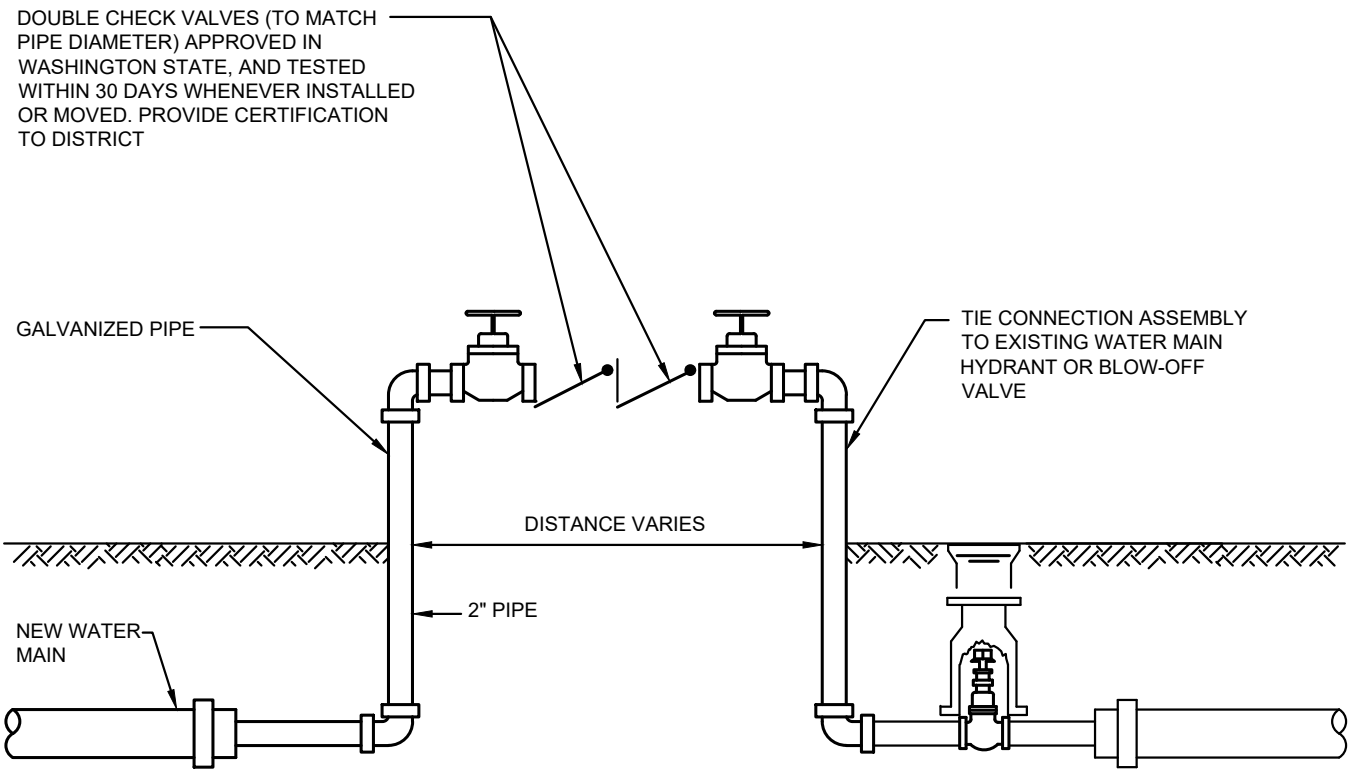
NOTES:

1. IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED BY THE DISTRICT AT NEW INTERTIE LOCATIONS. VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY.
2. MAXIMUM SPACES BETWEEN PIPES SHALL BE 1/4-INCH. IF A SINGLE SLEEVE IS USED, THE MAXIMUM SPACER WIDTH IS 2-INCHES.
3. CONNECTIONS ONLY ALLOWED ON A NON-HOLIDAY TUESDAY-THURSDAY UNLESS OTHERWISE APPROVED BY THE DISTRICT.

Silver Lake Water & Sewer District

CUT IN CONNECTION

DATE: 11-2022 | DWG: W8



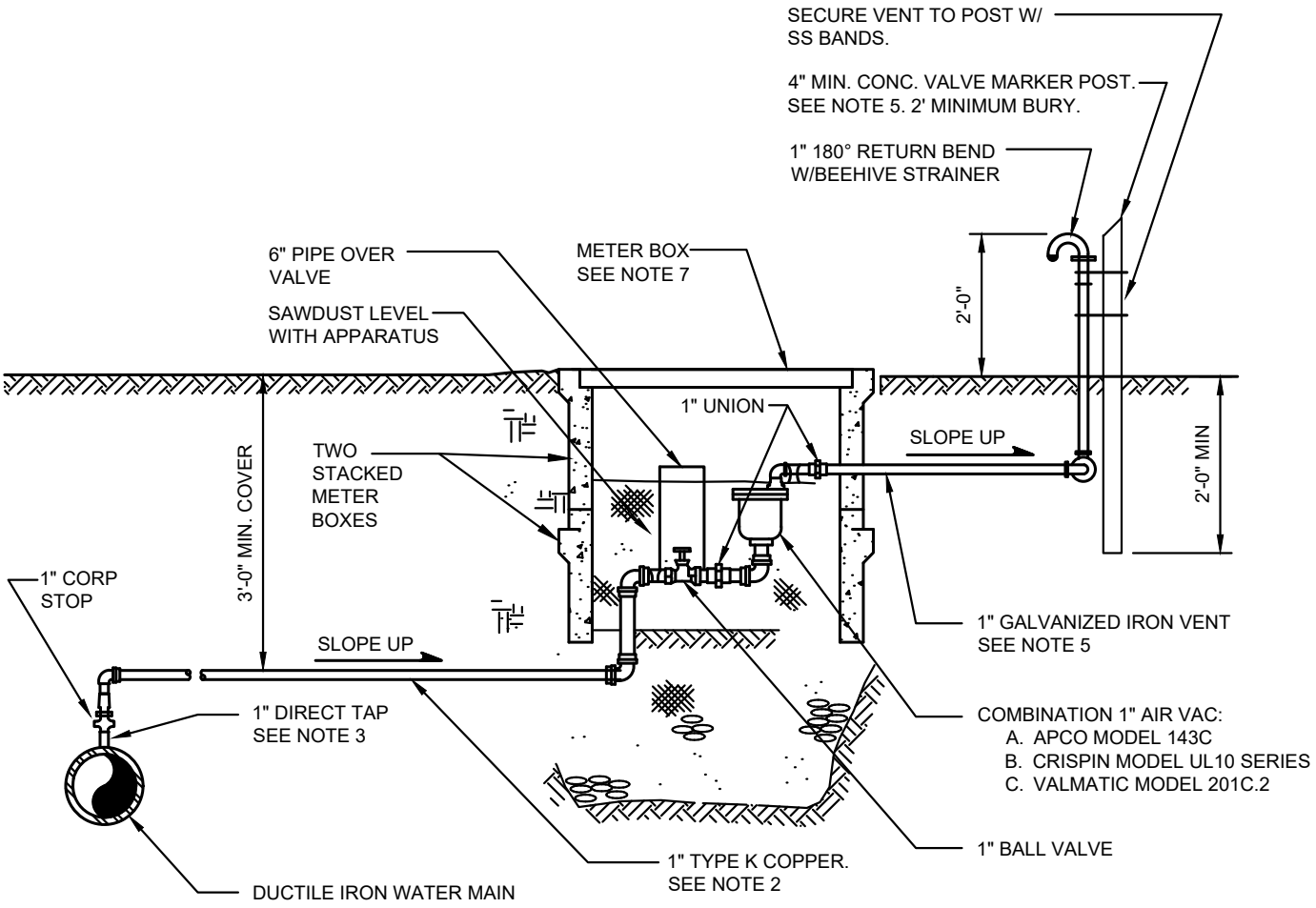
NOTES:

1. PROTECT INSTALLATION FROM DAMAGE AND FREEZING.
2. ALL WATER USED FOR FILLING AND FLUSHING SHALL BE METERED BY DISTRICT. PROVIDE SPACE FOR INSTALLATION OF METER OR INSTALL ON POINT OF DISCHARGE.
3. ALL NEW MAINS SHALL BE KEPT SEPARATE FROM THE DISTRICT'S EXISTING SYSTEM UNTIL THE NEW MAINS ARE TESTED AND ACCEPTED. FINAL CONNECTION REQUIRES 100% INSPECTION BY THE DISTRICT.
4. PROVIDE TEMPORARY BRACING OR BLOCKING AS APPROVED BY THE DISTRICT.

Silver Lake Water & Sewer District

TESTING CONNECTION DETAIL

DATE: 11-2022	DWG: W9



NOTES:

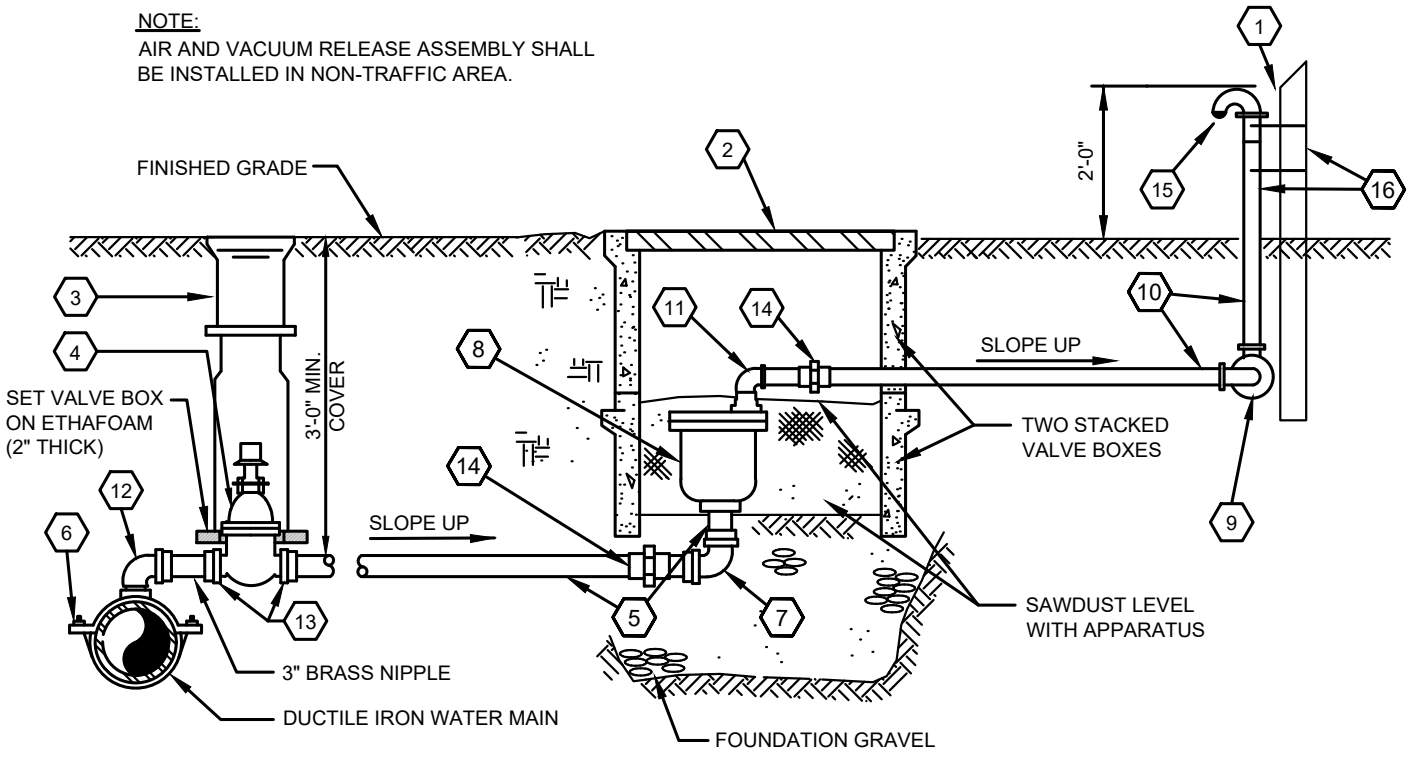
1. 1" AIR VAC FOR WATER MAINS LESS THAN 12" AND 2" AIR VAC FOR WATER MAINS 12" OR LARGER.
2. ALL PIPING AND FITTINGS BETWEEN CORP AND INLET SIDE OF COMBINATION AIR AND VACUUM ASSEMBLY SHALL BE COPPER OR BRASS.
3. TAP WATER MAIN AT HIGH POINT AT LOCATION DESIGNATED BY THE DISTRICT.
4. AIR VAC ASSEMBLY TO BE CONNECTED USING HORIZONTALLY PLACED UNIONS AT EACH END OF AIR VAC ASSEMBLY (MATCH PIPE MATERIAL).
5. PAINT EXPOSED PORTION OF VENT PIPE AND MARKER POST WITH TWO COATS YELLOW PAINT, COLOR FORMULA TO BE PROVIDED BY DISTRICT.
6. 2' MINIMUM BURY REQUIRED ON MARKER POST.
7. MID STATES PLASTICS MSBCF 1730-12 COMPOSITE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
8. FIELD LOCATION TO BE CONFIRMED WITH DISTRICT.

Silver Lake Water & Sewer District

1-INCH COMBINATION AIR AND VACUUM RELEASE ASSEMBLY

DATE: 11-2022	DWG: W10

NOTE:
AIR AND VACUUM RELEASE ASSEMBLY SHALL BE INSTALLED IN NON-TRAFFIC AREA.



1. CONC. VALVE MARKER POST, 4' MIN LENGTH.
2. MID STATES PLASTICS MSBCF 1730-12 COMPOSITE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
3. CAST IRON VALVE BOX PER W4.
4. 2" AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT.
5. 2" TYPE "K" COPPER TUBING OR BRASS.
6. DOUBLE STRAP SERVICE CLAMP.
7. 90° BEND MUELLER NO. H-15526 COMPRESSION X COMPRESSION.
8. 2" COMBINATION AIR & VACUUM RELEASE ASSEMBLY:
   A. APCO MODEL 145C.
   B. CRISPIN MODEL UL20 SERIES.
   C. VALMATIC MODEL 202C.2.
9. 2, 2"X90° ELL, GALV.
10. 2" GALV. IRON PIPE (FIELD LOCATE NEXT TO EXISTING PROPERTY LINE).
11. 2"X90° ELL, GALV.
12. 90° BEND MUELLER NO. H-10096 FEMALE X M.I.P.
13. STRAIGHT COUPLING, MUELLER No. H-15428 COMPRESSION TO M.I.P.
14. UNIONS.
15. 2" OPEN PATTERN RETURN BEND WITH 2" BEEHIVE STRAINER.
16. PAINT EXPOSED PORTION OF VENT PIPE AND MARKER POST WITH TWO COATS OF KELLY MOORE 6100-516 YELLOW PAINT. COLOR FORMULA TO BE PROVIDED BY THE DISTRICT.
17. SECURE VENT TO POST WITH SS BANDS. 2' MINIMUM BURY REQUIRED ON MARKER POST.

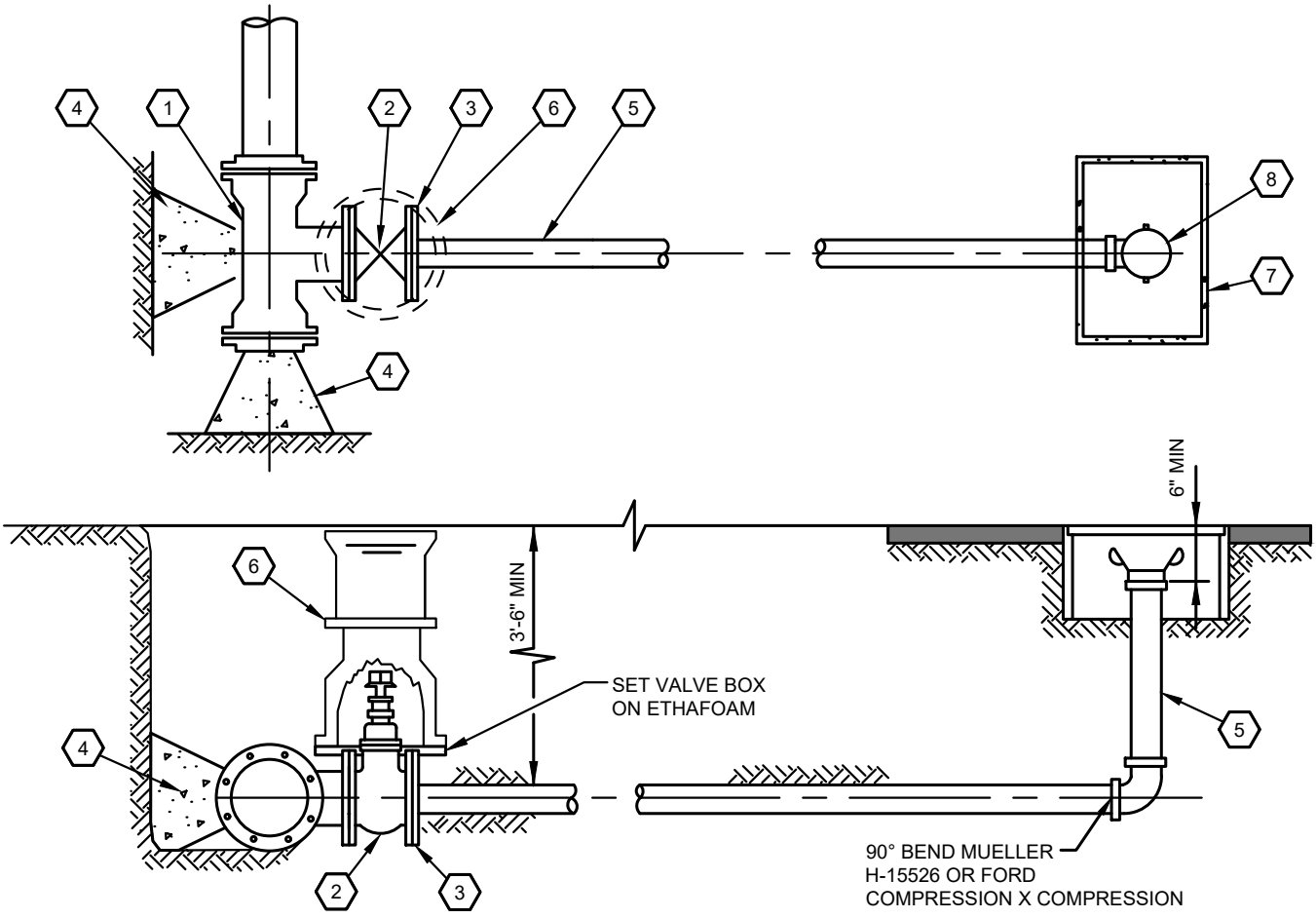
NOTES:

1. ALL PIPING AND FITTINGS BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR AND VACUUM ASSEMBLY SHALL BE COPPER OR BRASS.
2. TAP WATER MAIN AT HIGH POINT AT LOCATION TO BE DETERMINED BY THE DISTRICT.
3. AIR VAC ASSEMBLY TO BE CONNECTED USING HORIZONTALLY PLACED UNIONS AT EACH END OF AIR VAC ASSEMBLY (MATCH PIPE MATERIAL).

Silver Lake Water & Sewer District

2-INCH COMBINATION AIR AND VACUUM RELEASE ASSEMBLY

DATE: 11-2022 | DWG: W11



1. MJ X MJ X 4" FL D.I. TEE.
2. 4" AWWA RESILIENT SEAT GATE VALVE, FL X FL, WITH OPERATING NUT.
3. 4" BLIND FLANGE, TAPPED FOR 2" FOR 6" AND 8" MAINS. MAINS LARGER THAN 8" SHALL END IN A FIRE HYDRANT.
4. CONCRETE THRUST BLOCK.
5. 2" TYPE K COPPER OR BRASS PIPE.
6. CAST IRON VALVE BOX PER W4.
7. OLDCASTLE CARSON BCF HEAVYWALL METER BOX WITH COMPOSITE SOLID LID OR DISTRICT APPROVED ALTERNATE.
8. ALUMINUM CAM-LOCK AND CAP. DRILL 1/8" HOLE IN CAP. PLASTIC CAM LOCK FITTING NOT ALLOWED.

NOTES:

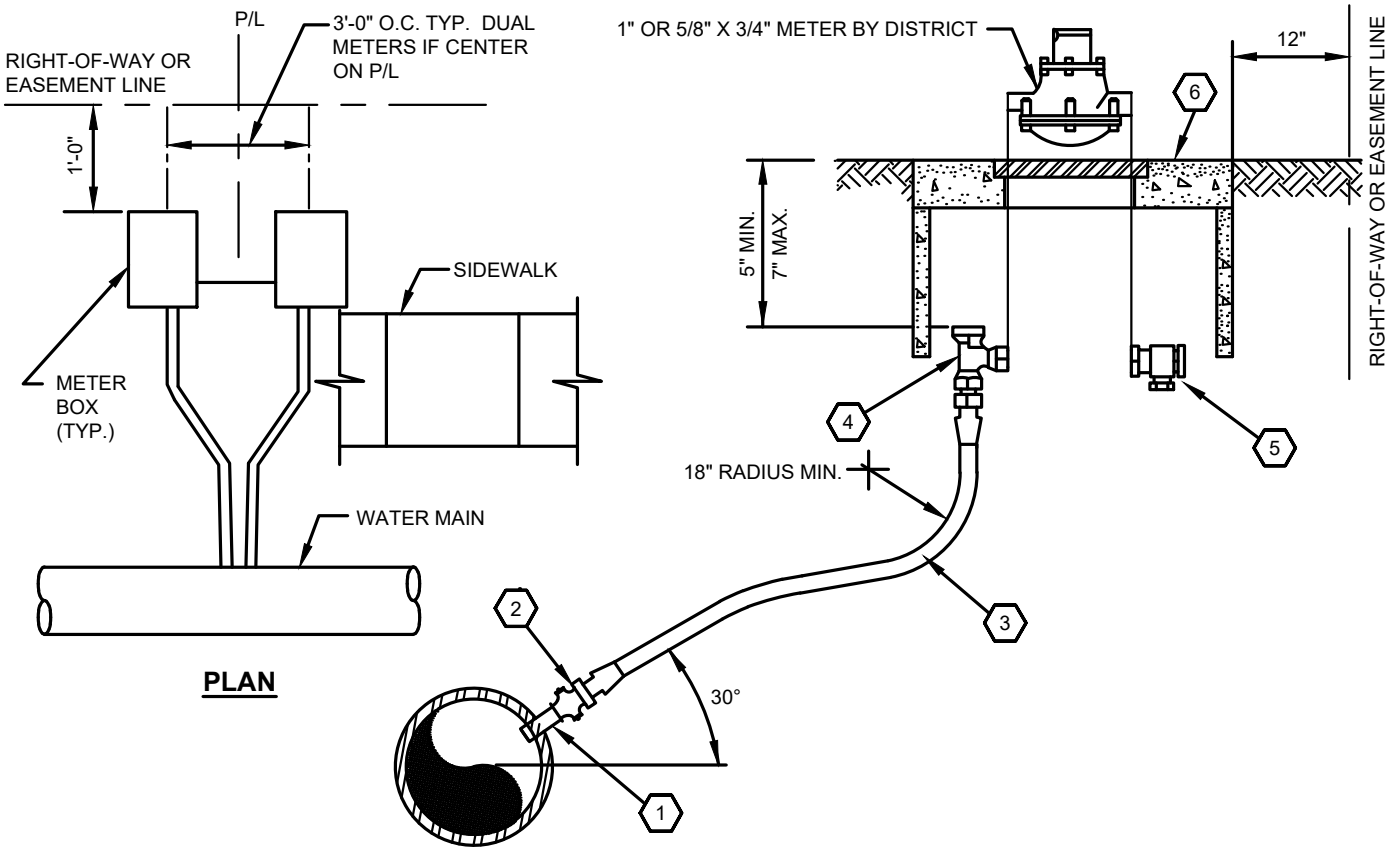
1. INSTALL DIELECTRIC COMPOUNDS FOR SEPARATION AT DISSIMILAR METALS.
2. FIELD LOCATION OF BLOW OFF AND METER BOX TO BE DETERMINED BY THE DISTRICT.

Silver Lake Water & Sewer District

BLOW OFF ASSEMBLY

DATE: 11-2022

DWG: W12



1. 1" DIRECT TAP
2. 1" BALL TYPE CORPORATION STOP:
   A. MUELLER B-25008-N.
   B. FORD FB1000-Q4-NL.
   C. A.Y. MCDONALD 74701BQ.
3. 1" TYPE K COPPER SERVICE TUBING - LENGTH AS REQUIRED.
4. 1"X1" WITH A 1" ANGLE METER BALL VALVE:
   A. MUELLER B-24258-N.
   B. FORD BA43-342-NL W2.
   C. A.Y. MCDONALD 74642BQ.
   REDUCER BUSHING FOR 5/8" METER TO BE INSTALLED BY DISTRICT AS NEEDED.
5. 1" ANGLE DUAL CHECK VALVE TO BE SUPPLIED BY DISTRICT.
6. OLDCASTLE CARSON BCF HEAVYWALL METER BOX WITH COMPOSITE AMR LID OR DISTRICT APPROVED ALTERNATIVE.
7. AFTER TAPPING A DRY WATER MAIN, USE A MAGNET TO REMOVE SHAVINGS BEFORE INSTALLING THE CORPORATION STOP.

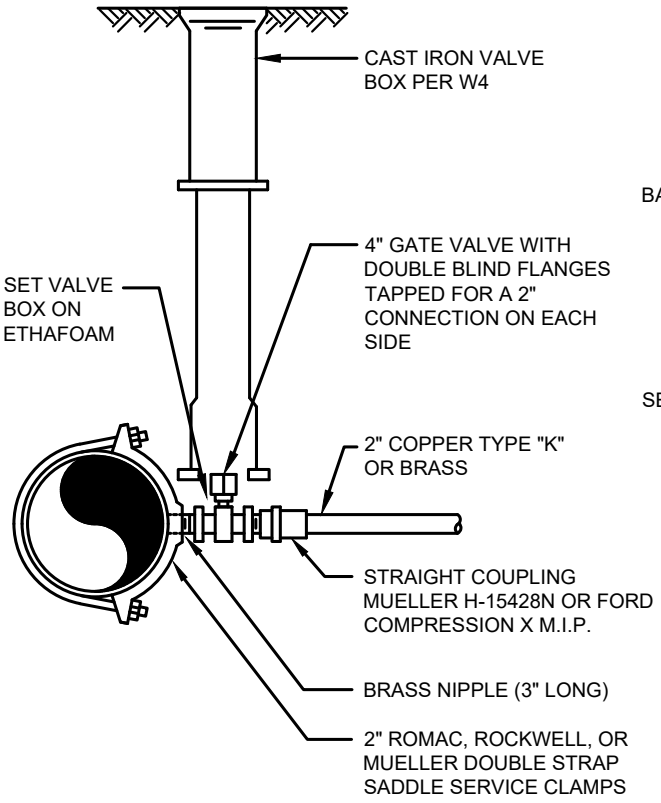
NOTES:

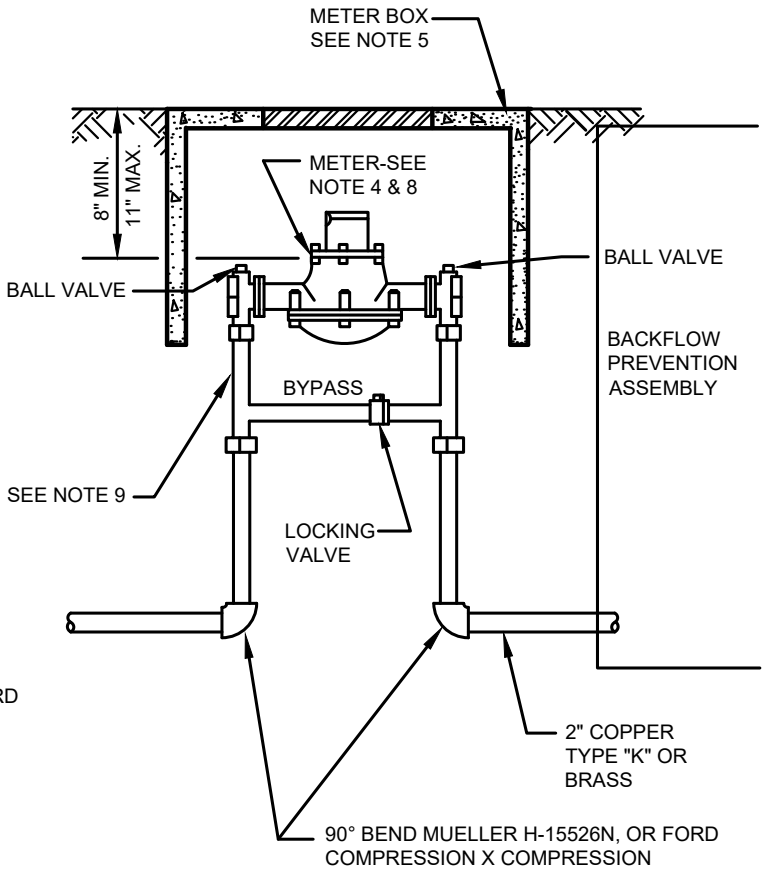
1. NO SPLICES IN 1" COPPER TUBING ALLOWED.
2. SERVICE FROM METER BOX TO HOUSE BY PROPERTY OWNER.
3. LEAD SERVICE LINES ARE PROHIBITED.
4. METER TO BE INSTALLED BY THE DISTRICT AT OWNER'S EXPENSE.
5. EASEMENT TO BE PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE R/W.
6. SEE DISTRICT CODE CHAPTER 6.20, ARTICLE V, FOR CROSS CONNECTION CONTROL REQUIREMENTS.

Silver Lake Water & Sewer District

1-INCH WATER SERVICE

DATE: 11-2022	DWG: W13





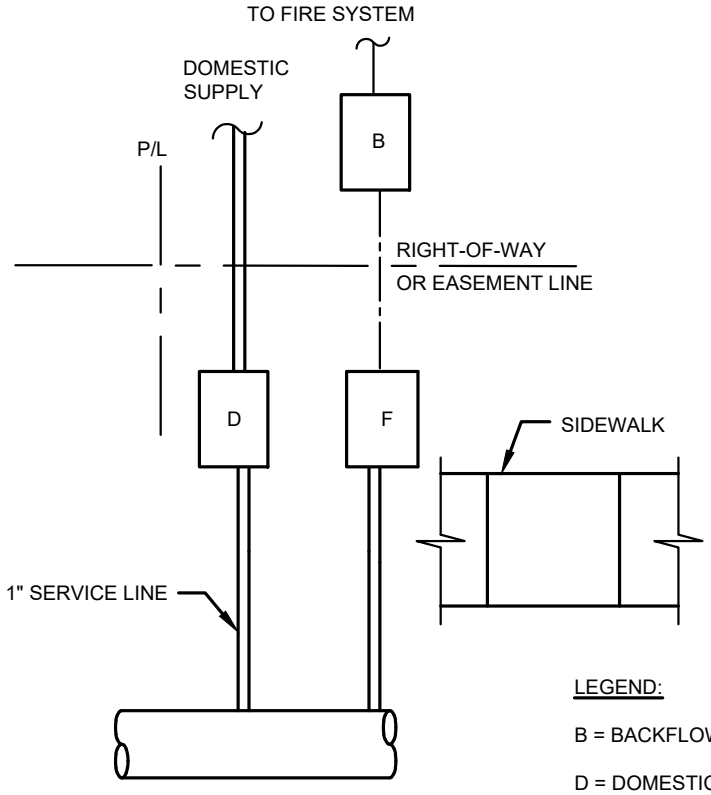
NOTES:

1. NO SPLICES IN 2" COPPER PIPE ALLOWED.
2. SERVICE FROM METER BOX TO STRUCTURE BY PROPERTY OWNER.
3. INDIVIDUAL SERVICES REQUIRED FOR EACH STRUCTURE.
4. 2-INCH METER SETTER (WITH ADAPTERS IF 1 1/2-INCH METER USED). SETTER - A.Y. MCDONALD 730B7-WWFF 775 OR MUELLER B-2427N. DRILL 2" DIAMETER HOLE IN LID FOR AMR DEVICE.
5. OLDCASTLE FRP 1730F (FLARED) METER BOX WITH POLYMER AMR LID OR DISTRICT APPROVED ALTERNATIVE.
6. EASEMENT TO BE PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE OF R/W.
7. SEE DISTRICT CODE CHAPTER 6.20, ARTICLE V, FOR CROSS CONNECTION CONTROL REQUIREMENTS.
8. METER TO BE INSTALLED BY THE DISTRICT AT OWNER'S EXPENSE. BYPASS TO BE LOCKED AND VISIBLE UNTIL ACCEPTED.
9. ALL SETTERS SHALL BE SET AT THE REQUIRED METER SPACING USING ALL THREAD OR OTHER MEANS.

Silver Lake Water & Sewer District

2-INCH WATER SERVICE

DATE: 11-2022	DWG: W14



DEDICATED FIRE LINE DETAIL

CONSTRUCTION NOTES:

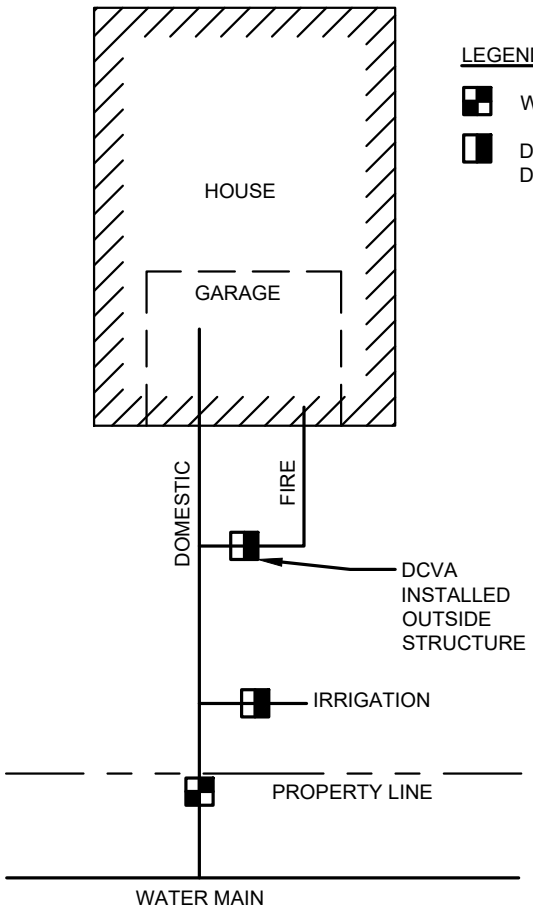
1. ALL TAPS CONFORM TO WATER SERVICE DETAIL FOR PIPE SIZE OF SERVICE LINE.
2. SEE DISTRICT CODE CHAPTER 6.20, ARTICLE V, FOR CROSS CONNECTION CONTROL REQUIREMENTS.
3. ALL FIRE METERS SHALL BE INSTALLED IN A METER BOX PER WATER SERVICE STANDARD DETAIL W13 OR W14 AS APPROPRIATE. ANGLE STOP TO BE PAINTED COMMERCIAL SAFETY RED IN FIELD.
4. ALL METERS PROVIDING FIRE PROTECTION SERVICES SHALL BE 1" MINIMUM SIZE.

LEGEND:

B = BACKFLOW ASSEMBLY IN BOX

D = DOMESTIC METER IN BOX

F = FIRE METER IN BOX



LEGEND:

WATER METER, 1"

DCVA PER SLWSD DETAIL CC9

COMMON SUPPLY FIRE LINE DETAIL

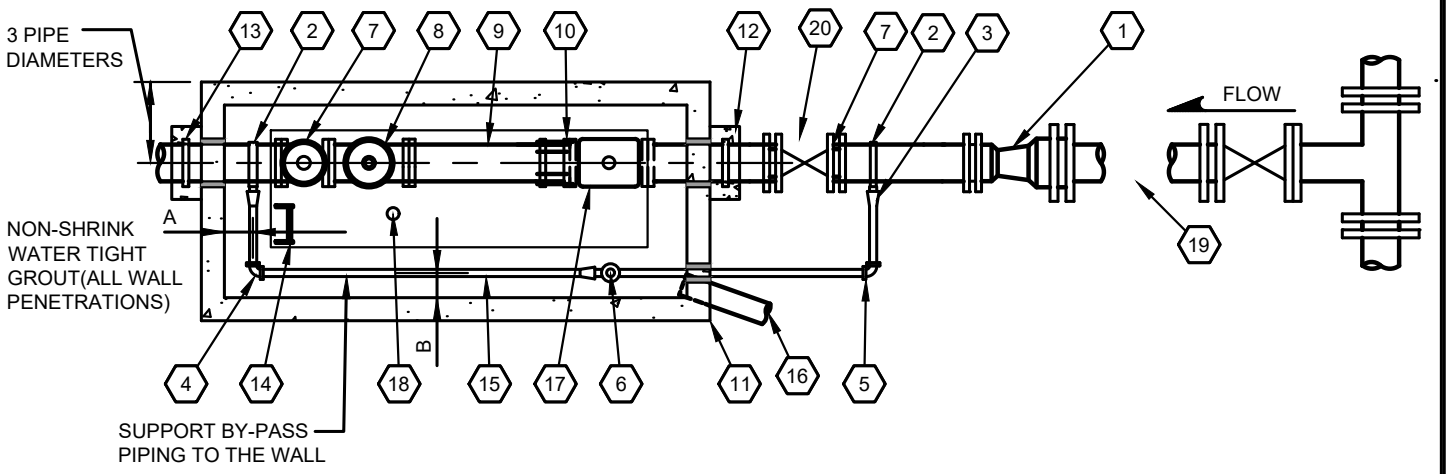
FLOW THROUGH FIRE SPRINKLER SYSTEMS:

1. FLOW THROUGH SYSTEMS SHALL BE INTERCONNECTED BETWEEN FLOORS AND CONNECTED TO PLUMBING FIXTURES TO ENSURE CIRCULATION FLOW IN ACCORDANCE WITH CURRENT PLUMBING AND FIRE CODE REQUIREMENTS.
2. FLOW THROUGH SYSTEMS SHALL NOT HAVE ANY BRANCHED OR DEAD END SERVICE LINES FOR SPRINKLERS ONLY.
3. APPROVED FLOW THROUGH FIRE SPRINKLER SYSTEMS MAY NOT BE REQUIRED TO HAVE A BACKFLOW ASSEMBLY.
4. APPROVED FLOW THROUGH FIRE SPRINKLER PLANS SHALL BE SUBMITTED WITH A PERMIT APPLICATION FOR DISTRICT REVIEW.

Silver Lake Water & Sewer District

1-INCH OR 2-INCH FIRE SERVICE CONNECTION

DATE: 11-2022 | DWG: W15



PLAN VIEW

1. REDUCER SIZED AS REQUIRED.
2. SINGLE STRAP SERVICE CLAMP, ROMAC 101 WITH IPS TAP, OR EQUAL (1 1/2" OR 2" BYPASS, 4-INCH BYPASS REQUIRES D.I. TEE).
3. FITTINGS AS REQUIRED.
4. BEND COUPLING COPPER TO COPPER MUELLER H-15525.
5. BEND COUPLING, COPPER TO OUTSIDE I.P. THREAD MUELLER H-15530, OR EQUAL.
6. BALL VALVE WITH PADLOCK WING OR LOCK CAP, FORD B21-444W OR B21-666 WITH LOCK CAP OR B21-777 WITH LOCK CAP. SIZED TO LINE.
7. RESILIENT SEAT GATE VALVE, FL X FL SIZED TO METER.
8. METER SHALL BE FURNISHED AND INSTALLED BY DEVELOPER FROM A MANUFACTURER DESIGNATED BY THE DISTRICT.
9. D.I. PIPE SPOOL FL X PE LENGTH TO FIT. SEE COMMENTS ON NEXT SHEET.
10. FL COUPLING ADAPTER
11. PRECAST CONCRETE VAULT, UTILITY VAULT OR EQUAL, SEE DETAIL W15B FOR SIZING AND REQUIREMENTS.
12. MEGA-LUG FOLLOWER INSTALLED ON INFLOW SIDE OF VAULT WITH CONCRETE THRUST BLOCK .
13. DIELECTRIC COUPLING TO BUILDING SERVICE. SIZE AS REQUIRED.
14. GALV. STEEL OR ALUMINUM LADDER. LADDER IF 4' DEEP OR LESS; SHIP LADDER PER DETAIL G4 IF OVER 4' DEEP. SECURE TO VAULT LID AND FLOOR. COORDINATE LOCATION FOR ACCESS. HATCH HINGE LOCATION SHALL ACCOMMODATE SHIP LADDER.
15. BY-PASS (SIZE BY TABLE BELOW).
16. 6" PVC TO CATCH BASIN OR DAYLIGHT. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP, ELECTRICAL SERVICE AND PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-53, WITH CHECK VALVE ON DISCHARGE LINE.
17. WATER METER STRAINER (FL) SENSUS OR EQUAL.
18. HOLE DRILLED IN LID, STREET SIDE FOR METER READING COORDINATE WITH DISTRICT.
19. INSTALL BLOW-OFF ASSEMBLY UPSTEAM OF VAULT. (PER DETAIL W11)
20. RESILIENT SEAT GATE VALVE, MJ X MJ SIZED TO METER.

METER SIZE	MAIN-LINE	BYPASS	A	B
3"	4" DI.	1 1/2" COPPER	9"	4"
4"	4" DI.	1 1/2" COPPER	9"	4"
6"	6" DI.	2" COPPER	9"	4"
8"	8" DI.	4" DI.	14"	6"
10"	10" DI.	4" DI.	16"	6"

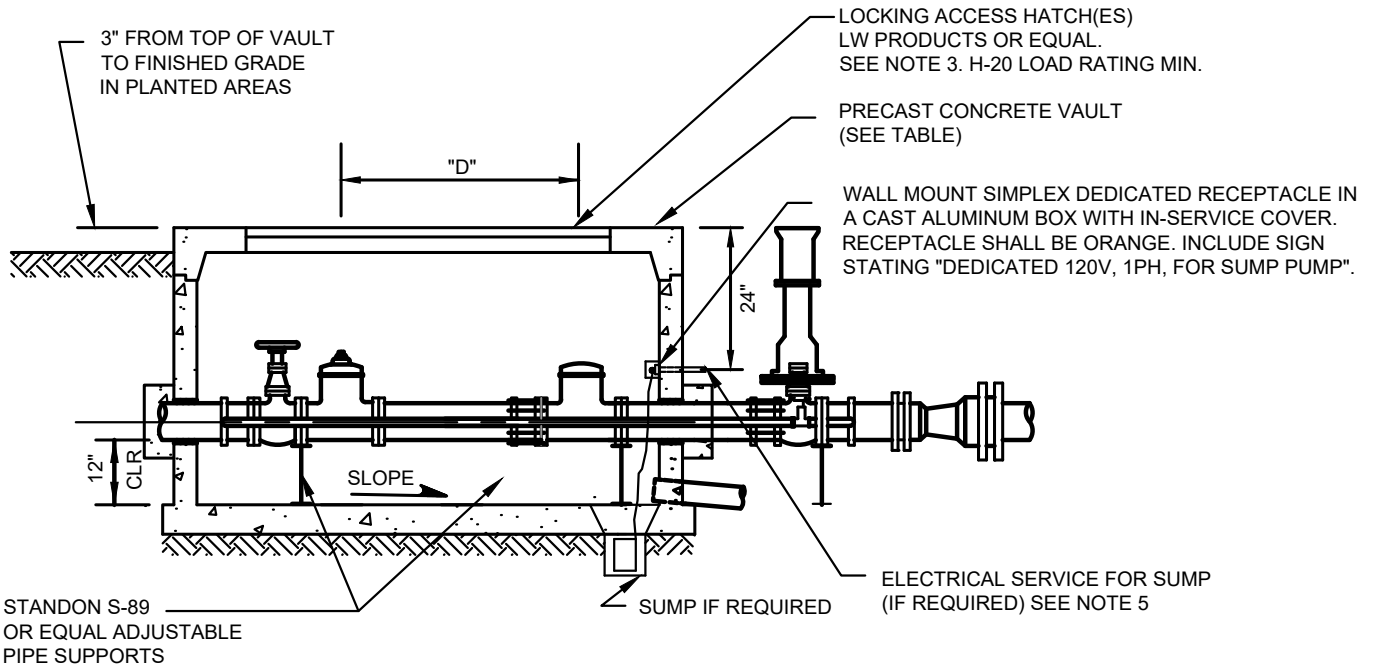
NOTES:

1. SEE W15B FOR ELEVATION AND NOTES.

Silver Lake Water & Sewer District

METER VAULT ASSEMBLY 3-INCH THROUGH 10-INCH

DATE: 11-2022 | DWG: W16A



ELEVATION

SEE DETAIL VI-W16A FOR CALLOUTS

METER SIZE	MAIN-LINE	MINIMUM I/S VAULT DIM. L x W x H			OLD CASTLE VAULT CO APPROVED MODEL	MIN. HATCH OPENING	MIN. UPSTREAM DISTANCE "D"
3"	4" DI.	8'-4"	4'-4"	6'-2"	4484-LA	3' x 6'	15"
4"	4" DI.	8'-4"	4'-4"	6'-2"	4484-LA	3' x 6'	20"
6"	6" DI.	10'-6"	5'-0"	6'-1"	5106-LA	3' x 6'	30"
8"	8" DI.	12'-0"	6'-0"	6'-6"	612-LA	3' x 6'	40"
10"	10" DI.	14'-0"	8'-0"	8'-0"	814-LA	3' x 6'	50"

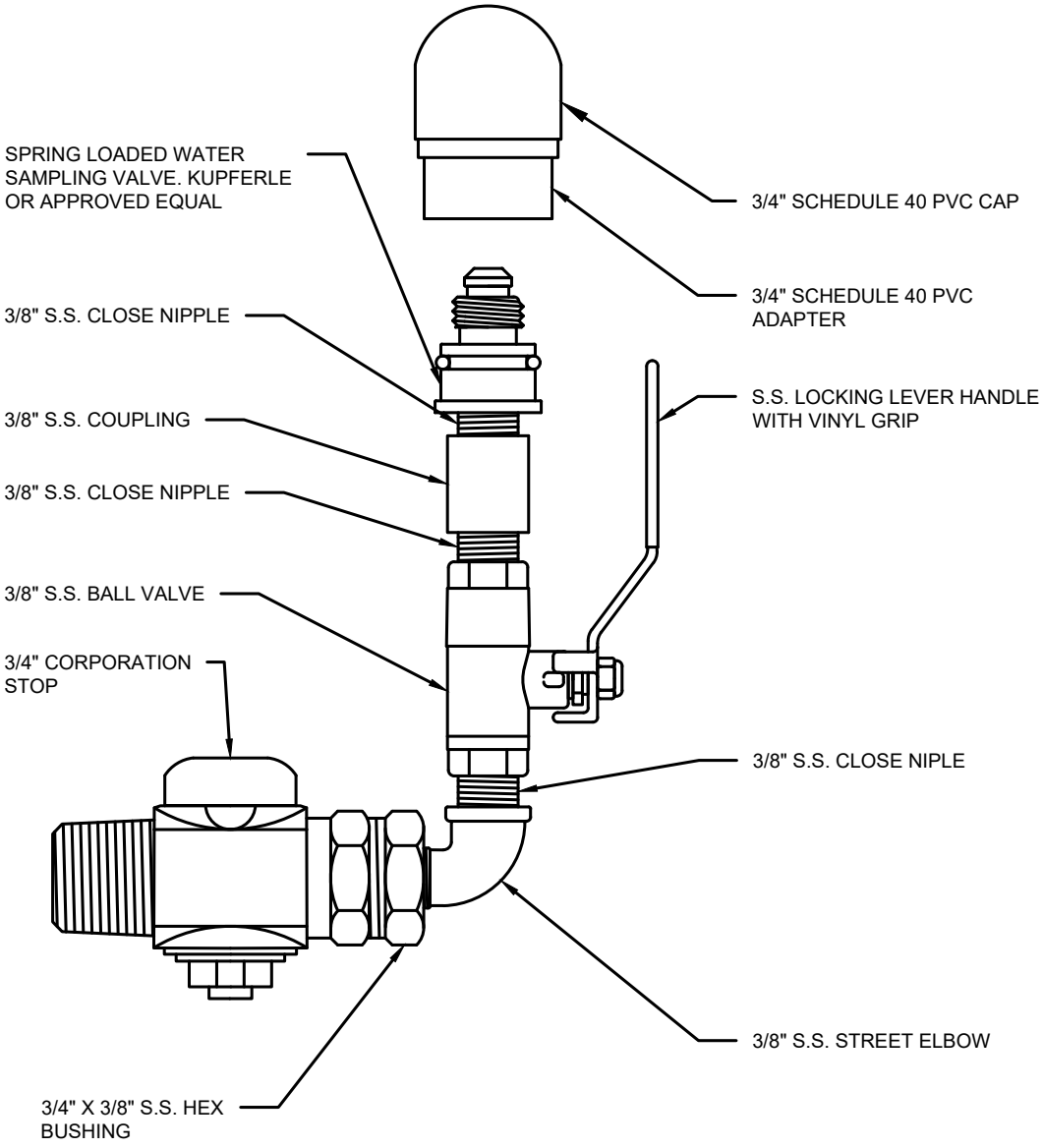
NOTES:

1. METER SHALL BE INSTALLED SUCH THAT IT CAN BE READ WITHOUT ENTERING VAULT WITH ACCESS HATCH OPEN.
2. COORDINATE ORIENTATION OF HATCH(ES) TO PROVIDE CLEAR VERTICAL ACCESS TO METER ASSEMBLY, VERIFY WITH DISTRICT.
3. DRAIN HATCH(ES) TO VAULT FLOOR WITH PVC PIPE AND FITTINGS.
4. 3/4" (MINIMUM) PVC SCH-40 CONDUIT. WIRING SHALL BE COMPLETELY SEALED 120V, UNDER GROUND. CONTRACTOR TO SEAL CONDUIT PENETRATION WITH NON-SHRINK GROUT. (NOT REQUIRED IF GRAVITY VAULT DRAIN PROVIDED).
5. EASEMENT TO BE PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE R/W.
6. SEE W15A FOR PLAN AND NOTES.
7. ALL METERS SHALL BE INSPECTED BY DISTRICT PERSONNEL PRIOR TO INSTALLATION.

Silver Lake Water & Sewer District

METER VAULT ASSEMBLY
3-INCH THROUGH 10-INCH

DATE: 11-2022 | DWG: W16B



NOTES:

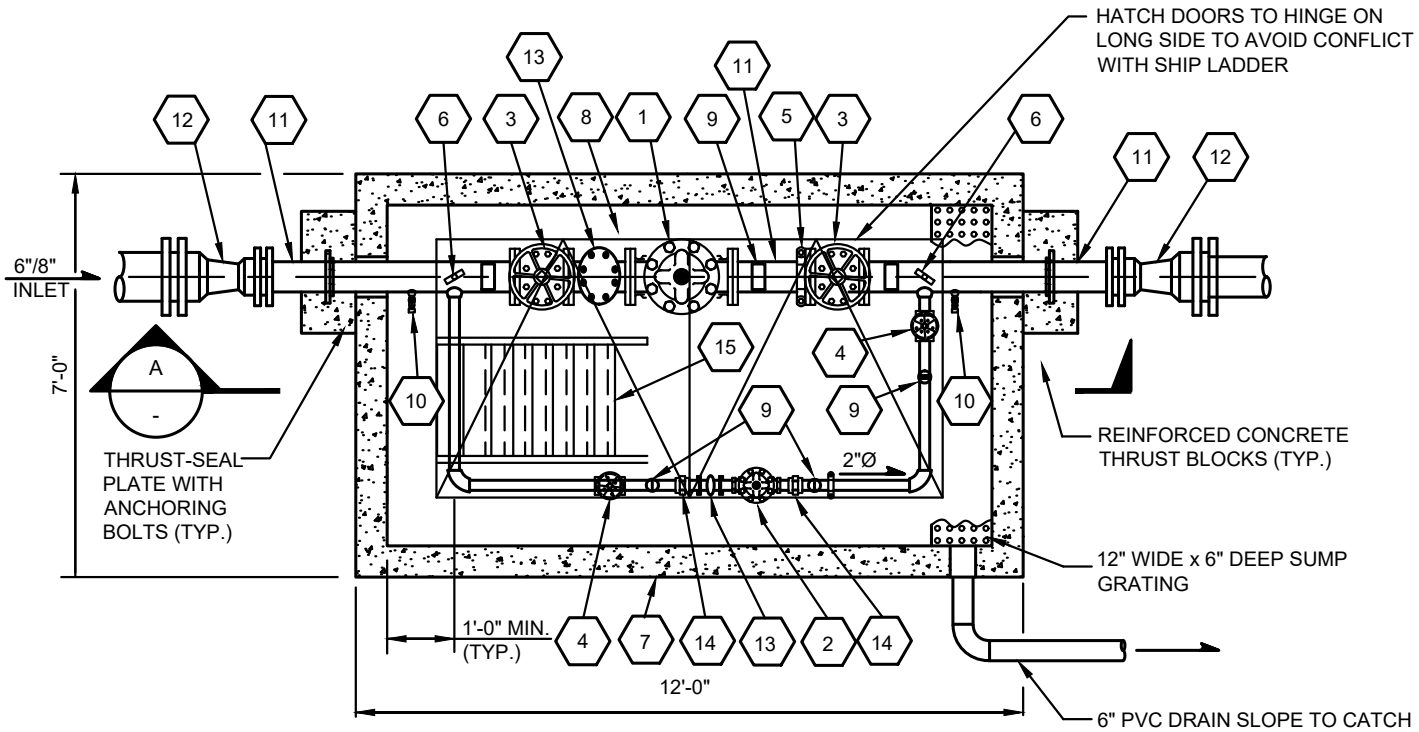
1. SAMPLE TAP ASSEMBLY MUST BE KUPFERLE X94WM-ASSY OR DISTRICT APPROVED EQUAL.
2. ALL STAINLESS STEEL MUST BE 316 STAINLESS STEEL.
3. DIRECT TAP CORPORATION STOP HORIZONTALLY INTO 8" DI WATER MAIN.

SCALE: NTS

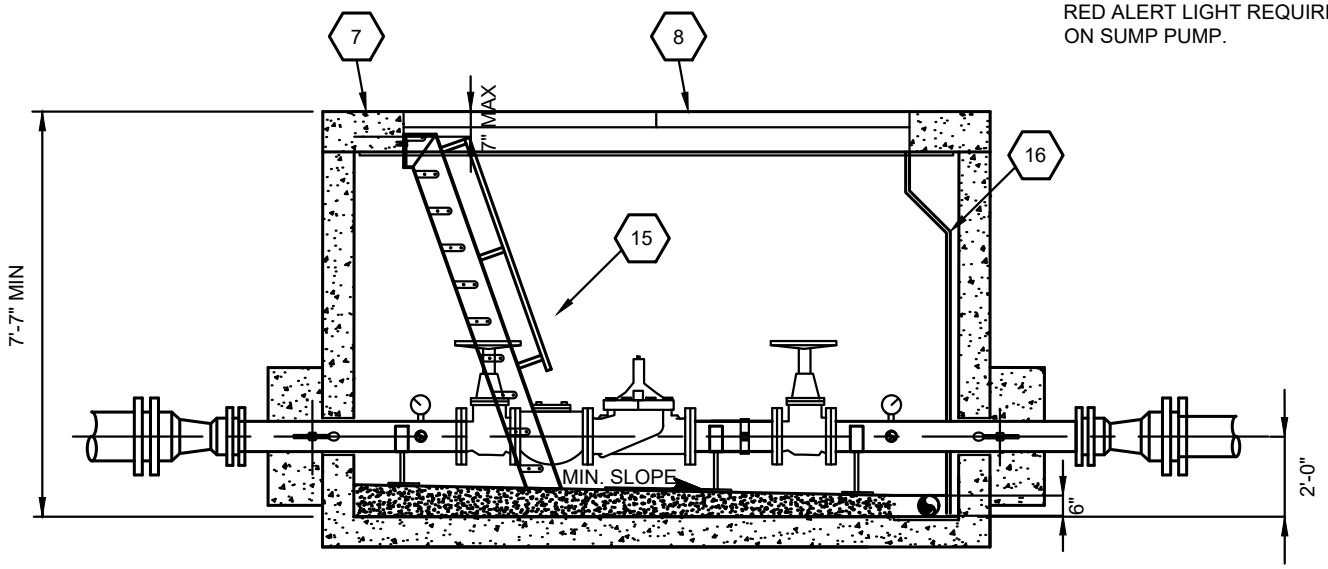
Silver Lake Water & Sewer District

WATER SAMPLE TAP

DATE: 11-2022 | DWG: W17



PLAN



A - SECTION

NOTE:

ALTERNATE TO FIELD ASSEMBLED PRV AND VAULT IS SYSTEM AS MANUFACTURED BY GC SYSTEMS.

(X) SEE W18B FOR CALLOUTS AND NOTES

Silver Lake Water & Sewer District

PRESSURE REDUCING VALVE AND VAULT

DATE: 11-2022

DWG: W18A

LEGEND - SEE V-W22A FOR PLAN AND SECTION

1. 6" CLA-VAL 92G-01BCSY PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, S.S. TRIM, #150 FL.
2. 2" CLA-VAL 90G-01BC PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, BRONZE TRIM - THREADED.
3. 6" D.I. RW NRS GATE VALVE WITH HANDWHEEL, #150 FL.
4. 2" MUELLER A2360-6W41 W55 RW NRS GATE VALVE WITH HANDWHEEL, THD.
5. UNIFLANGE
6. 4" 0-300 PSI PRESSURE GAUGE WITH SNUBBER AND GAUGE COCK; TOP OF PIPE.
7. PRECAST CONCRETE VAULT 12'L x 7'W x 7'-7"H, SOLID WALL WITH WHITE INTERIOR & BLACK EXTERIOR SEALANT
8. 48" X 96" DOUBLE DOOR ALUMINUM HATCH, LW PRODUCTS OR EQUAL. H-20 RATED. DRAIN HATCH TO VAULT FLOOR.
9. ADJUSTABLE PIPE SUPPORTS
10. 3/4" HOSE BIB ASSEMBLY
11. PIPE SPOOL (FLxPE) LENGTH AS REQUIRED.
12. REDUCER (AS REQUIRED), MJ WITH MEGA-LUGS
13. WATER METER STRAINER, INVENSYS OR EQUAL, FL
14. UNION
15. OSHA-COMPLIANT SHIP LADDER, SEE DETAIL G-4.
16. HATCH DRAIN
17. MEGA-LUG OR UNI-FLANGE

NOTES:

1. PRV SETTINGS TO BE PROVIDED BY DISTRICT.
2. 6" x 2" PRV ASSEMBLY SHOWN. SIZES TO BE DETERMINED BY THE DISTRICT BASED ON DOWNSTREAM DEMANDS.
3. EXTERIOR OF PIPE SHALL BE SANDBLASTED AND COATED WITH BLUE ENAMEL TO AWWA AND NSP SPECS.
4. ALL PIPE 2" AND SMALLER TO BE BRASS.

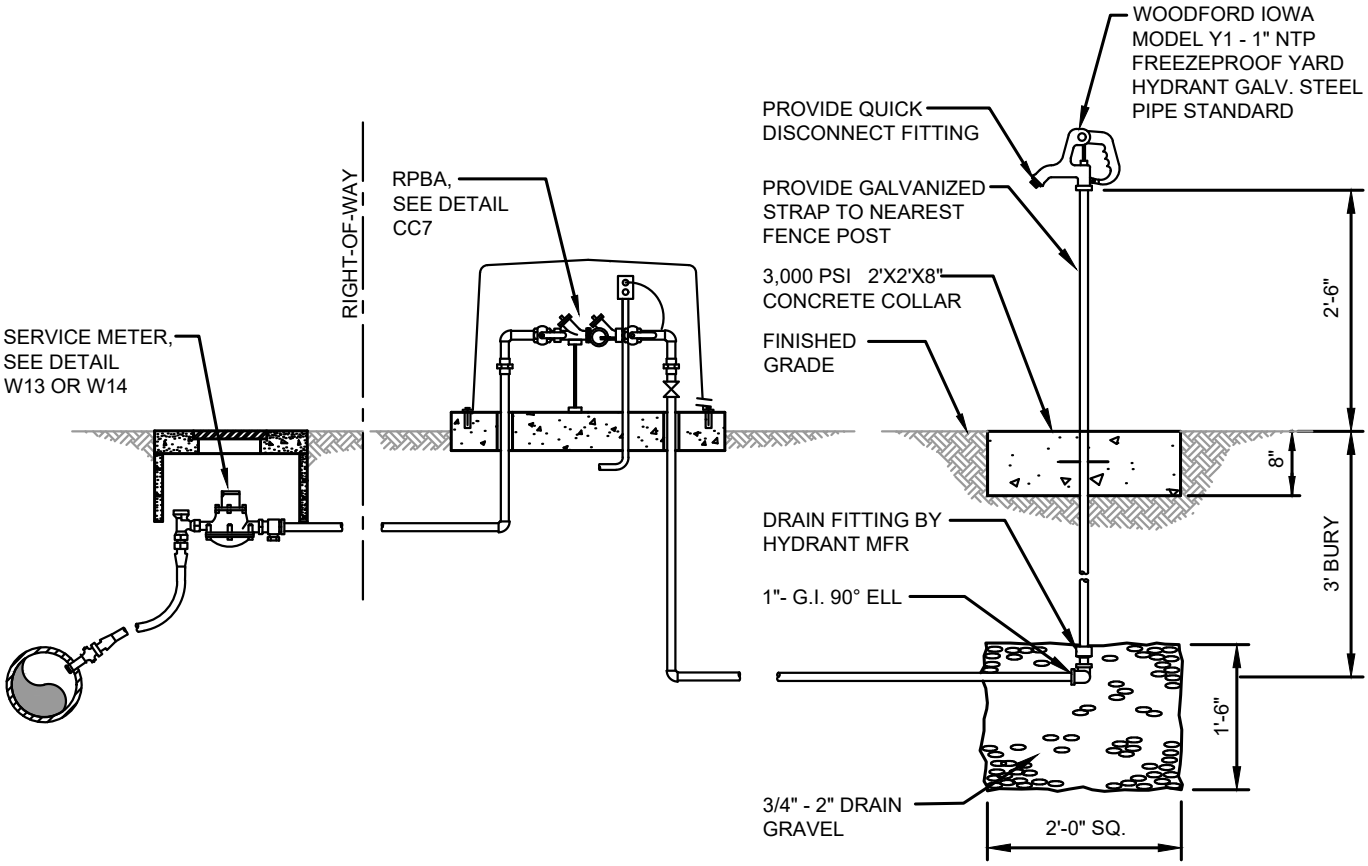
SCALE: NTS

Silver Lake Water & Sewer District

PRESSURE REDUCING VALVE AND VAULT LEGEND

DATE: 11-2022

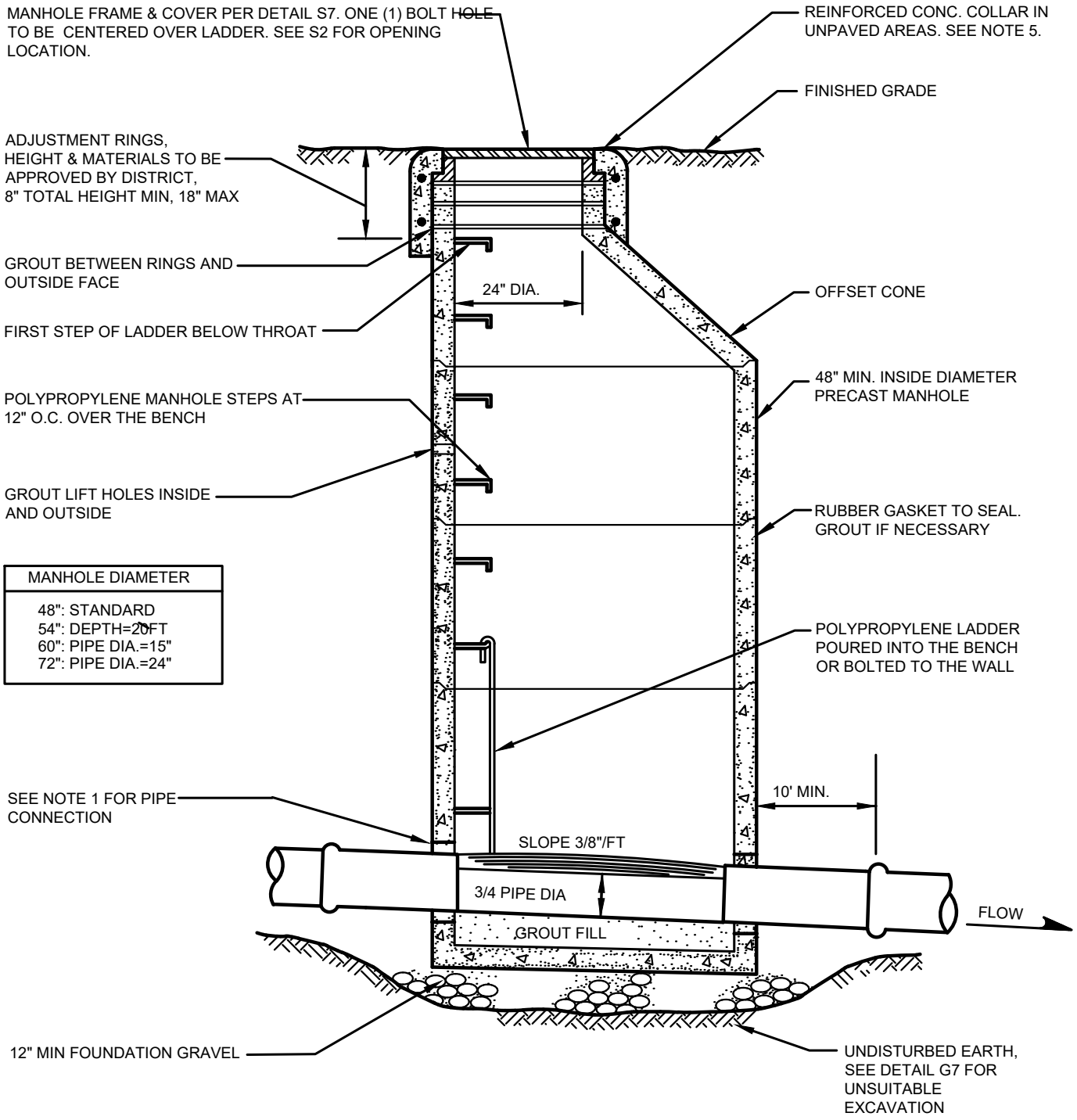
DWG: W18B



Silver Lake Water & Sewer District

1-INCH NON-FREEZE YARD HYDRANT

DATE: 11-2022	DWG: W19



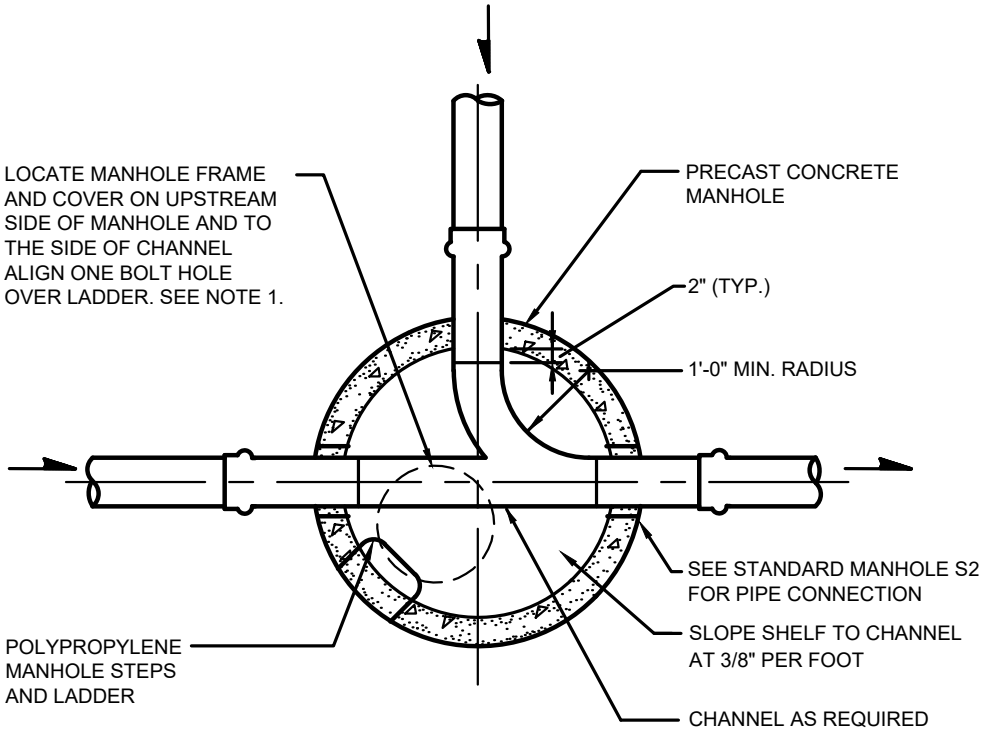
NOTES:

1. PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS: CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR-N-SEAL BOOT OR EQUAL.
2. DROP OF GRADE THRU MANHOLE SHALL BE 0.10', UNLESS OTHERWISE APPROVED.
3. MINIMUM DEPTH OF MANHOLE SHALL BE 8' UNLESS APPROVED BY THE DISTRICT.
4. INSTALL GREEN CARSONITE FIBERGLASS MANHOLE MARKERS IN EASEMENTS.
5. POUR 4'-0" DIAMETER BY 12" THICK CONCRETE COLLAR AROUND ALL MANHOLE COLLARS IN UNPAVED AREAS. REINFORCE WITH #5 REBAR.

Silver Lake Water & Sewer District

SANITARY SEWER MANHOLE SECTION

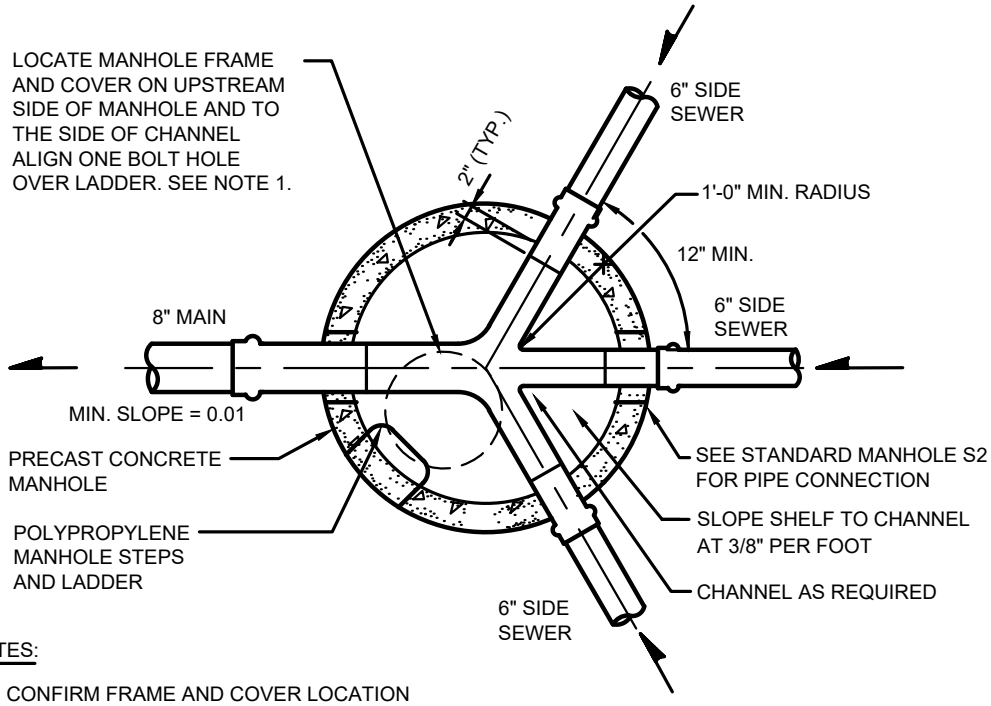
DATE: 11-2022 | DWG: S1



NOTES:

1. CONFIRM FRAME AND COVER LOCATION WITH DISTRICT.

TYPICAL MAIN CONNECTION



NOTES:

1. CONFIRM FRAME AND COVER LOCATION WITH DISTRICT.
2. MAXIMUM 3 SIDE SEWER CONNECTIONS PER MANHOLE.
3. MATCH CROWN ELEVATIONS.

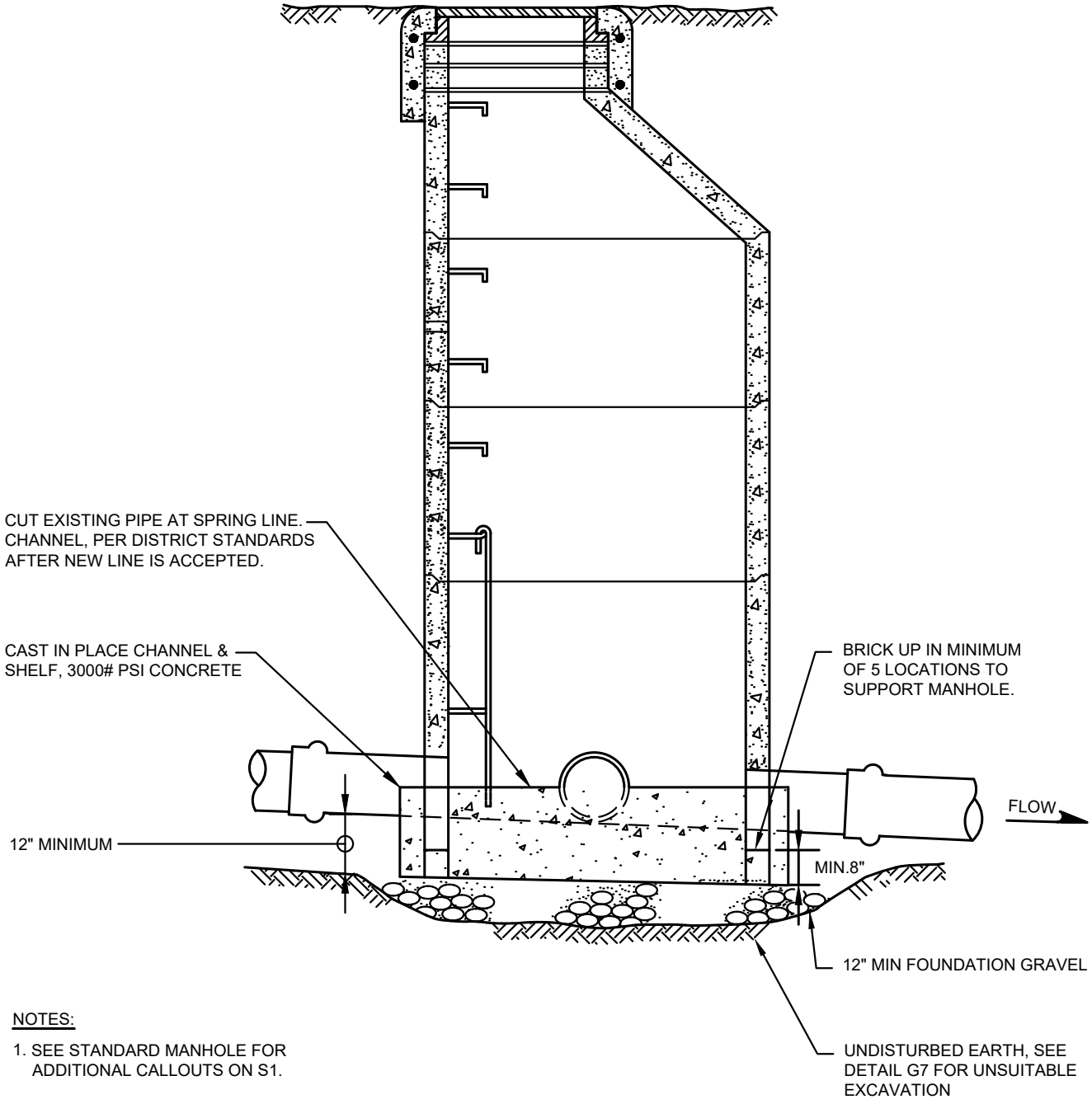
TYPICAL SIDE SEWER CONNECTION (END MANHOLE)

Silver Lake Water & Sewer District

SANITARY SEWER MAIN AND SIDE SEWER CONNECTIONS

DATE: 11-2022

DWG: S2



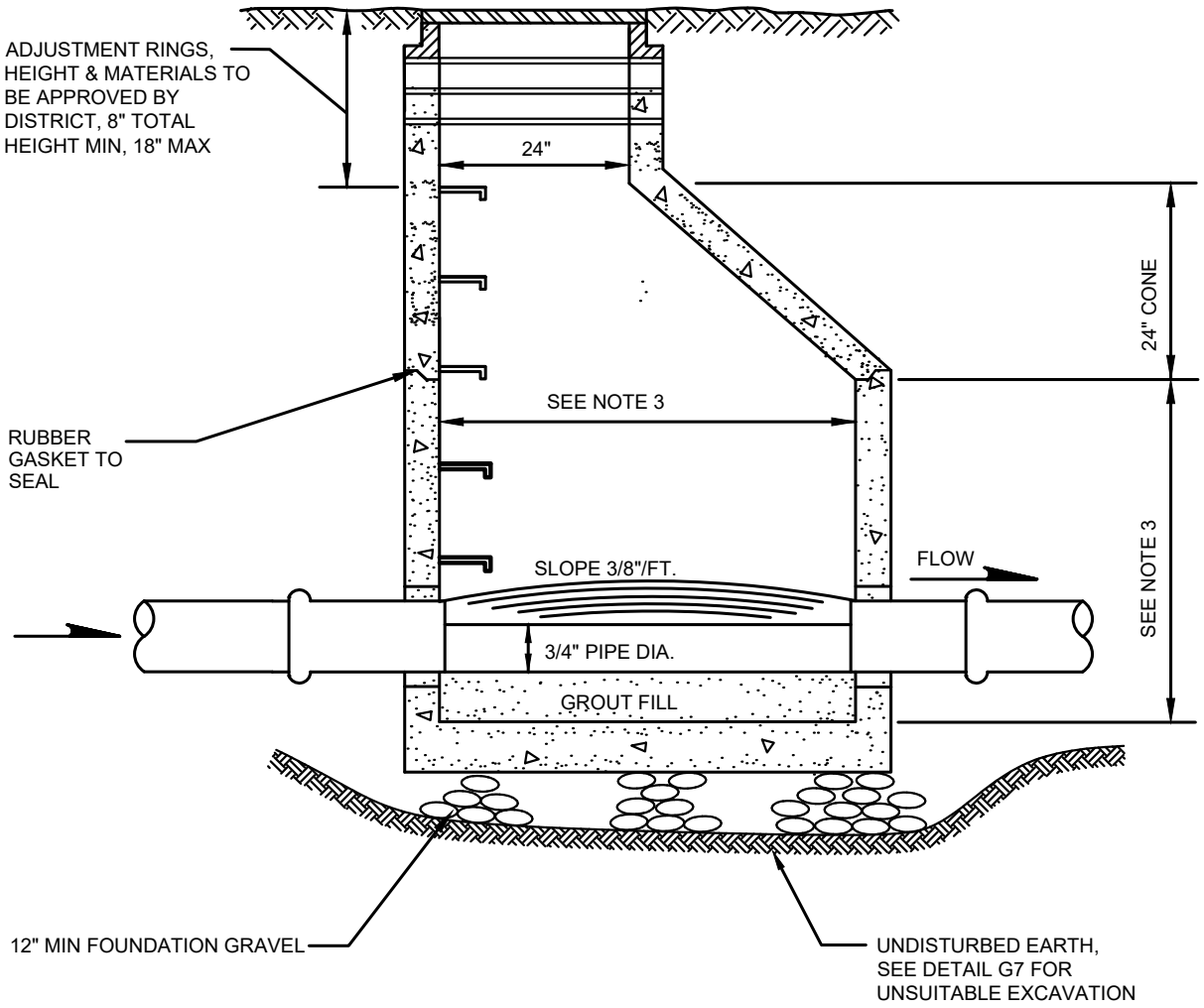
NOTES:

1. SEE STANDARD MANHOLE FOR ADDITIONAL CALLOUTS ON S1.

Silver Lake Water & Sewer District

SANITARY SEWER SADDLE MANHOLE

DATE: 11-2022	DWG: S3



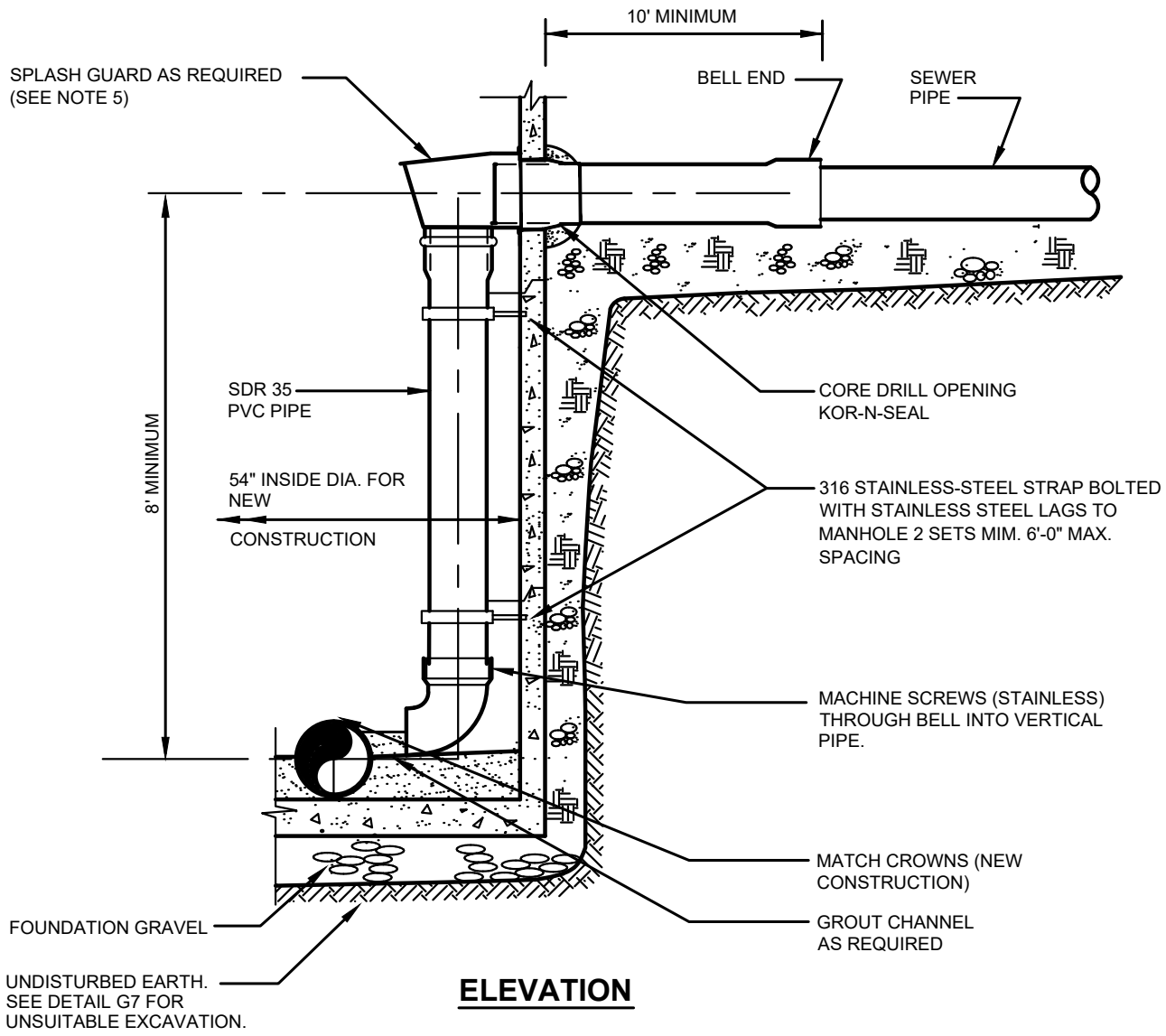
NOTES:

1. SEE STANDARD MANHOLE CALLOUTS ON S1.
2. FRAME AND COVER SHALL MEET REQUIREMENTS FOR 48" MANHOLE.
3. 5' MINIMUM DEPTH FROM RIM TO IE. SHALLOW MANHOLE SHALL BE 54" DIAMETER.

Silver Lake Water & Sewer District

SANITARY SEWER SHALLOW MANHOLE

DATE: 11-2022	DWG: S4



ELEVATION

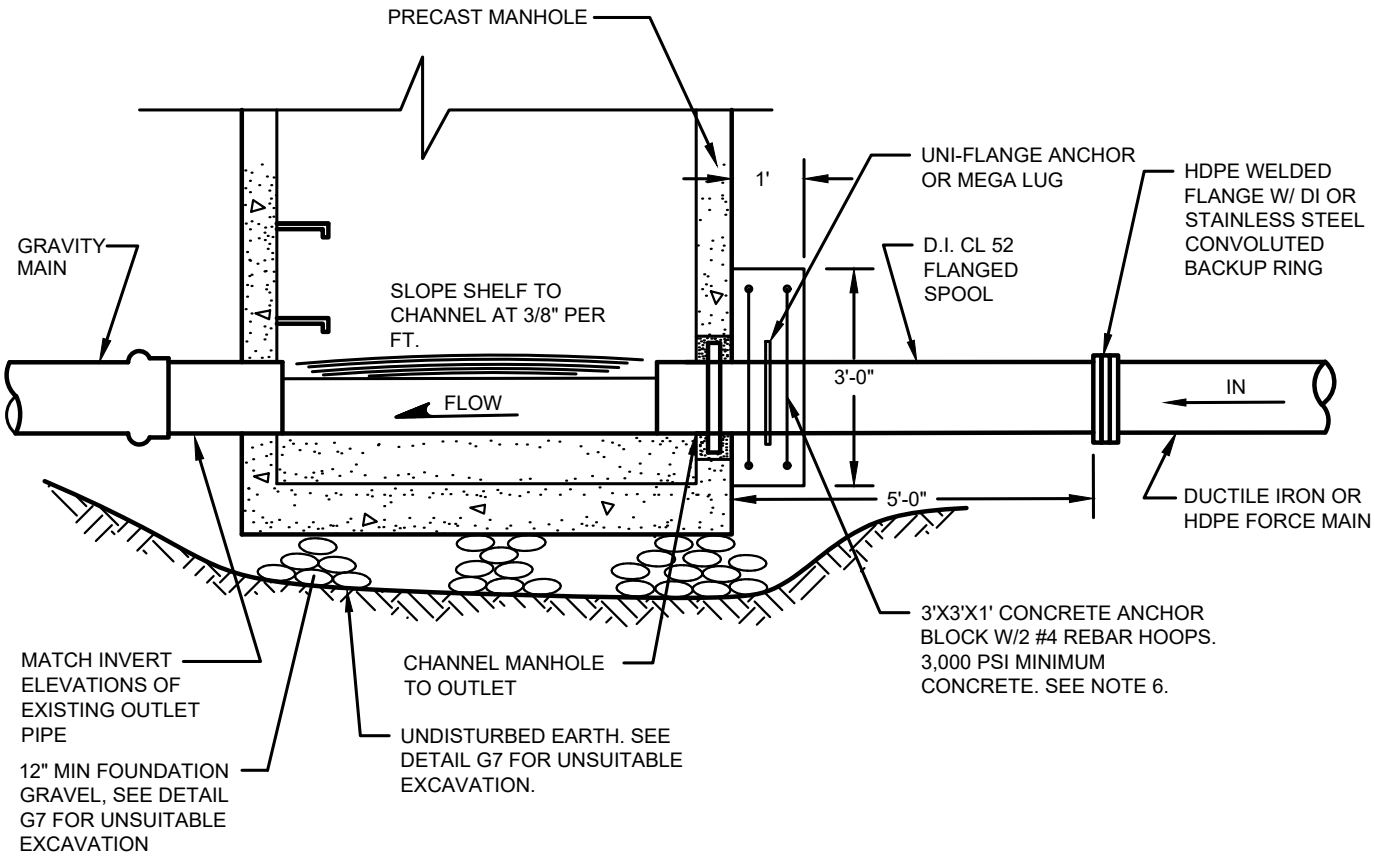
NOTES:

1. USE OF DROP MANHOLE REQUIRES DISTRICT APPROVAL. OUTSIDE DROPS ARE PROHIBITED.
2. DROP HEIGHT MUST BE GREATER THAN 8 FEET FOR CONSIDERATION.
3. ALL JOINTS SHALL BE GLUED. USE A SINGLE SECTION OF VERTICAL PIPE WITH NO JOINTS.
4. 90° VERTICAL BEND SHALL SWEEP INTO DOWNSTREAM FLOW DIRECTION. CHANNEL ACCORDINGLY.
5. DURAN INC./ RELINER BRAND - HD SUPPLY/MARYSVILLE (SUPPLIER). THIS IS THE ONLY PRODUCT ALLOWED. INSTALL SPLASH GUARD AS REQUIRED BY DISTRICT.

Silver Lake Water & Sewer District

INSIDE DROP MANHOLE

DATE: 11-2022	DWG: S5



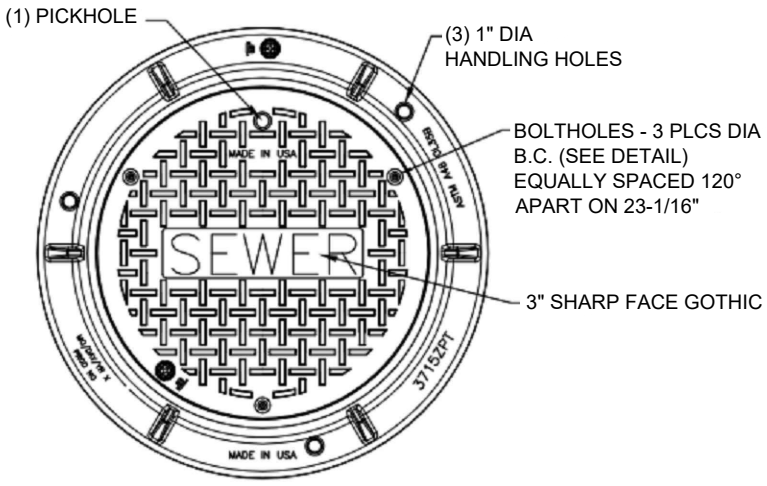
NOTES:

1. GRAVITY MAIN PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS: CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR-N-SEAL BOOT OR EQUAL.
2. DROP OF GRADE THROUGH MANHOLE SHALL BE 0.10', UNLESS OTHERWISE NOTED.
3. ALIGN FORCE MAIN DISCHARGE AXIS WITH OUTLET PIPE WHEN FEASIBLE.
4. RESTRAIN FORCE MAIN JOINTS AND FITTINGS.
5. SEE STANDARD MANHOLE CALLOUTS ON S1.
6. CONCRETE ANCHOR BLOCK ONLY REQUIRED FOR HDPE FORCE MAINS.

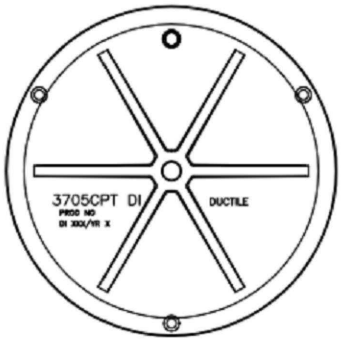
Silver Lake Water & Sewer District

FORCE MAIN DISCHARGE MANHOLE

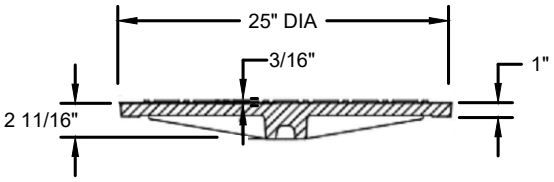
DATE: 11-2022	DWG: S6



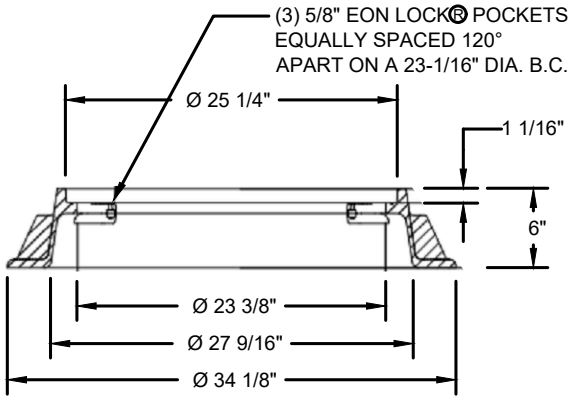
PLAN VIEW



BOTTOM VIEW



SECTION VIEW



GENERAL NOTES:
MANHOLE RING AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL #00371564 FOR USE IN UNPAVED EASEMENT AREAS. USE UNCOATED MODEL #00370076 FOR ROADWAYS.

COVER NOTES:

1. USE WITH THREE LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 3" LONG. DRILL HOLES SPACED 120°,TO MATCH HOLES IN RING.
2. COVER MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06.
3. SHALL CONFORM TO SEC. 9-05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF COVER IS 150 LBS.
5. RATING - H30.
6. MUST MEET (AASHTO) M306 SPECIFICATIONS AND HAVE REPLACEABLE LOCK DOWN NUTS.

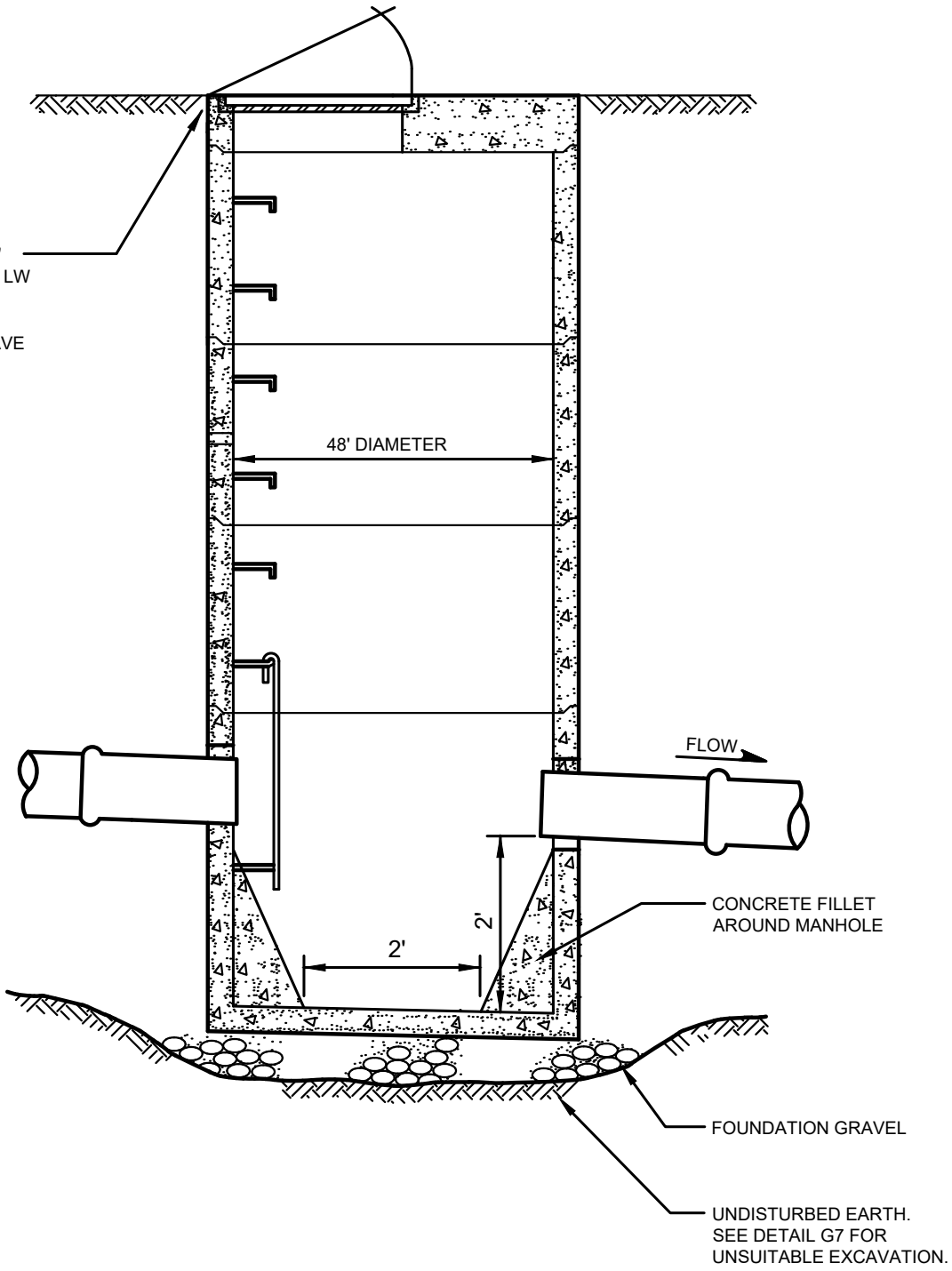
RING NOTES:

1. DRILL AND TAP THREE 5/8"-11 NC HOLES THROUGH RING AT 120°.
2. RING MATERIAL IS GRAY IRON, ASTM A-48 CLASS 30.
3. SHALL CONFORM TO SEC. 9-05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF RING IS 215 LBS.
5. RATING - H30.
6. USE ANTI-SEIZE ON BOLTS.

Silver Lake Water & Sewer District

STANDARD MANHOLE FRAME AND COVER

DATE: 11-2022	DWG: S7



NOTES:

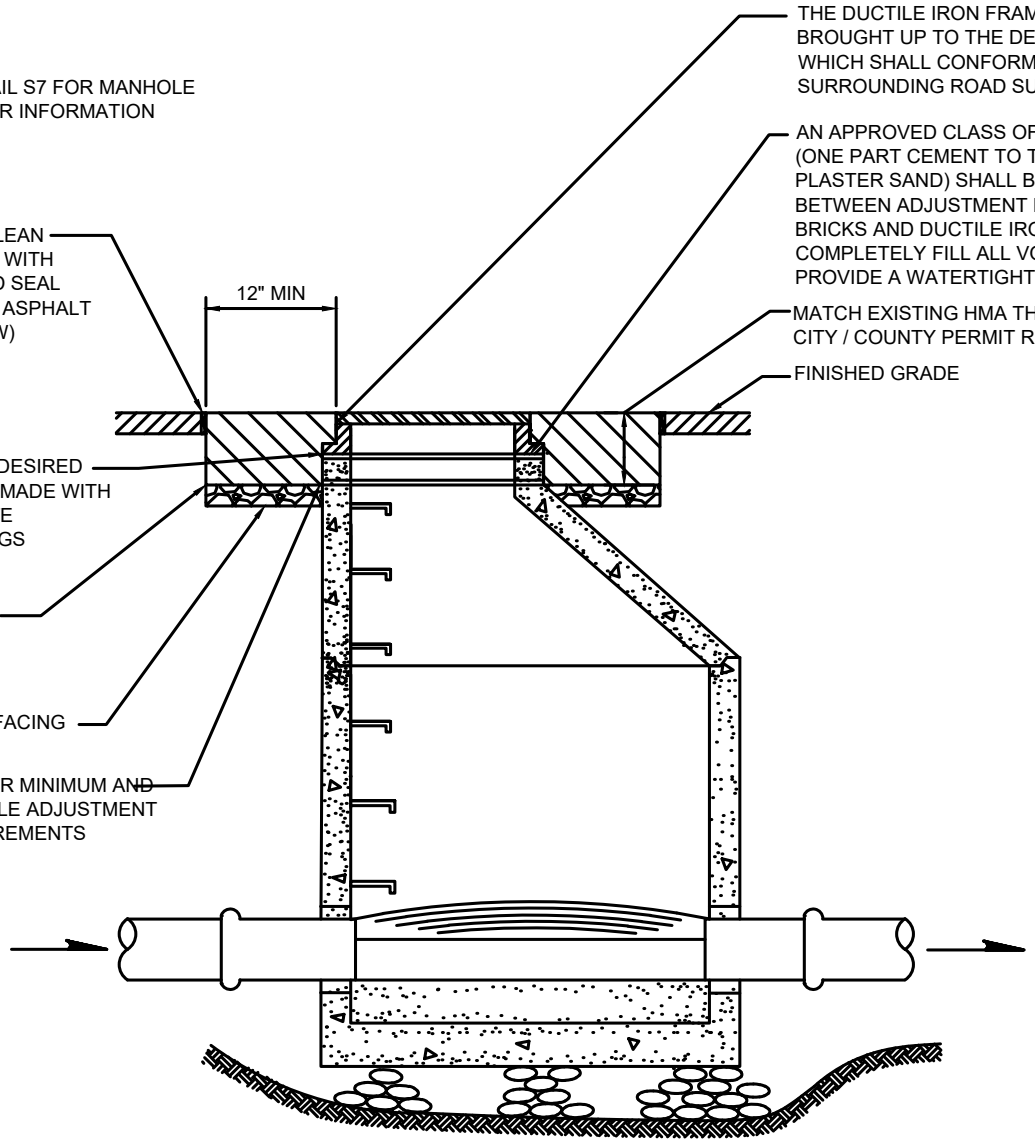
1. SEE STANDARD MANHOLE FOR ADDITIONAL CALLOUTS ON S1.
2. ACCESS HATCH AND MANHOLE STEPS LOCATED AT 45° TO THROUGH FLOW

Silver Lake Water & Sewer District

ROCK CATCH MANHOLE

DATE: 11-2022	DWG: S8

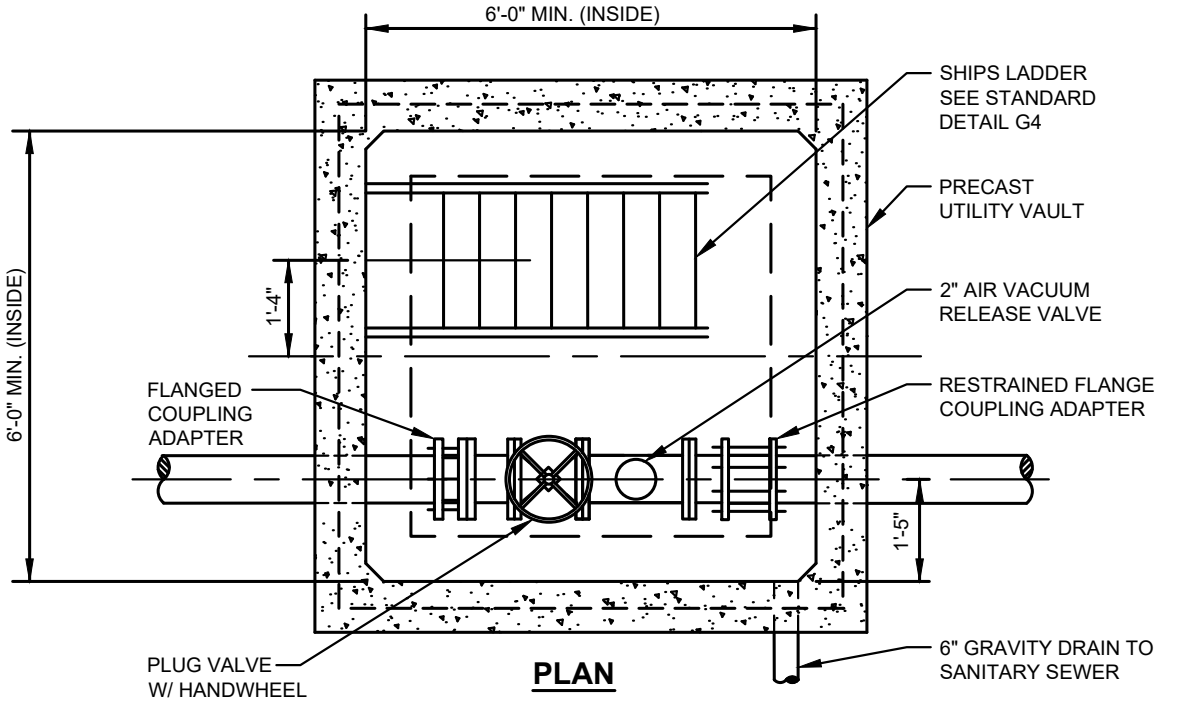
NOTE:
REFERENCE DETAIL S7 FOR MANHOLE FRAME AND COVER INFORMATION



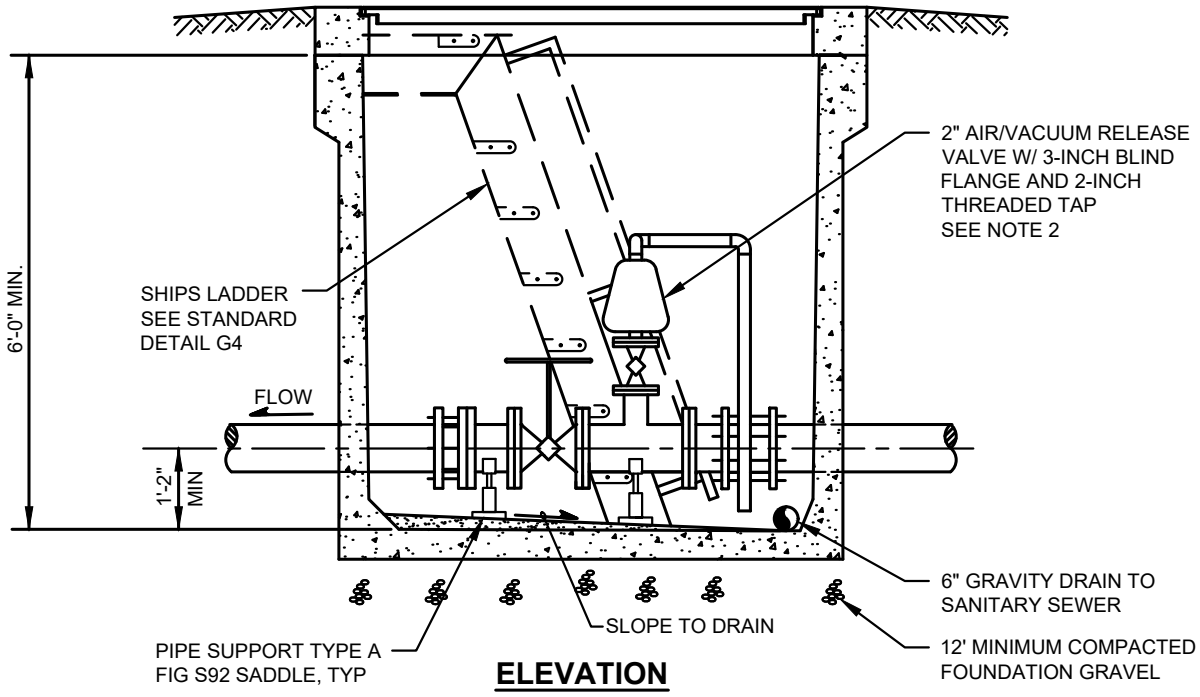
Silver Lake Water & Sewer District

MANHOLE ADJUSTMENT DETAIL

DATE: 11-2022	DWG: S9



PLAN



ELEVATION

NOTES:

1. VAULT AND HATCH SHALL BE H20 RATED.
2. 2" COMBINATION AIR VALVE SHALL BE A STAINLESS STEEL ARI D-025 L AT A WORKING PRESSURE TO BE PROVIDED BY THE DISTRICT.

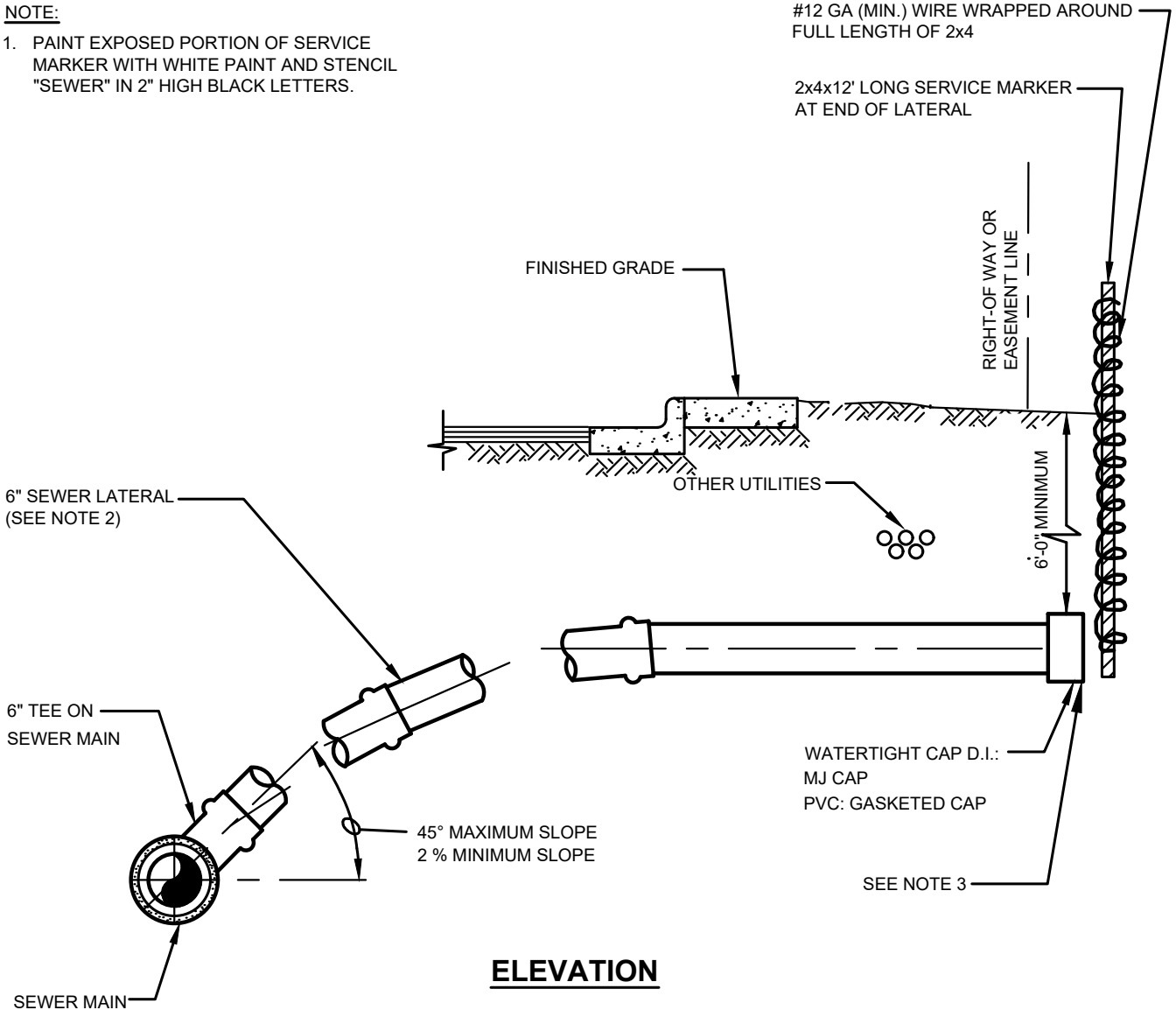
Silver Lake Water & Sewer District

SEWER AIR VACUUM RELEASE VAULT

DATE: 11-2022	DWG: S10

NOTE:

1. PAINT EXPOSED PORTION OF SERVICE MARKER WITH WHITE PAINT AND STENCIL "SEWER" IN 2" HIGH BLACK LETTERS.



ELEVATION

NOTES:

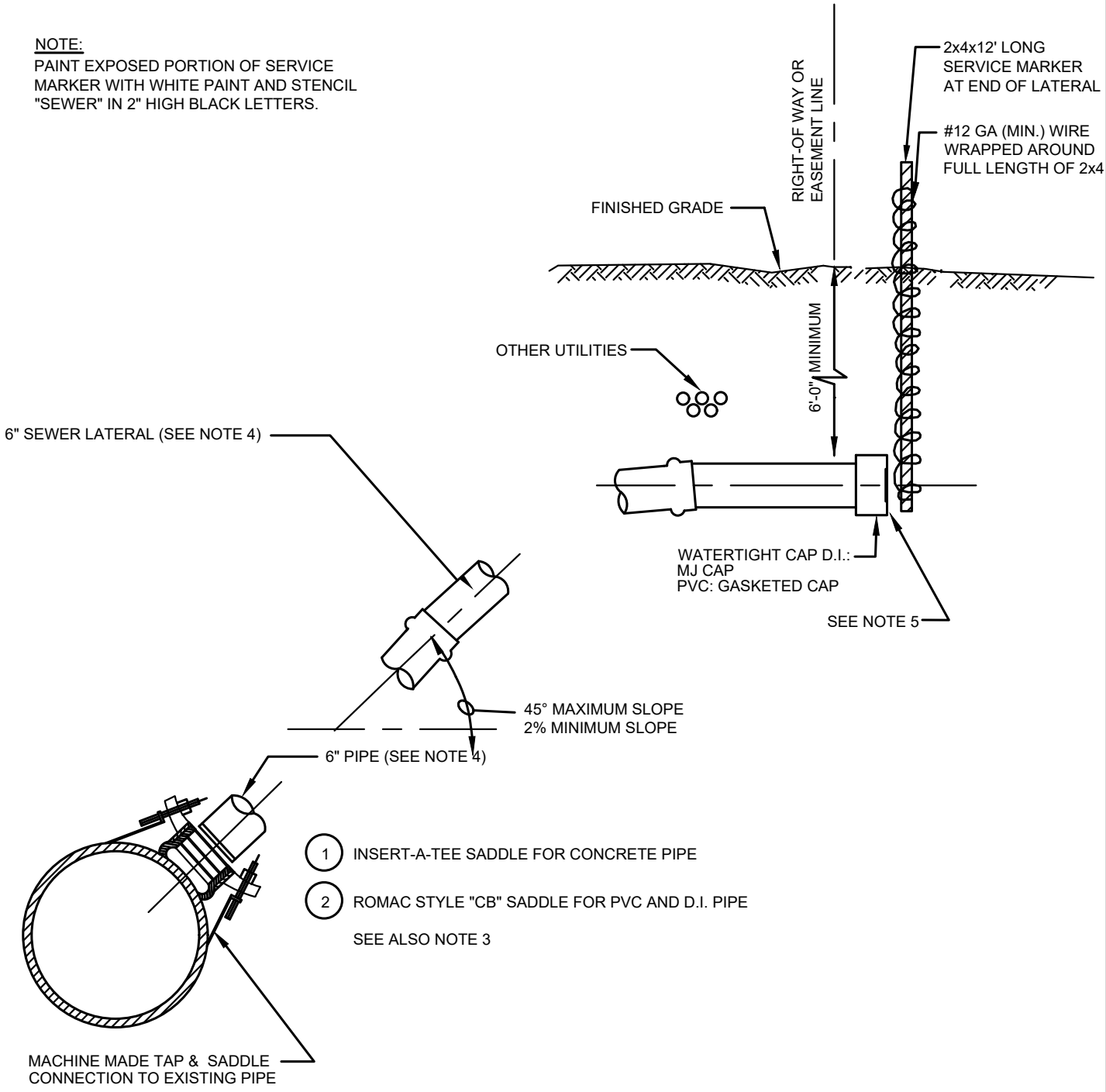
1. MAXIMUM DEFLECTION NOT TO EXCEED PIPE MANUFACTURER RECOMMENDATIONS.
2. SEWER LATERAL SHALL BE THE SAME MATERIAL AND BEDDING AS THE MAIN LINE.
3. EXTEND LATERAL 3' MINIMUM BEYOND ROW/EASEMENT LINE AND/OR DRY UTILITIES, WHICHEVER IS GREATER, UNLESS OTHERWISE APPROVED OR DIRECTED BY DISTRICT.

Silver Lake Water & Sewer District

STANDARD SEWER LATERAL

DATE: 11-2022	DWG: S11

NOTE:
PAINT EXPOSED PORTION OF SERVICE MARKER WITH WHITE PAINT AND STENCIL "SEWER" IN 2" HIGH BLACK LETTERS.



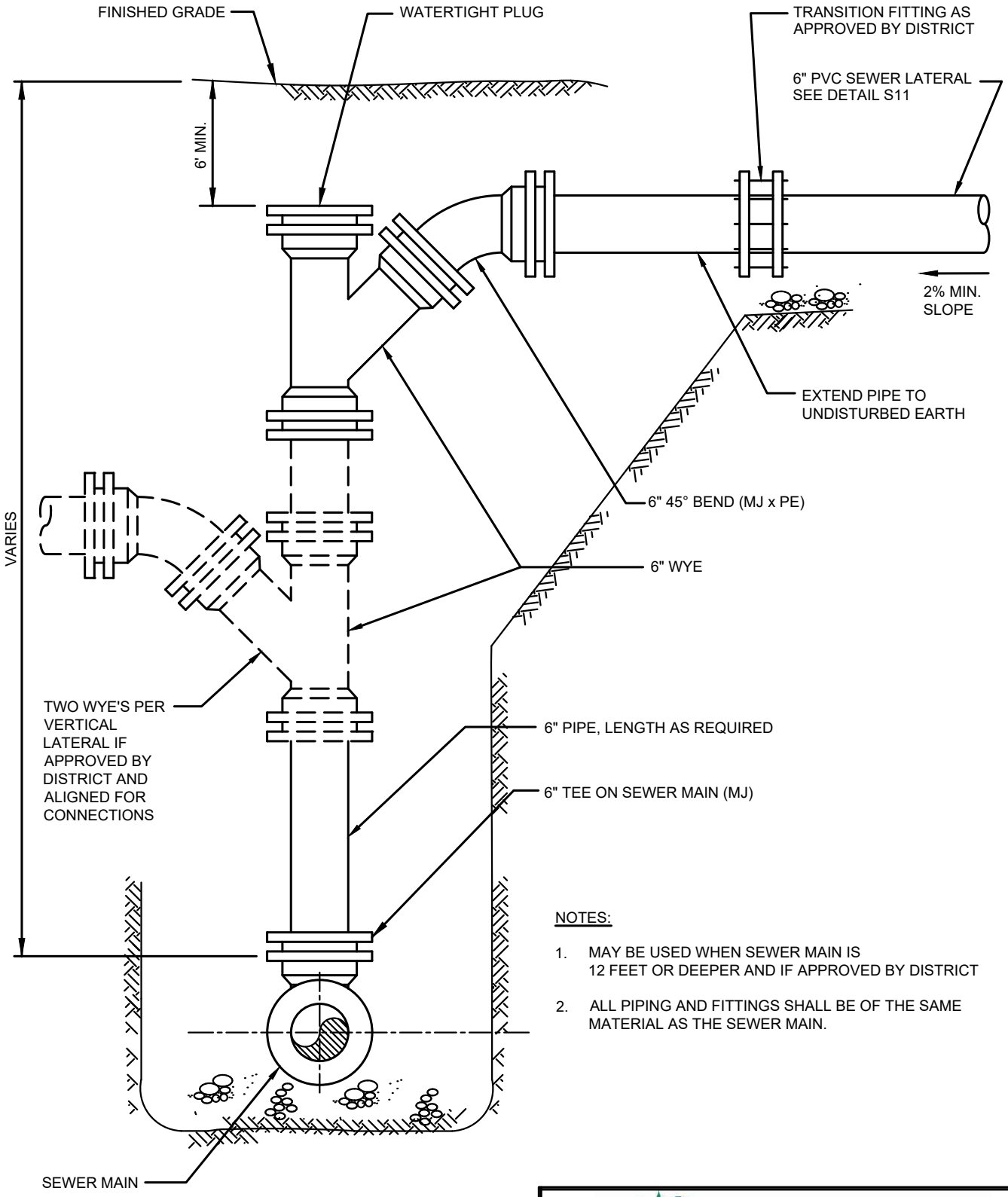
NOTES:

1. SEE STANDARD SEWER LATERAL DETAIL S11 FOR NEW CONSTRUCTION.
2. DEVELOPER TO PROVIDE ALL MATERIALS, TRAFFIC CONTROL, PERMITS, SHORING AND MISC. WORK AS REQUIRED TO TAP THE MAIN AND INSTALL THE SIDE SEWER.
3. CUT-IN TEES ARE PERMITTED ONLY WITH DISTRICT APPROVAL.
4. SEWER LATERAL SHALL BE SAME MATERIAL AND BEDDING AS MAIN LINE PIPE.
5. EXTEND LATERAL 3' MINIMUM BEYOND ROW/EASEMENT LINE AND/OR DRY UTILITIES, WHICHEVER IS GREATER, UNLESS OTHERWISE APPROVED OR DIRECTED BY DISTRICT.

Silver Lake Water & Sewer District

SEWER LATERAL CONNECTION TO EXISTING MAIN

DATE: 11-2022 | DWG: S12



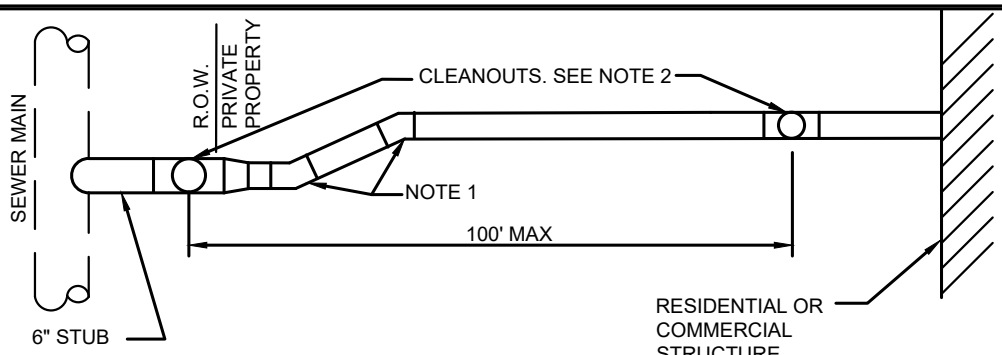
NOTES:

1. MAY BE USED WHEN SEWER MAIN IS 12 FEET OR DEEPER AND IF APPROVED BY DISTRICT
2. ALL PIPING AND FITTINGS SHALL BE OF THE SAME MATERIAL AS THE SEWER MAIN.

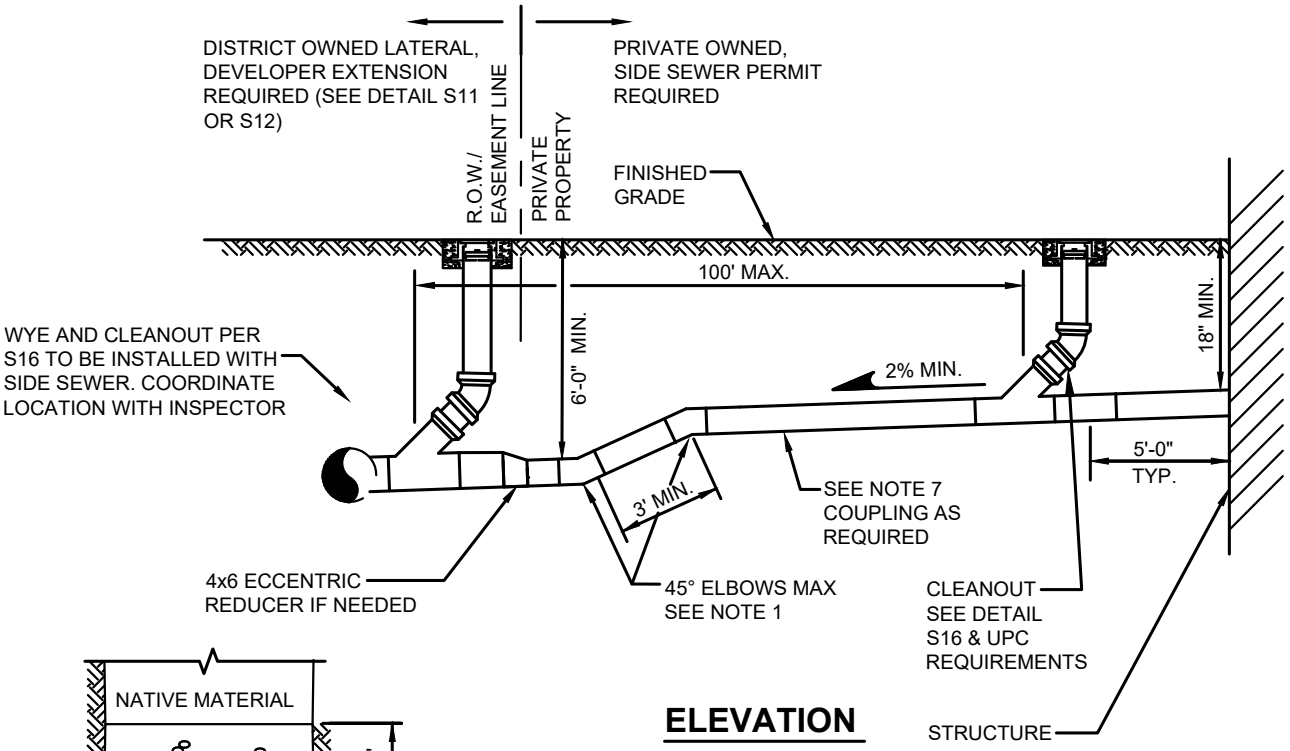
Silver Lake Water & Sewer District

VERTICAL SEWER LATERAL

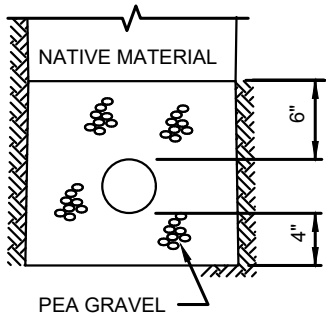
DATE: 11-2022	DWG: S13



PLAN



ELEVATION



TRENCH SECTION

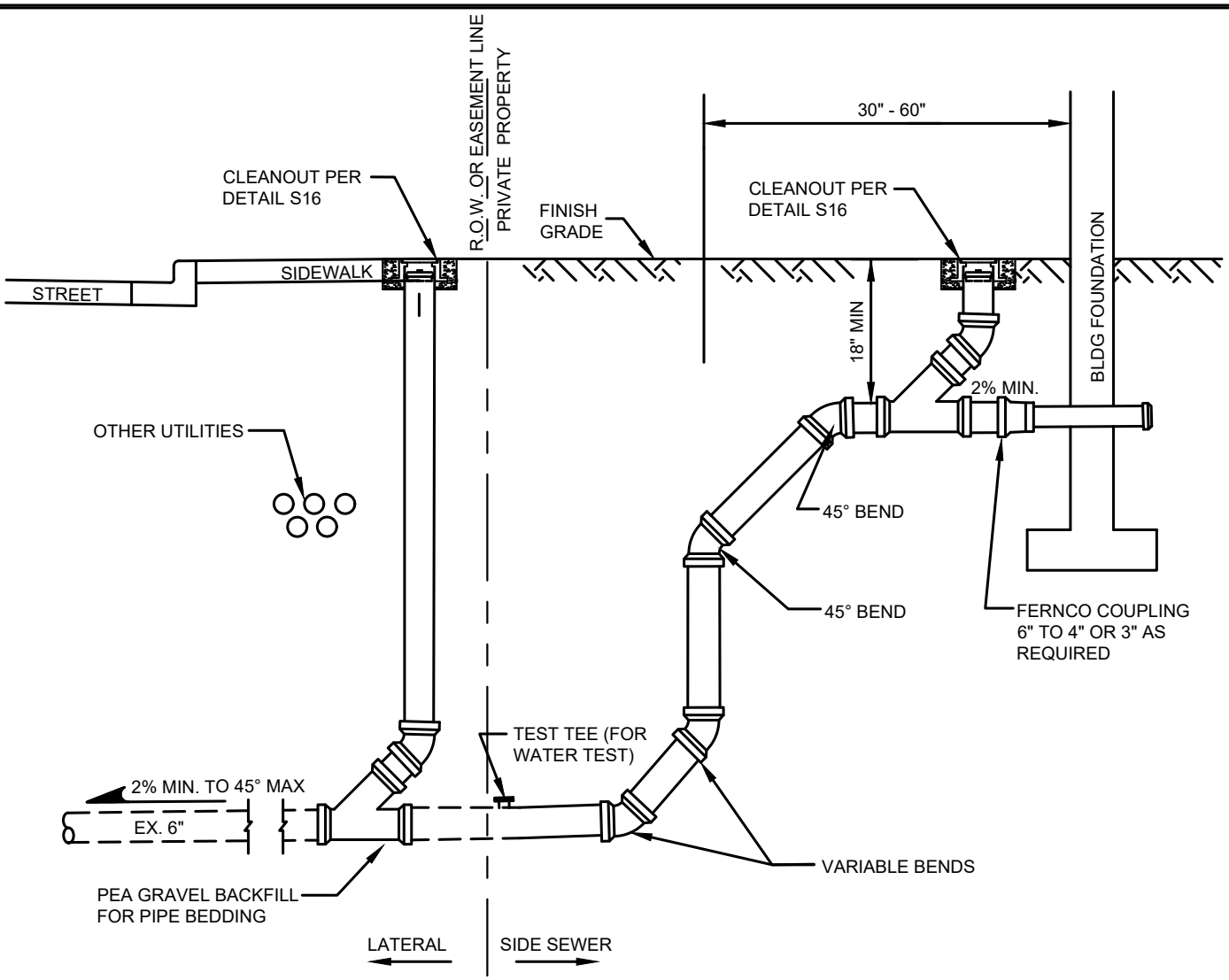
NOTES:

1. BENDS SHALL NOT BE GREATER THAN 45°. MINIMUM DISTANCE BETWEEN BENDS SHALL BE 3' UNLESS APPROVED BY DISTRICT.
2. CLEAN OUT IS REQUIRED MID-RUN FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED BEND.
3. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" LIFTS
4. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
5. 18" MINIMUM COVERAGE OVER PRIVATE SIDE SEWER.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE SHALL BE ELBOW AND WYE.
7. 4" SEWER PIPE MINIMUM SIZE ON PRIVATE RESIDENTIAL PROPERTY. 6" SEWER PIPE MINIMUM SIZE ON COMMERCIAL PROPERTIES AND DUPLEXES.
8. 2% MINIMUM GRADE, 100% MAXIMUM (45°).
9. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF DISTRICT CONNECTION FEES.
10. PIPE TO BE BEDDED WITH PEA GRAVEL TO LIMITS SHOWN.
11. INSTALL BACKWATER VALVE WHERE REQUIRED BY UPC. SEE S17 AND S18 FOR DETAILS.
12. SCHEDULE INSPECTION WITH DISTRICT 24 HOURS IN ADVANCE.

Silver Lake Water & Sewer District

PRIVATE SIDE SEWER INSTALLATION

DATE: 11-2022 | DWG: S14



NOTES:

1. THIS METHOD MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE DISTRICT AND ONLY WHEN STANDARD SIDE SEWER INSTALLATION PER DWG S11 IS NOT POSSIBLE BY EITHER:

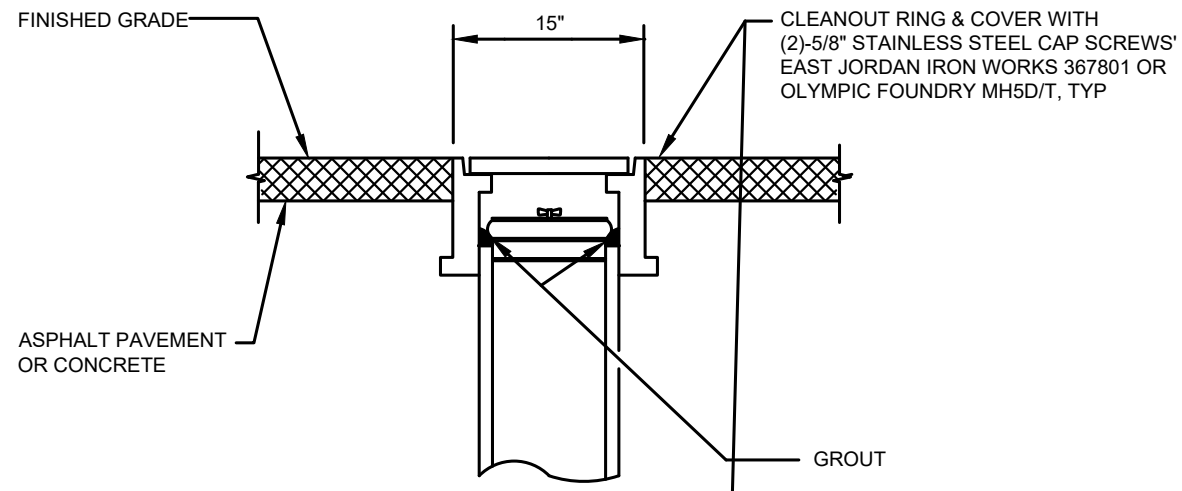
    A. INSTALLING THE PIPE AT 45 DEGREES (1:1) OR LESS TO A CONNECTION POINT LOCATED 30" FROM THE FOUNDATION AND 18" DEEP, OR

    B. ROUTING THE SIDE SEWER PIPE TO EXTEND ALONG THE SIDE OF THE BUILDING TO DECREASE SLOPE.

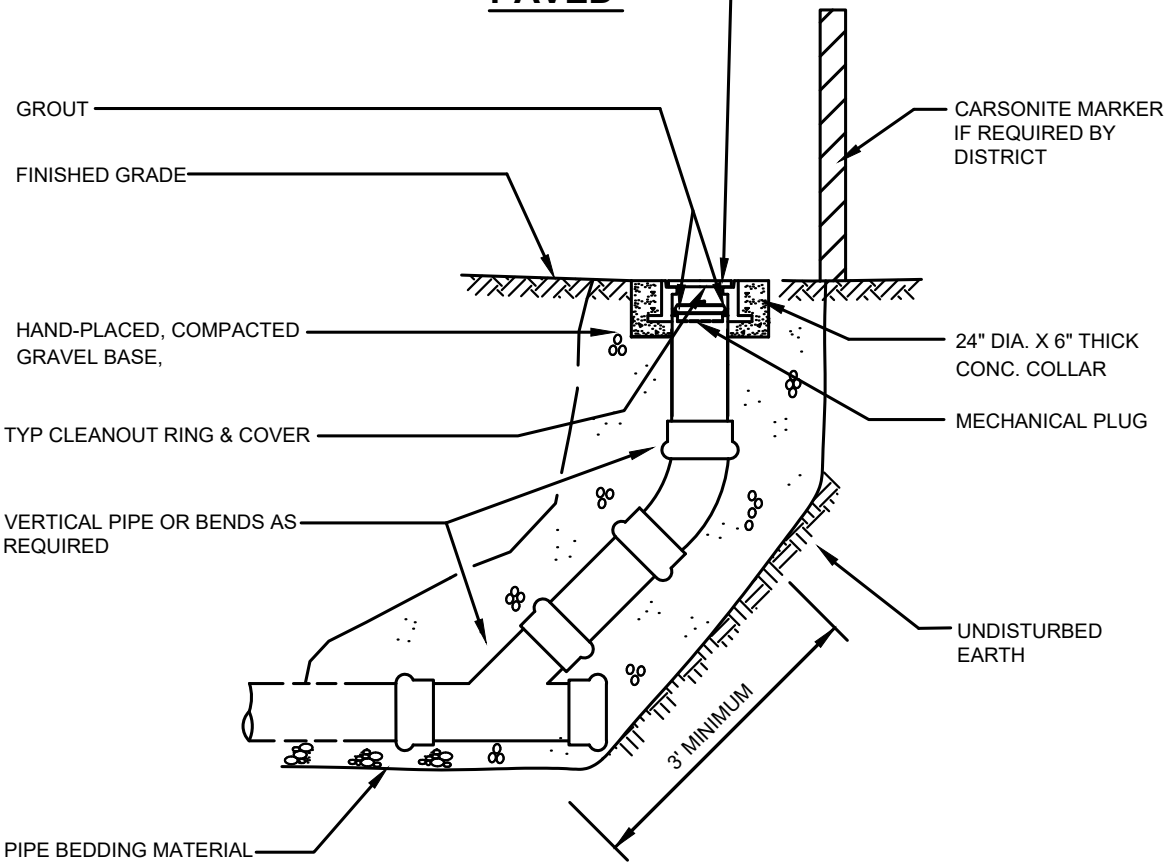
Silver Lake Water & Sewer District

PRIVATE VERTICAL RISER SIDE SEWER INSTALLATION

DATE: 11-2022 | DWG: S15



PAVED



UNPAVED

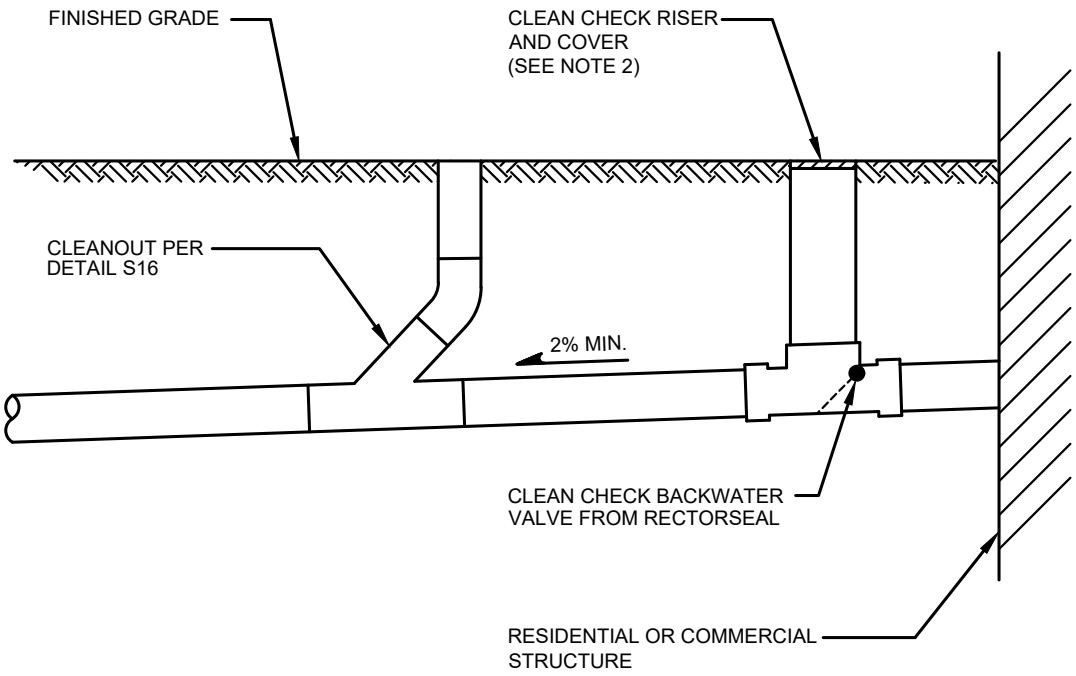
NOTES:

1. TO BE USED ON CLEANOUT ACCESS AT STRUCTURE OR AS REQUIRED BY DISTRICT.
2. CLEANOUTS REQUIRED EVERY 100' ON PRIVATE SIDE SEWERS

Silver Lake Water & Sewer District

SIDE SEWER CLEANOUT

DATE: 11-2022 | DWG: S16



ELEVATION

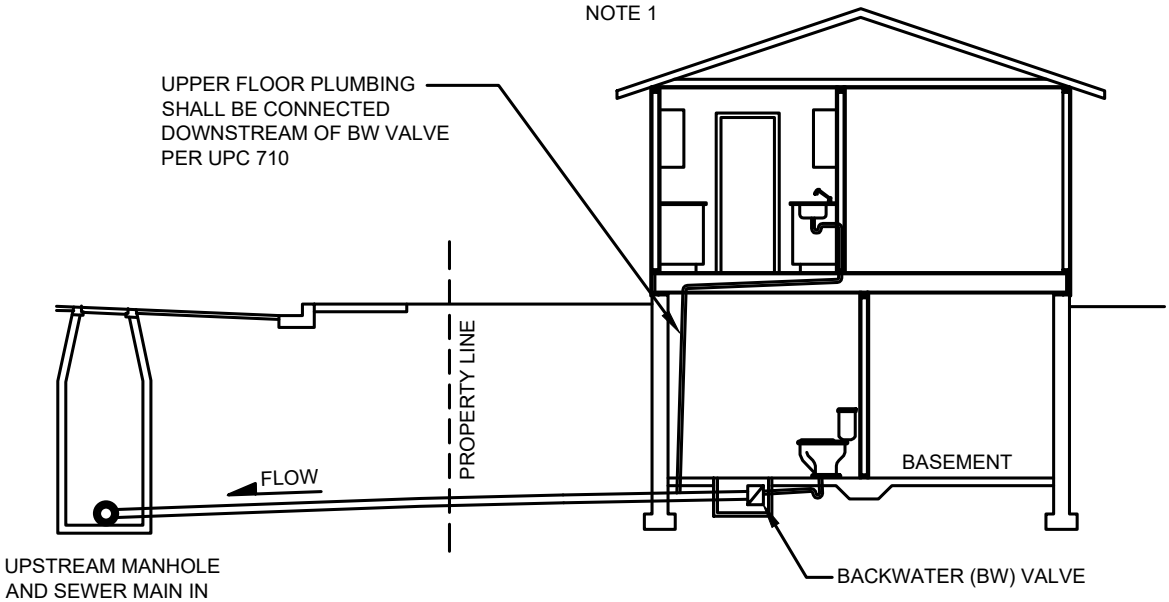
NOTES:

1. LOCATION TO BE APPROVED BY SILVER LAKE WATER AND SEWER DISTRICT, PRIOR TO INSTALLATION.
2. INSTALL DISTRICT STANDARD LOCKING CLEAN OUT CASTING LID PER DETAIL S16.

Silver Lake Water & Sewer District

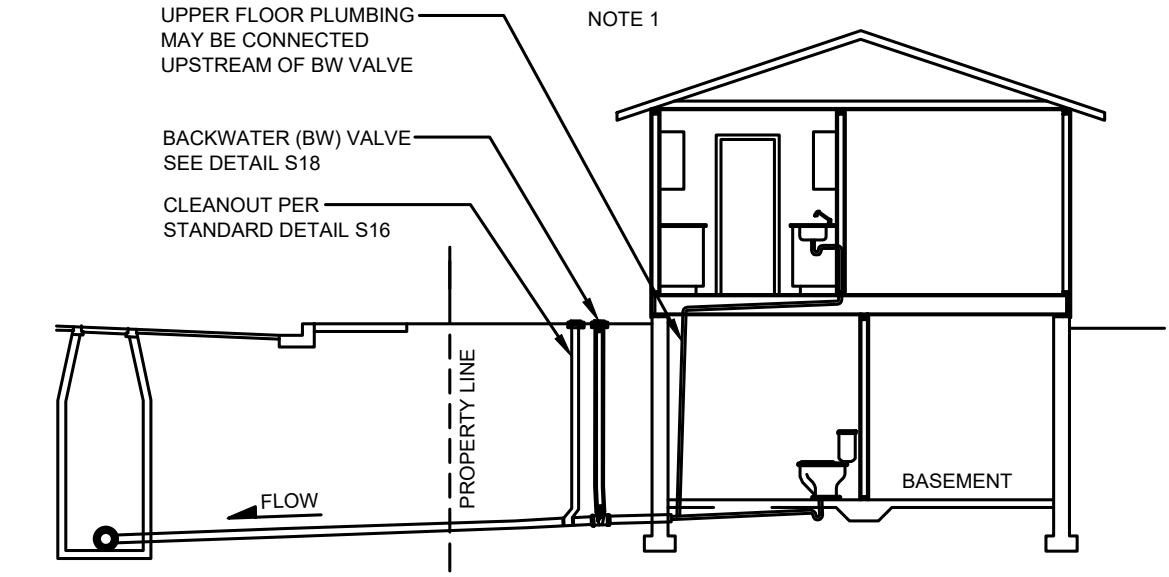
EXTERIOR PRIVATE BACKWATER VALVE

DATE: 11-2022	DWG: S17



BACKWATER VALVE INSIDE BLDG/BASEMENT

IF REQUIRED PER UPC ON ANY NEW CONSTRUCTION



BACKWATER VALVE OUTSIDE BUILDING

RETROFIT ON EXISTING STRUCTURE ONLY

NOTES:

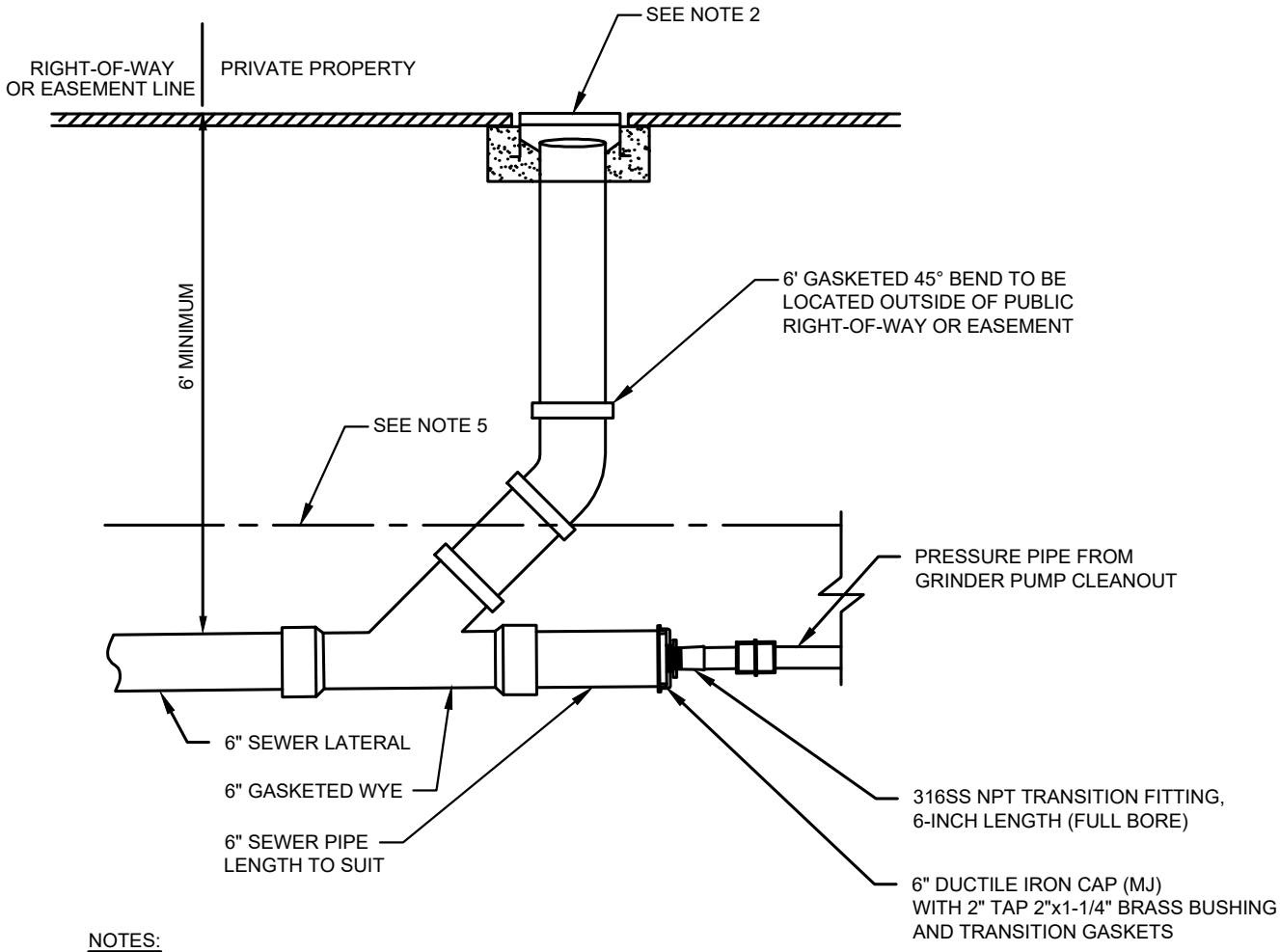
1. PLUMBING INSPECTIONS INSIDE THE BUILDING ARE THE RESPONSIBILITY OF THE COUNTY OR CITY IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE.

Silver Lake Water & Sewer District

PRIVATE BACKWATER VALVE INSTALLATION TO SANITARY SEWER

DATE: 11-2022

DWG: S18



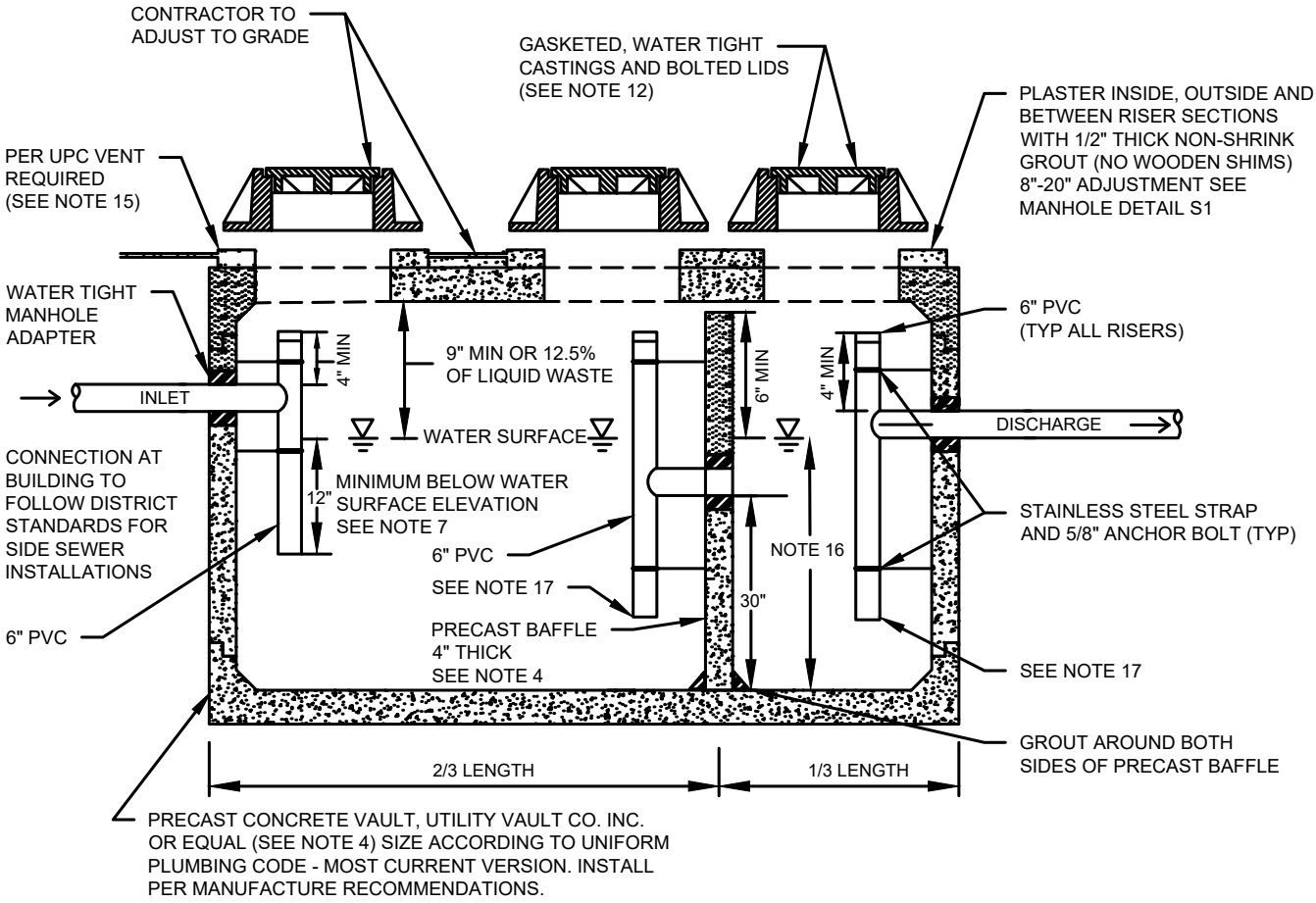
NOTES:

1. FOR SINGLE RESIDENTIAL/UNIT CONNECTION. ANY DEVIATION MUST BE REVIEWED AND APPROVED BY THE DISTRICT PRIOR TO INSTALLATION. ALL PIPE AND FITTINGS MUST BE INSTALLED PER DISTRICT STANDARDS.
2. 6" CLEANOUT IS REQUIRED FOR VISUAL INSPECTION OF THE PUMP LINE FLOW AND TO AID IN CLEANING OF THE SEWER SYSTEM. THE CLEANOUT MUST BE INSTALLED PER S16 PRIOR TO TESTING OF THE PUMP SYSTEM AND PERMIT SIGN-OFF.
3. FLEXIBLE COUPLINGS ARE NOT ALLOWED ON THE CONNECTION OF THIS SYSTEM.
4. PRESSURE PIPE SIZE AND TYPE TO BE PER PUMP MANUFACTURER RECOMMENDATIONS AND REQUIREMENTS OF THE CURRENT UNIFORM PLUMBING CODE.
5. INSTALL BURIED MARKER TAPE 1' ABOVE PRESSURE LINE. TAPE SHOULD READ "CAUTION BURIED SEWER BELOW".

Silver Lake Water & Sewer District

PRESSURE LINE CONNECTION TO GRAVITY SEWER

DATE: 11-2022	DWG: S19



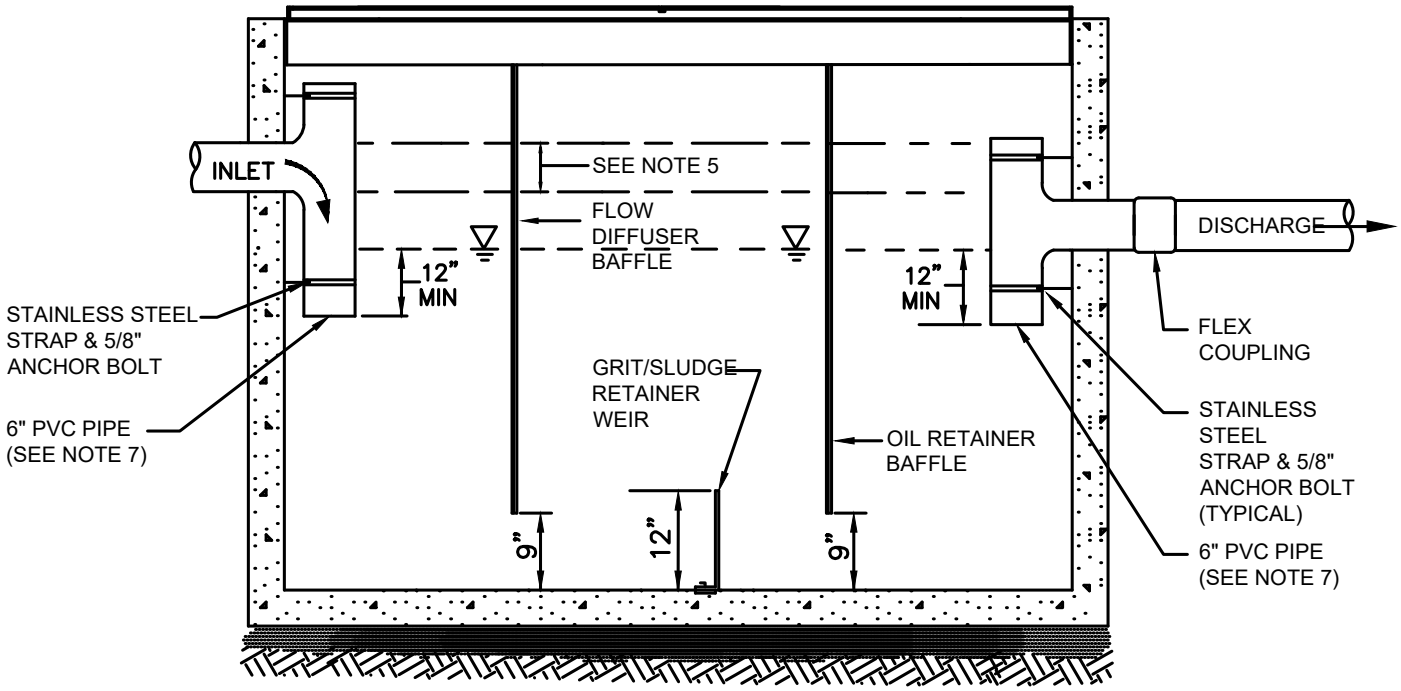
NOTES:

1. GRAY-WATER ONLY. BLACK-WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.
2. LOCATE INTERCEPTOR WITHIN CLOSE PROXIMITY OF DRIVE FOR ACCESS BY A MAINTENANCE VEHICLE.
3. IF VAULT IS NOT SLOTTED TO ACCEPT PRECAST CONC. BAFFLE THEN PRECAST CONC. SHALL BE HELD IN PLACE BY (2) 3"X3"X3/8" ANGLE (4FT. LONG) ATTACHED TO VAULT WALL WITH (4 EA) 1/2" BOLTS AND NUTS (WITH WASHERS) SPACED 14" O.C. ANGLE AND FASTENERS SHALL BE STAINLESS STEEL.
4. PRECAST VAULT AND BAFFLE SHALL HAVE KNOCKOUTS AT ALL PIPE OPENINGS. IF KNOCKOUTS ARE NOT PRESENT THEN PIPE OPENINGS SHALL BE 2" LARGER THAN PIPE DIAMETER.
5. POSITION PIPE RISERS BELOW ACCESS OPENINGS TO ALLOW CLEAR ACCESS TO RISER AND VAULT CHAMBER FOR SAMPLING & INSPECTION.
6. TOP OF INLET PIPE SHALL BE ONE PIPE DIAMETER HIGHER THAN THE TOP OF THE DISCHARGE PIPE.
7. INLET INSPECTION TEE/RISER MUST EXTEND A MINIMUM OF 12" BELOW THE DESIGNED WATER LEVEL.
8. ALL INTERNAL PIPING (RISER/INSPECTION TEE) SHALL BE A MINIMUM OF 6" PVC PIPE. EACH RISER SHALL BE CONNECTED TO THE WALL OF THE VAULT IN TWO (2) PLACES USING STAINLESS STEEL OR ALUMINUM STRAPS.
9. ALL FITTINGS SHALL BE DESIGNED FOR GREASE RETENTION.
10. CONNECTIONS THROUGH CONCRETE WALLS REQUIRE WATER TIGHT MANHOLE ADAPTERS. SEAL ALL PIPE CONNECTIONS WITH NON-SHRINK GROUT.
11. VAULT AND FITTINGS SHALL BE WATER TIGHT.
12. LIDS, FRAMES, AND BOLTS SHALL MEET ALL APPLICABLE DISTRICT STANDARDS (WITHOUT DISTRICT LOGO). MANHOLE ACCESS REQUIRED TO ALL VAULT CHAMBERS.
13. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM.
14. DISCHARGE REQUIRED TO COMPLY WITH DISTRICT DISCHARGE LIMITS.
15. INTERCEPTORS SHALL BE VENTED PER THE UNIFORM PLUMBING CODE.
16. LIQUID DEPTH SHALL MEET THE UNIFORM PLUMBING CODE REQUIREMENTS.
17. DISCHARGE AND TRANSITION TEES/RISERS SHALL EXTEND TO WITHIN 12"-18" OF THE VAULT BOTTOM.
18. LOCATION SHALL BE COORDINATED WITH DISTRICT AND LAND USE AGENCY AS REQUIRED. FACILITY SHALL NOT BE LOCATED WITHIN A PARKING SPACE, DRIVE THROUGH ROUTE, OR PUBLIC RIGHT-OF-WAY UNLESS OTHERWISE APPROVED.

Silver Lake Water & Sewer District

GREASE INTERCEPTOR

DATE: 11-2022 | DWG: S20



NOTES:

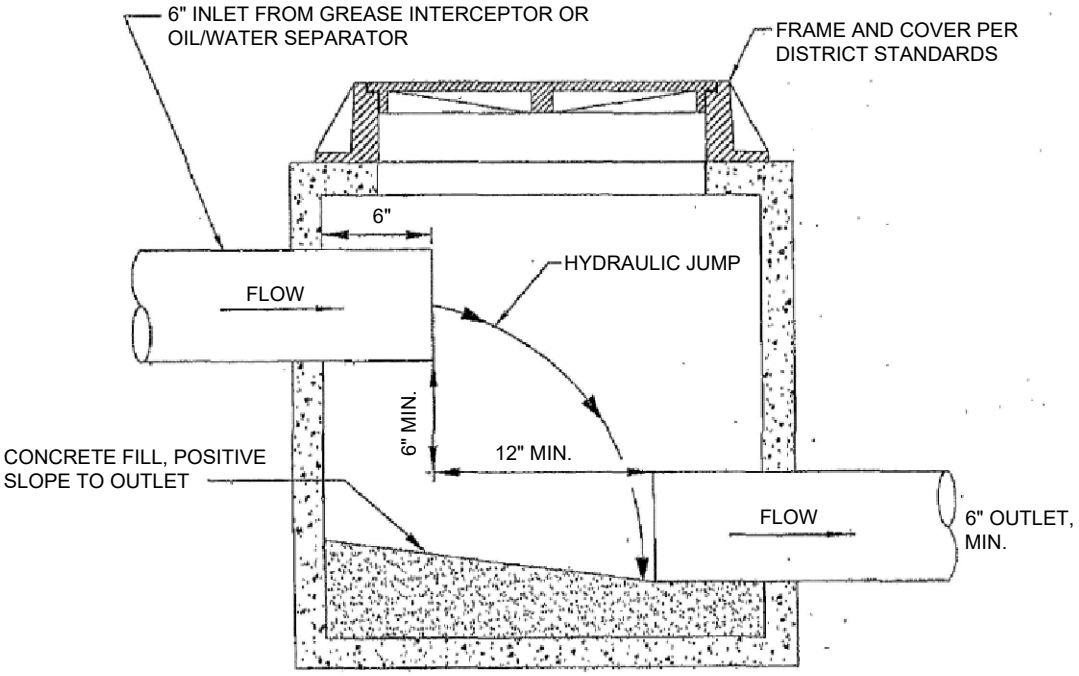
1. GRAY-WATER ONLY. BLACK-WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.
2. LOCATE SEPARATOR WITHIN CLOSE PROXIMITY OF DRIVE FOR ACCESS BY A MAINTENANCE VEHICLE.
3. PRECAST VAULT AND BAFFLE SHALL HAVE KNOCKOUTS AT ALL PIPE OPENINGS. IF KNOCKOUTS ARE NOT PRESENT THEN PIPE OPENINGS SHALL BE 2" LARGER THAN PIPE DIAMETER.
4. POSITION PIPE RISERS BELOW ACCESS OPENINGS TO ALLOW CLEAR ACCESS TO RISER AND VAULT CHAMBER FOR SAMPLING & INSPECTION.
5. TOP OF INLET PIPE SHALL BE ONE PIPE DIAMETER HIGHER THAN THE TOP OF THE DISCHARGE PIPE.
6. INLET INSPECTION TEE/RISER MUST EXTEND A MINIMUM OF 12" BELOW THE DESIGNED WATER LEVEL.
7. ALL INTERNAL PIPING (RISER/INSPECTION TEE) SHALL BE A MINIMUM OF 6" PVC PIPE. EACH RISER SHALL BE CONNECTED TO THE WALL OF THE VAULT IN TWO (2) PLACES USING STAINLESS STEEL OR ALUMINUM STRAPS.
8. ALL FITTINGS SHALL BE DESIGNED FOR OIL RETENTION.
9. CONNECTIONS THROUGH CONCRETE WALLS REQUIRE WATER TIGHT MANHOLE ADAPTERS. SEAL ALL PIPE CONNECTIONS WITH NON-SHRINK GROUT.
10. VAULT AND FITTINGS SHALL BE WATER TIGHT.
11. LIDS, FRAMES, AND BOLTS SHALL MEET ALL APPLICABLE DISTRICT STANDARDS (WITHOUT DISTRICT LOGO).
12. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM.
13. DISCHARGE REQUIRED TO COMPLY WITH DISTRICT DISCHARGE LIMITS.
14. SEPARATORS SHALL BE VENTED PER THE UNIFORM PLUMBING CODE.
15. ACCESS REQUIRED TO AL INTERNAL COMPONENTS TO ALLOW FOR MAINTENANCE.
16. LOCATION SHALL BE COORDINATED WITH DISTRICT AND LAND USE AGENCY AS REQUIRED. FACILITY SHALL NOT BE LOCATED WITHIN A PARKING SPACE, DRIVE THROUGH ROUTE, OR PUBLIC RIGHT-OF-WAY UNLESS OTHERWISE APPROVED.

Silver Lake Water & Sewer District

OIL/WATER SEPARATOR

DATE: 11-2022

DWG: S21



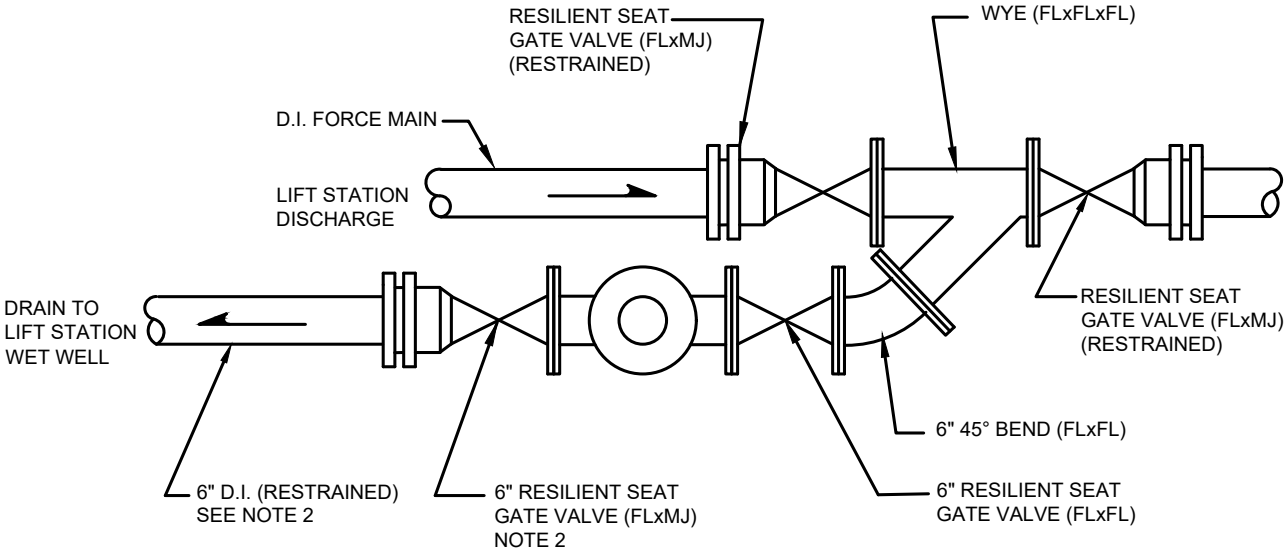
NOTES:

1. COMPLY WITH ALL REGULATORY REQUIREMENTS OF JURISDICTIONAL AUTHORITY.
2. OUTLET PIPE SHALL BE OF EQUAL OR GREATER DIAMETER THAN THE INLET PIPE.
3. STRUCTURE, FRAME, AND COVER SHALL BE H-20 LOAD RATED IF LOCATED IN TRAFFIC AREA.

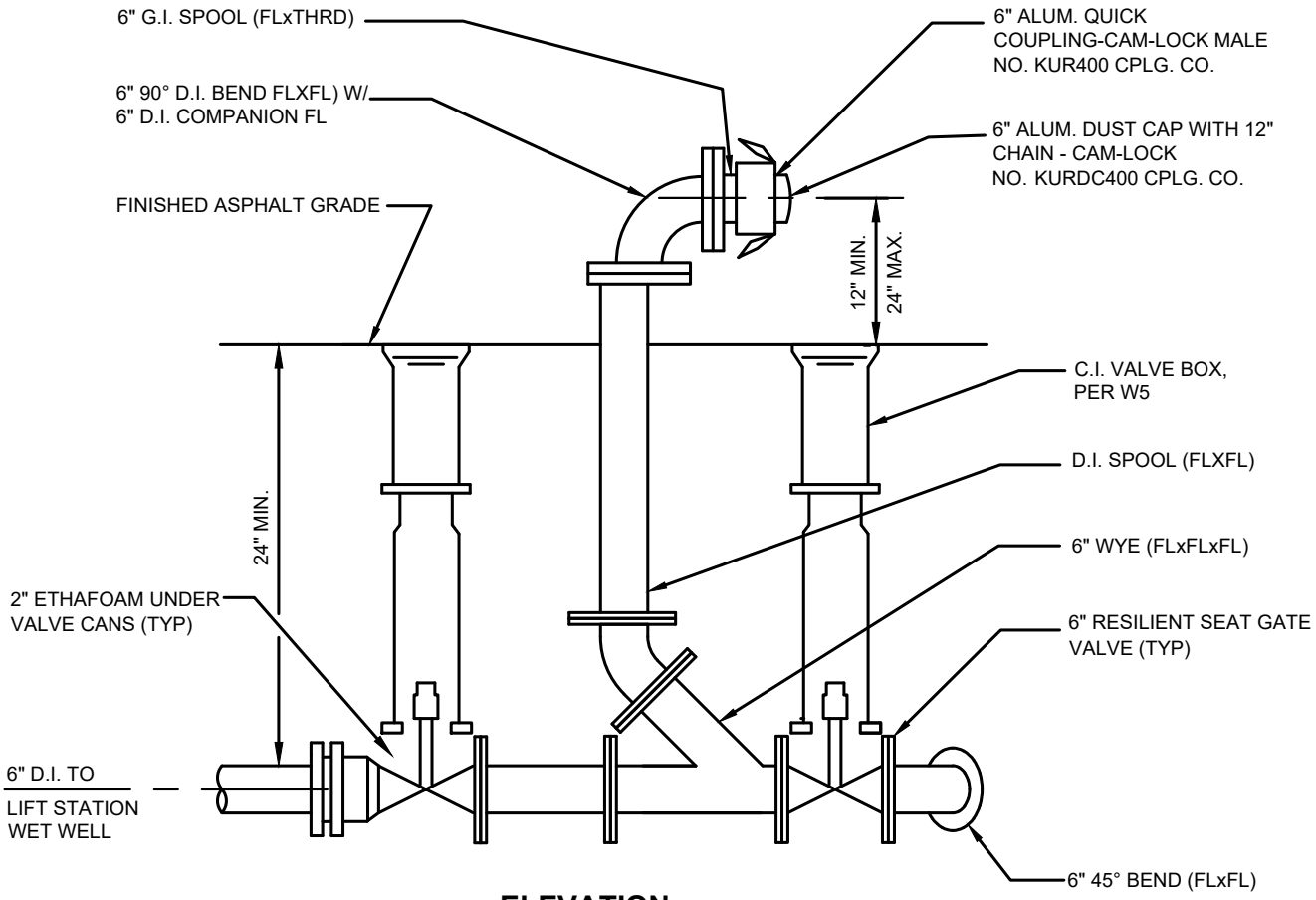
Silver Lake Water & Sewer District

SAMPLE CHAMBER FOR GREASE INTERCEPTOR & OIL/WATER SEPARATOR

DATE: 11-2022	DWG: S22



PLAN



ELEVATION

NOTES:

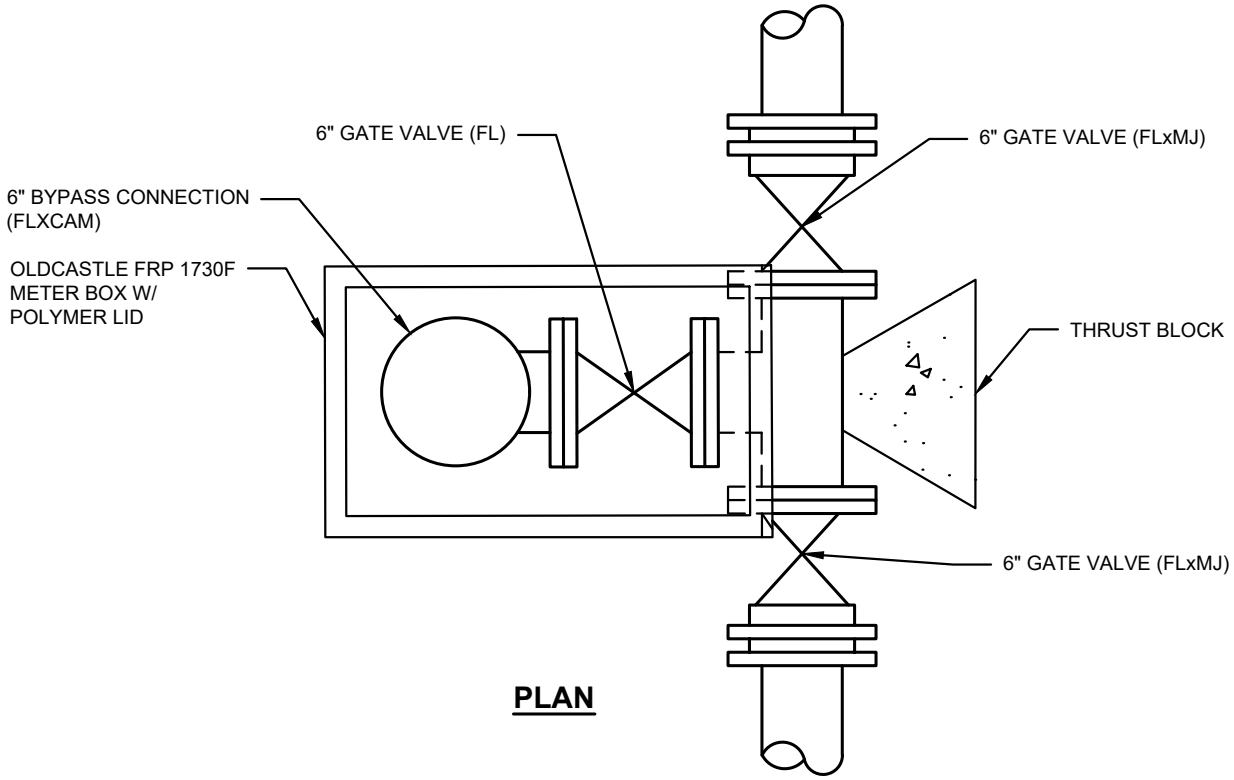
1. LOCATE AND ORIENT PUMP CONNECTION AS DIRECTED BY SLWSD.
2. PIPE AND FITTINGS TO BE ADJUSTED BASED ON DISTANCE TO WET WELL (FLxPE, OR FLxMJ RESTRAINED)
3. SIZE SHOWN, LARGER SIZE MAY BE REQUIRED TO MEET STATION CAPACITIES.

Silver Lake Water & Sewer District

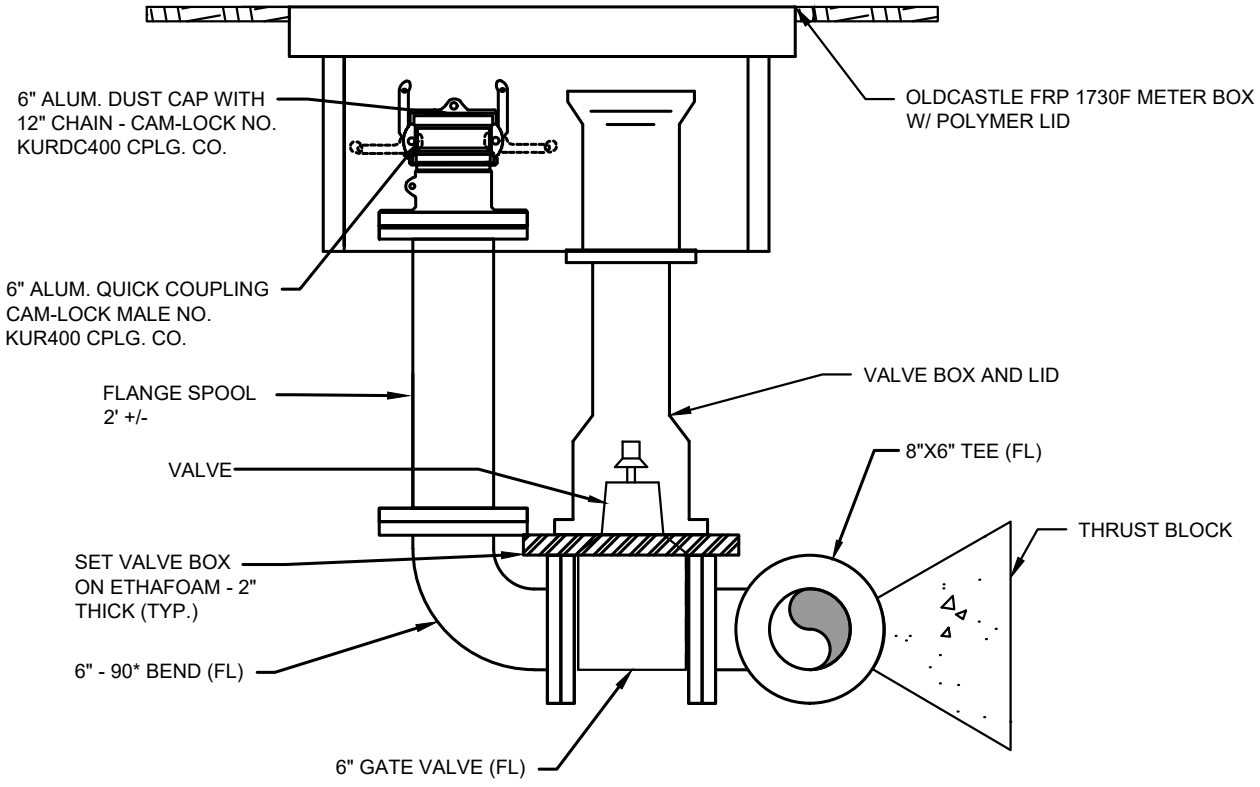
FORCE MAIN BYPASS PUMP CONNECTION

DATE: 11-2022

DWG: S23A



PLAN



ELEVATION

Silver Lake Water & Sewer District

FORCE MAIN BYPASS PUMP CONNECTION BELOW GRADE

DATE: 11-2022	DWG: S23B

Silver Lake Water & Sewer District

Exhibit 5

2022 Sewer CCTV Inspection Requirements

1. At a minimum, draft as-built plans and associated CAD files must be provided to the District at least one week in advance, and 48 hours notice must be given to the inspector prior to CCTV inspection.

2. The District will provide asset ID's for all manhole and pipes to be used during the CCTV work, as well as a pdf map of the development.

3. All sewer main line pipes, laterals and manholes must be video inspected and recorded.

4. All pipes shall be cleaned and flushed, and manholes channeled, prior to CCTV inspection. Use contrasting dye when adding water before recording.

5. Start videoing from the downstream manhole to upstream manhole.

6. The **center** of the downstream manhole will start at **zero** and the uphill manhole footage will be finished at the **center** of the upstream manhole. Verbalize the sewer lateral with a station such at 1+64 along with writing on the screen to document on the video log.

7. Control the lighting power to best visualize the system including sewer laterals.

8. Focus on any deficiencies, and **verbalize** on the recording anything documented on the log.

9. Stop and video all fittings including the bell and spigot connections and lateral connections. **Inverts of the sewer laterals are vital.** Visualize any joints that appear to not be normal such as wide gaps which require video around the connection point to see if any gasket is showing. Verbalize and document on the video the fittings or any abnormalities.

10. Document ponding verbally as well as typing onto the screen which will then be on the video log. Document the start of the pond to the end of the pond along with depth of the pond using a 1" indicator.

11. Make sure the selected camera is appropriate to the pipe material and diameter to create the best video record. The camera needs to be stabilized. The lack of traction from the camera creating a jumping video is not acceptable.

12. When videoing the inside of a manhole focus on the joints along with the risers for the ring and cover. Turn the camera lights up when looking inside the manhole.

13. Camera tractor needs to be kept at a consistent pace and not too fast.

14. When documenting on the video and video log use stations for the tees from the **center** of the downstream manhole.

15. When documenting a tee for a sewer lateral use Tee Left or Tee Right along with the stationing from the **center** of the downstream manhole.

16. Use National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) compliant software.

17. CCTV videos shall be coded using NASSCO PACP, in MPEG4 file format and encoded using MPEG4 compression with a minimum resolution of 640 pixels by 480 pixels and a maximum of 1920 pixels by 1080 pixels. The minimum frame rate shall be 24 frames per second. The bitrate shall be a minimum of 2000kb/s and a maximum of 3000kb/s.

    - Each pipe inspection from manhole to manhole shall be an individual video file.

    - Each individual video shall be named with the District's GIS Facility ID and inspection date. The District will provide GIS Facility IDs.

        - <facilityid>-<year>-<month>-<day>.<fileextension>

        - Example: SM2886-2021-03-23.mpg

    - Submittal of pipe inspection data shall include a NASSCO PACP compliant Microsoft (MS) Access database. In addition to the standard PACP require fields, the following fields shall also be included and completed in the database: GIS Facility ID, Upstream MH, Downstream MH, Inspection Date, Inspection Time, Survey Direction, Vendor Name, Inspector's Name, Inspector's Certificate #, Street, City, Project Name (provided by District), Pre-Cleaning, Survey Reason, Weather, Pipe Shape, Pipe Material, Pipe Diameter, Pipe Use, Survey Length.

    - Weekly submittals of still photos of each observed deficiency shall be provided. Photos shall be named with the District's GIS Facility ID, the observation code, and distance. (SM2711-MMS at 0.0 ft.JPG). Images will be in a JPG file format with a minimum resolution of 640 pixels by 480 pixels and a maximum of 1920 pixels by 1080 pixels.

    - Provide a separate PDF file format of a PACP inspection report for each video.

        - Each inspection report shall be named the District's GIS Facility ID:

            - <facilityid>-<year>-<month>-<day>.pdf

            - Example: SP2993-2022-03-23.pdf

18. The District will provide a link to upload the video and associated data.