

**FLORIDA KEYS AQUEDUCT AUTHORITY
MINIMUM DESIGN AND CONSTRUCTION
STANDARDS AND SPECIFICATIONS**



ENGINEERING DEPARTMENT

FLORIDA KEYS AQUEDUCT AUTHORITY
MINIMUM CONSTRUCTION STANDARDS AND SPECIFICATIONS
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FLORIDA KEYS AQUEDUCT FLORIDA KEYS AQUEDUCT AUTHORITY
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I. FORMAT FOR UTILITY DRAWINGS

A. All drawings shall be done on 24”x 36” and/or 11”x 17” sheet with standard title block. Lettering shall be 1/8-inch or larger to permit photographic reduction. Line quality shall be uniform and heavy enough to permit legible copies to be made from original documents.

B. Drawings shall include:

1. Cover sheet with location map, legend, sheet index, and general construction notes
2. Plan views of proposed utilities
3. Profile views as may be required
4. Construction details-indicate conflicts/separation with utilities
5. Locations of all existing utilities including existing water mains and valves
6. Minimum scale shall be 1:40; maximum shall be 1:20.
7. Digital Copy-Auto Cad 2007 or newer
8. Signed and Sealed by a Florida Licensed P.E.

C. Location map shall show Key, Mile Marker, and Roads from U.S. 1 (reference DOT Station #) leading location to work at a scale appropriate to clearly indicate all such information. Legend shall include all symbols used on drawings. Sheet index shall reference all sheets included with plans by name and number.

D. General construction notes shall be as follows:

1. The contractor shall notify all utilities with facilities in proximity to the proposed utility 72 hours prior to starting work and shall coordinate his work with utility representatives.
2. The contractor shall notify the Florida Keys Aqueduct Authority Contract Office 72 hours prior to starting work so that inspection may be scheduled. Inspections will be made between 8:00a.m. and 5:00p.m. Monday through Friday excluding legal holidays. When inspections are required after 5:00p.m. or on weekends and holidays the contractor shall reimburse Florida Keys Aqueduct Authority for all costs incurred to perform the inspections.

The Florida Keys Aqueduct Authority observes the following holidays: New Year's Day, Martin Luther King Day, Presidents Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Columbus Day, Thanksgiving Day, Day After Thanksgiving, Christmas Day, and/or as otherwise directed by Florida Keys Aqueduct Authority.

3. The Contractor shall be responsible for locating all utilities in the proposed area of work prior to proceeding by calling Sunshine at 1-800-432-4770. All excavation work must comply with applicable State and Federal (OSHA) requirements, including the Florida Trench Safety Act.
4. The Contractor shall not interrupt service to customers while making connection to existing utilities without the presence of a Florida Keys Aqueduct Authority Representative. Such tie-ins shall be scheduled with the Florida Keys Aqueduct Authority 72 hours in advance. The Contractor may be required in certain instances to schedule his/her tie-in work at off peak hours. Shut-downs shall be kept to a maximum of 2 hours, unless previously approved by Florida Keys Aqueduct Authority, pending extenuating circumstances.
5. The Contractor shall utilize an approved reduced pressure zone backflow preventer, and meter all water taken from Florida Keys Aqueduct Authority utilities for flushing, pigging, testing, and disinfection of mains. Meters must be obtained from Florida Keys Aqueduct Authority. All water metered during construction, will be billed for construction.
6. The Contractor shall have a supervisor present on the jobsite at all times who is capable of speaking, reading and writing in the English language.
7. No revisions shall be made to the plans without the written approval of the Florida Keys Aqueduct Authority Engineering Department.
8. Information shown on the drawings as to the location of existing utilities has been prepared from the most reliable data available to the Engineer. However, this information is not guaranteed and it shall be the responsibility of the contractor to determine the location, character and depth of any existing utilities, at no additional cost to the Florida Keys Aqueduct Authority. Extreme caution shall be exercised to prevent damage to existing utilities. Repairs to existing utilities necessitated because of damage caused by contractor's activities shall be at the expense

of the Contractor. Any actions by the Contractor necessitating repair to Florida Keys Aqueduct Authority facilities will require that the Contractor notify the Florida Keys Aqueduct Authority Representative immediately and adhere to Florida Keys Aqueduct Authority main break procedures. Repairs to existing water lines will be made before construction continues.

9. No excavation shall be permitted in the area of the transmission pipeline without a Florida Keys Aqueduct Authority representative at the site. Contractor must excavate by hand when within 24-inch of an existing utility.
10. Construction shall be performed in such a manner as to provide a minimum of inconvenience to the residents of the area. At no time shall roadways or pathways be blocked without providing a well-marked and easily accessible alternative route. Signs and markings shall be provided in accordance with the Florida Department of Transportation Roadway and Traffic Design Standards. The Contractor shall submit to the Florida Keys Aqueduct Authority maintenance of traffic (M.O.T.) plan that shows the scheme(s) that is intended for use on site. This shall include barricades, signing, and/or temporary striping. A 24 hour/day contact name and phone number shall be provided to the Florida Keys Aqueduct Authority Engineering Department both the M.O.T. Plan and contact shall be updated as needed. For projects involving state roads, the M.O.T. must also be submitted to F.D.O.T. for approval. For projects not within FDOT right-of-way, M.O.T. shall be in accordance with Part VI of the Manual of Uniform Traffic Control Devices (MUTCD), latest edition. Contractor shall assist in public notification efforts.
11. The Contractor shall not operate any utility valve or make tap on any utility unless an Florida Keys Aqueduct Authority representative is present. All existing system valves are to be operated by Florida Keys Aqueduct Authority personnel only. Contractor must provide three (3) business days notification prior to scheduled shut downs.
12. At the preconstruction meeting with the Florida Keys Aqueduct Authority, the Contractor shall submit a project schedule to the Florida Keys Aqueduct Authority Engineering Department in an approved format that details all construction activities throughout the term of the contract. This schedule shall indicate those activities considered to be on the critical path for satisfactory completion within the time limits of the contract. It

will be submitted for approval to the Florida Keys Aqueduct Authority, and must be approved, or revised and resubmitted in an acceptable form prior to commencement of any construction activity on the project.

The Florida Keys Aqueduct Authority shall require a resubmittal of this schedule if the Contractor falls more than 5% behind (dollar value of contract items versus contract time, excluding material advances), showing how the Contractor, at further cost or expense to the Florida Keys Aqueduct Authority will mitigate the delay and complete this project within the contract duration as specified.

Deviation from the approved schedule will be by written permission of the Florida Keys Aqueduct Authority. This schedule will be reflective of the Contractor's M.O.T. Plan.

Failure to submit the initial schedule may result in the suspension of all construction activity. Failure to submit schedule revisions within ten (10) calendar days of written notice by the Florida Keys Aqueduct Authority shall result in withholding of all progress payments until an acceptable schedule is delivered and approved by the Florida Keys Aqueduct Authority.

13. The contractor is responsible for collecting GPS coordinates for all fittings, valves, bends, flush-out assemblies, connections to existing utilities, fire hydrants, service connections, meters, etc. on required State Coordinate System- NAD_NAD_1983_HARN_State Plane_Florida_East_FIPS_0901_Feet and must be deliverable as a shape file with attributes (i.e. pipe with size, diameter and length of pipe segments, valves with type, size, turns to close, and fittings with type and sizes, etc. prior to burial. The vertical and horizontal precision should be within 1-inch and 1feet, respectively.

E. Drawings reviews shall be prepared in the following manner:

Location of proposed utilities, valves, flush-outs, hydrants, and services shall be referenced to existing right-of-way lines, street centerlines, lot lines, and/or other permanent structures. All existing utilities and other structures in proximity to the proposed water mains shall be shown and referenced in a similar manner. Size and type of all existing utilities to be tapped and size, type and lengths of proposed utilities shall be indicated. The location and limits of all easements to be granted to the Florida Keys Aqueduct Authority shall be indicated. Width of

existing pavement, distance from right-of-way and right-of-way shall be indicated. Drawings shall indicate location, size, type of all driveways to be crossed by the proposed utilities shall be indicated. Pavement cuts and paved driveway cuts shall be indicated. All utilities to be conveyed to the Florida Keys Aqueduct Authority shall be indicated. The location and elevation of a 1929 NGVDF Benchmark shall be indicated. Elevations of existing and proposed roads referenced to said benchmark shall be indicated when necessary to insure proper roads referenced to said benchmark shall be indicated when necessary to insure proper cover over utilities. Drawings shall include all general notes.

- F. Profile view shall clearly indicate all utilities in areas of potential conflict of proposed utilities. Plan and profile sheet should be used to indicate both plan and profile when profile views are required. Vertical scale shall be one inch = two feet or less. Horizontal scale shall be same as plan view.

II. GENERAL DESIGN CRITERIA

- A. Service lines shall be as follows:

SIZE TO BE USED	MATERIAL	MAXIMUM No. OF METERS SERVED
1-inch	BLUE CTS-POLYETHYLENE TUBING	2 EA 5/8"x3/4" (SDR9) OR 1 EA 1"
2"	BLUE CTS-POLYETHYLENE TUBING	6 EA 5/8"x3/4" (SDR9) OR 4 EA 1" OR 1 EA 1.5" OR 1 EA 2"
4"	AWWA C-900 PVC PIPE (DR18")	1 EA 3" METER OR 1 EA 4" METER
6"	AWWA C-900 PVC PIPE (DR18")	1 EA 6" METER

- B. Minimum size of utilities shall be 4-inches unless otherwise approved by the Florida Keys Aqueduct Authority Manager of Engineering.
- C. Utilities and services lines shall be installed in public right-of-way (R/W). When easements are necessary, permission must be obtained from the Florida Keys Aqueduct Authority Engineering Department before incorporation into the design. Easement shall be a minimum of 20 feet wide and must include all meters and appurtenances.
- D. Minimum depth to cover shall be 36-inches under pavement, 30-inches cover under nonpavement within FDOT R/W and 30-inches outside FDOT R/W unless

otherwise approved by the Florida Keys Aqueduct Authority Engineering Department. Maximum depth of cover shall be 5-feet.

- E. Installation of utilities in proximity with sewer, storm sewer and reclaimed mains shall adhere to requirements outlined in FDEP Section 62-555.314 (1), (2), (3), and (4).

Parallel installation:

Utilities shall be laid in accordance with FDEP Section 62-555.314 from any existing or proposed sewer. The distance shall be measured pipewall to pipewall. In case where it is not practical to maintain a minimum separation, the FDEP may allow deviation on a case-by-case basis, if supported by data from the design engineer.

Crossings:

Utilities crossing sewer, storms sewer and reclaimed mains shall be laid in accordance with FDEP Section 62-555.314 from any existing or proposed sewer, storm sewer and reclaimed mains. This shall be the case where the water main is either above or below the sewer, storm sewer and reclaimed mains. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer, storm sewer and reclaimed mains as possible. Special structural support for the water and sewer, storm sewer and reclaimed mains may be required.

Exception:

The Florida Keys Aqueduct Authority and FDEP must specifically approve any variance from the above requirements when it is impossible to obtain the specified separation distances. Where sewers are being installed and specified separation distances cannot be met, the sewer materials shall be water main pipe or equivalent and shall be pressure tested to FDEP specifications to ensure water tightness.

Force mains:

Utilities shall be laid in accordance with FDEP Section 62-555.314 from any existing or proposed sewer force mains.

- F. Water meters shall be located at the frontage of the property to be served, generally within an existing City, County or State right-of-way. Whenever two or more meters are utilized to supply a premise, such meters shall be grouped and installed at a location designated by the Florida Keys Aqueduct Authority. Meters for adjacent properties shall be grouped, or paired, at a common property

line, whenever possible. Water meters will not be installed within ten (10) feet of an existing or proposed septic tank and/or drainfield. Water meters shall not be installed in a driveway.

- G. The Contractor shall maintain on a daily basis at the jobsite, and make available to the Florida Keys Aqueduct Authority on request, one current record set of Drawings which have been neatly and accurately marked up to indicate all modifications in the completed work that differ from the design information shown on the drawings. Upon substantial completion and, prior to final payment of the work, the Contractor shall give the Florida Keys Aqueduct Authority one complete set of neatly marked up Record Drawings which shall consist of the following at a minimum:

1. Valves:

Valves shall have measurements from the centerline of paralleling and closet intersecting streets and property lines. Type of valve (make, model, size, type-gate valve or butterfly valve), the number of turns to open valve, and the direction to open shall be indicated.

2. Bends:

Both horizontal and vertical bends shall have measurements from the centerline of paralleling and closet intersecting streets and property lines measurements to nearest valve. Degree of bend and method of restraint shall be indicated.

3. Fittings and Specials:

Fittings shall have measurements from the centerline of paralleling and closet intersecting streets and property lines. Method of restraint and measurement to nearest valve shall be indicated.

4. Flush-Out Assembly:

Flush-outs shall have measurements from the centerline of paralleling and closet intersecting streets and property lines. Make and model shall be indicated measurement to nearest valve.

5. Connection to Existing Utilities:

Connections shall have measurements from the centerline of paralleling and closet intersecting streets and property lines. Type of material of existing water main being connected to and the type of connection (i.e. tapping sleeve and valve, tee, etc.), shall be indicated.

6. Utilities:

Locations of any existing utilities including drainage pipe shall be indicated.

7. Service Connections:

Service connections shall indicate meter numbers and any change of connection (i.e. D, E, F, G, or H) from original design and locations of service shall be GPS located.

III. FIRE FLOW SERVICE CONSIDERATIONS

The provision of adequate fire flow service to a new development by the FLORIDA KEYS AQUEDUCT AUTHORITY is not always possible. In many instances, adequate fire flow service must be provided by the construction of on-site facilities by the developer.

The amount of fire flow service to be provided will be determined by Florida Building Code, Monroe County Fire Department requirements, and the developer's Design Engineer prior to construction and shall be in accordance with applicable insurance requirements. It is the responsibility of the developer's design engineer to determine the fire flow service requirements. The Florida Keys Aqueduct Authority Engineering Department will determine in each instance the adequacy of the Florida Keys Aqueduct Authority water system to provide the needed fire flow as determined by the developer's design engineer. If Florida Keys Aqueduct Authority water system is considered to be adequate to handle required fire flow and the fire line is allowed to be connected to the Florida Keys Aqueduct Authority system without the use of a booster pump, storage tank, or pump suction control valve. The use of a DCDA or RPDA is still required. If the Florida Keys Aqueduct Authority determines that the Florida Keys Aqueduct Authority system cannot provide required fire flow, the Design Engineer shall select one of the methods below to provide fire protection.

METHOD 1:

The fire sprinkler system, fire standpipes or fire hydrants are served by a fire booster pump drawing water from the storage tank or swimming pool which is isolated from the Florida Keys Aqueduct Authority water system. The tank fill line is connected to the domestic plumbing after the domestic meter and reduced pressure zone backflow preventer. All water used for the fire purposes is metered through the domestic meter. The domestic plumbing lines and the fire lines after the storage tank are not connected at any point. No full flow fire meter, detection check valve assembly, or reduced pressure

detection assembly (DCDA or RPDA) is required. No pump suction control valve is required. The storage capacity of the tank and the size of the booster pump may be adjusted as required so as to provide the optimum degree of fire flow dictated by the use of the premises. This method does not depend upon the instantaneous availability of adequate pressures and quantities from the Florida Keys Aqueduct Authority and is the only method which the Florida Keys Aqueduct Authority will accept in all instances.

METHOD 2:

In this approach the storage tank and air gap are eliminated and a pump suction control (PSC) valve and Detection Check Valve Assembly (DCDA or RPDA) are installed in a “fire line”. The PSC valve prevents the fire booster pump from reducing Florida Keys Aqueduct Authority water main pressure below 20 psi. The DCDA or RPDA will detect both the unauthorized use of water and leaks through the “fire line”. This method protects the FKA water system from backflow but provides only a limited degree of fire flow.

IV. MATERIAL SPECIFICATIONS

No Lead Law-All materials must be “lead free”. “Lead Free” means no lead content no more than 0.25% in the wetted surface material.

A. Hardware

All hardware shall be SS304.

B. EPDM Gaskets

C. Ductile Iron Pipe Fittings

1. Ductile Iron Pipe: Ductile iron pipe shall conform to AWWA C151 (ANSI A21.51) and shall be pressure Class 350.
2. Lining: Ductile iron pipe for utilities shall have an internal lining of cement mortar in accordance with AWWA C104/A21.4.
3. Coating: Buried ductile iron pipe shall be bituminous coated per AWWA C151/A2.51 and wrapped in a 12 mil polyethylene encasement.
4. Push-On Points: Bell and spigot ductile iron pipe shall be EPDM gasket compression, push-on type as specified in AWWA C111 (ANSI A21.11). These joints may be U.S. Pipe and Foundry Tyton Joints or approved equal.

5. Restrained Joints: Restrained joint pipe shall be used for changes in elevation or alignment as shown on the plans or as required in the field by the Engineer. Restrained joints may be U.S. Pipe and Foundry TR Flex by U.S. Pipe joints, American Ductile Iron Pipe Lok-Ring, or approved equal. All restrained joints shall have a working pressure of 350 psi.
6. Ductile Iron Fittings: Ductile iron fittings shall be restrained joint type, and shall conform to ANSI/AWWA C153/A21.53, and must be Domestic or approved equal. All fittings shall have a working pressure rating of 350 psi in sizes 4-inch through 24-inch, and shall be coated and lined as specified for pipe.

All piping valves, meters, etc. within meter or valve vaults shall be flanged. Flanged fittings on high pressure side of transmission main shall be Class 250. All others shall be Class 125. All hardware shall be Type 304 stainless steel.

7. Ductile iron pipe shall be installed along the entire frontage of existing and abandoned gas stations (or other sources of subsurface hydrocarbon contamination) plus 200 L.F. distance on each side. Nitrile gaskets shall be used in areas of subsurface hydrocarbon contamination.

D. Polyvinyl Chloride Pipe (PVC)

1. PVC Pipe: PVC pipe shall meet the requirements of AWWA C900 DR18 for pipe 4-inch to 12-inch in diameter, and shall be furnished in cast-iron pipe equivalent outside diameters with EPDM gasket joints.
2. Push-On Joints: Pipe shall be furnished with integral bell joints with locked in EPDM gaskets.
3. Restrained Joints: Restrained joint pipe shall be used for changes in elevation or alignment as shown on the plans or as required in the field by the Engineer. Restrained joints may be EBAA Iron Series 2000 Retainers, or approved equivalent restraint. Restrained joint pipe and fittings shall be used to mechanically restrain pipe for thrusts at all bends and dead ends. See pipe restraint joint schedule for minimums.
4. Florida Keys Aqueduct Authority may require additional thrust blocks.
5. Fittings:
See Ductile Iron Fittings

E. Anchor Coupling / Anchor Tee

1. All valves located at a tee shall be restrained to the tee by mega lugs or the use of anchor tees or anchor couplings. Anchor Tee/Anchor Couplings shall meet all applicable requirements of ANSI/AWWA C153/A21.53 and ANSI/AWWA 111/A21.11. Bolts used with anchor tees/anchor couplings must be ductile iron or Cor-Ten as manufactured by NSS Industries, or approved equal.

F. Polyethylene Pipe for Service Lines

1. Polyethylene pressure pipe and tubing, 1-inch through 2-inch having standard PE code designations blue PE2406, PE3406, and PE3408, shall be in accordance with AWWA Standard C-901, have a standard dimension ration (SDR) of 9 with a 200 psi working pressure and have copper equivalent (CTS) outside diameters. Polyethylene pipe shall be used for all service connections.
2. PVC C-900 Pipe (DR18) for water service lines 4-inch-12-inch.

G. Valves

1. General- All valves shall be furnished with affidavits from the manufacturers that the valve furnished under this Contract comply with all applicable provisions of the respective AWWA Specifications, cited below. All valves shall be factory tested in accordance with AWWA Standard Leakage and Hydrostatic Tests and certified test report shall be furnished stating that the valves have met the requirements of the test.

Valves shall be furnished with mechanical joint or flanged ends. Valve ends with mechanical joints or flanges joints shall conform to AWWA Standard C110, "Gray-Iron and Ductile Iron Fittings, 4-inch for water and other liquids. In addition, mechanical joints shall conform to ANSI/AWWA Standard C111/A21.11. Bolt holes in the flanges of the mechanical joint shall straddle the vertical and horizontal centerline. Flanges shall be ANSI Standard Class 125, plain faced and drilled.

All shut-off valves 4-inch through 16-inch in diameter, shall be resilient seated or resilient wedge gate valves and all valves 18-inch in diameter and larger, shall be as specified and shown on the drawings. All valves shall be polyethylene encased, from one foot on each side of the valve.

2. Gate Valves- 4-inches and larger shall be resilient seated or resilient wedge gate valve for 150 psi working pressure, conforming to AWWA Standard C-509. The gate valve shall have a high strength bronze or 304 stainless non-rising stem. Valves shall have neoprene or equal, but not natural rubbers, EPDM O-ring stem seals and are of a design that permits the replacement of the O-ring seals while the valve is in service, without undue leakage. All exposed bolts used with valves shall be AISI Type 304 stainless steel. The valves shall operate in a vertical position with a vertical operating nut shaft and shall be suitable for buried service.

The valves shall open by turning the operating nut counterclockwise. Operating nuts shall be AWWA 2-inch square nuts with skirts. Valve body, bonnet, and gate shall be ductile iron conforming to ASTM-A536. The gate valve for distribution systems shall be designed for 150 psi working water pressure rating. Gate valves for connection to the high pressure transmission mains and installed between the transmission mains and pressure reducing valves, shall be designed for 250 psi working pressure and 350 psi test pressure and shall be furnished with Class 250 flanges. Gate valves shall be as manufactured by American Flow Control Series 2500, U.S. Pipe Metroseal 250, Clow #2638, Kennedy Valves #KS-FW, or an approved equal. Bolts shall meet requirements of Type 304 Stainless Steel.

3. Air Release Valves- shall be installed at relative high points on the installed piping systems and at distance along the pipeline in accordance with manufacturer's recommendations for the given size and flow. ARVs shall be automatic, combination air and vacuum release valves as manufactured by Val-Matic or APCO. Floodsafe attachments shall be provided for valves located below grade. Valves to be made of corrosion resistant metal(s), bronze and 304 stainless steels. Valve assemblies shall in accordance with AWWA standard C512-07.

H. Ball Valve Curb Stops

Curb stop shall be Ford Series B-11, Mueller H10283, Mac Donald Curb Stop, or an approved equal. Ball valves shall have locking lugs and 2-inch square operating nut which opens to the left on 1-inch and 2-inch valves.

I. Residential Meter Dual Check Valve

Meter check valves shall be dual check valve assemblies suitable for installation on 5/8-inch, 3/4-inch, 1-inch, and shall be Ford HHS31, Mueller H-14242, or an approved equal.

J. Ball Valve Meter Stops

Meter stops shall be Ford Series B43 or BF13, or an approved equal. Valves shall have lockable padlock wings, and open to the left.

K. Tapping Sleeve and Valve

Tapping sleeves shall be ASTM 285 Grade C Steel or ASTM A-36 Carbon Steel with Fusion bonded epoxy coating (AWWA C213-70). Tapping sleeves shall utilize AISI Type 304 (ASTM A320 Grade B8) stainless steel bolts and nuts. Tapping Sleeves shall be as manufactured by JCM Industries Model 412, Romac Industries Model FTS420, or approved equal.

Tapping valves shall be as specified for gate valves, herein above, and as further specified herein. Tapping valves for use in tapping distribution mains shall be resilient seat gate valves. Inlet shall be Class 125, ANSI B16.1, ductile iron flange with centering ring to match tapping sleeve. Outlet shall be a mechanical joint. Tapping valve shall be compatible for use with drilling machine. Operating nut shall be 2-inch square and open to the left. Tapping valves shall be attached to tapping sleeves with heavy hex-head 304 SS ASTM F593 stainless steel bolts. Approved tapping sleeves include: American Flow Control Series 2500 or approved equal.

L. Pressure Reducing Valves

The pressure reducing valve shall be hydraulically operated, diaphragm actuated in globe pattern. The valve shall maintain a constant downstream pressure regardless on inlet pressure variations.

It shall contain a resilient synthetic rubber disc having a rectangular cross section contained on three and one-half sides by a disc retainer. The seat ring shall be contained on three and one-half sides by a disc retainer. The seat ring shall be firmly held in place and not pressed into the body. The diaphragm assembly shall be the only moving part. The diaphragm shall consist of a nylon fabric reinforced EPDM rubber and shall not be used as a seating surface. All necessary repairs shall be possible without removing the valve from the line. All main valve interior components shall be manufactured for non-corrosive materials.

The pilot valve shall be adjustable, direct acting, spring loaded and normally open. The reducing pilot shall be supplied with a stainless steel seat ring.

The valve shall be Cla-Val as manufactured in the U.S.A. by AMES Company, Inc., Woodland, CA, and shall be Pressure Class 300 with Class 150 Flanges Stainless Steel body. The valve shall be piloted in reverse flow for fail-safe operation.

M. Valve Boxes

Valve boxes shall be furnished and installed for all valves, air release valves, flushing valve outlets and at other locations shown on the Drawings.

N. Saddles

Saddles shall be Rockwell International, Type 323, style double strap bronze saddles, for PVC and ductile iron pipe, or approved equal. Tapping saddles shall be used for all taps on 2-inch PVC pipe 4-inch PVC pipe or greater shall have a tapping sleeve and valve.

O. Corporation Stops

Corporation stops shall be Ford F-1000, or approved equal. The largest corporation stop which can be tapped directly into the pipe is 1-inch.

P. Detectable Warning Tape and Wire

Contractor shall install 6-inch detectable blue warning tapes and 12 gauge copper tracer wire for all utilities. Such tape shall be magnetic type, 5 mils thick, 2mil thick aluminum center core, encased in Mylar. Tape shall be imprinted with the words "Caution: Potable Water Line Below". Printing shall appear on both sides of the tape with white lettering. The tape shall be placed between 6 and 12 inches below finish grade.

Q. Pump Suction Control Valves

Pump suction control valves shall be Cla-Val Model 50B-5KG.

R. End Seals

End seals for casings used in jack and bore installations shall be "Link-Seal Model PI" or an approved equal.

S. Casing Spacers

Casing Spacers for jack and bore installations shall be as manufactured by Cascade, or approved equal.

T. Fire Hydrants

Fire hydrants shall be 6-inch, mechanical joint pipe connection with a minimum 5.25 inch valve opening. Hydrants shall be of AWWA approved type, designed for a 150 psi working pressure. Provisions shall be made for two 2.5 inch hose nozzles and one 4.5 inch pumper nozzle, open left (counter clockwise). All base threads shall conform to the national standards hose coupling thread specifications. Fire hydrants shall have a safety stem coupling to prevent bending of the operation system, and a safety flange to prevent breaking of the hydrant barrel if hit by a vehicle. The hydrant base (shoe) shall be coated with a two-part thermo-setting epoxy, not less than 4 mils thick. Weather cap shall be metal. The maximum pressure loss allowable for the 5 1/4-inch valve opening shall be 2.2 psi at 1000 gpm flow based on 5 foot bury with 6-inch diameter inlet. The hydrant shall be a Mueller Super Centurion or American Darling B-84-B. The drain hole in the foot of the fire hydrant shall be plugged and buried bolts of the hydrant assembly shall be AISI type 304 stainless steel super centenarian.

Fire hydrants shall be painted with one coat of rust proof primer and two furnish coats of an approved red paint.

U. Concrete Materials

Proportions and construction procedures shall be in accordance with the applicable provisions of Chapter 25 of the South Florida Building Code and shall have a minimum compressive strength of 3500 psi at 28 days, as indicated by standard laboratory compressive tests. Contractor shall provide Florida Keys Aqueduct Authority with submittal of concrete mix and all batch tickets for actual concrete poured for project.

V. Reinforcing Steel

Unless otherwise specified, reinforcing steel shall be grade 60 and shall have yield strength of 3600 psi and shall be clean and free of rust.

W. Miscellaneous

Materials necessary for a complete installation, not specified, shall be equal in quality to the specified materials suitable for the intended use, and shall conform to the details and notes shown on the Drawings. All minors items implied, usually included or required for the construction of a complete operating system, shall be installed whether specified or shown on the Drawings.

X. Test and Inspection

All pipes, valves, fittings and special furnished and specials furnished under this contract shall be tested and inspected at the plant, by manufacturer, in accordance with the requirements of the respective specification under which the material is to be furnished. Florida Keys Aqueduct Authority may request an affidavit that all such materials have been so tested and inspected and that the materials comply with all other applicable requirements for the respective specification.

V. UTILITY CONSTRUCTION PROCEDURES

A. General

Piping, valves, fittings, and specials shall be accurately installed in a workmanlike manner, true to the lines and grades shown on the Drawings. The interior of the pipe shall be thoroughly cleaned of foreign matter before installation. Restrained joints and fittings shall be used for changes on elevation or alignment as shown on the plans or as required on the field by the Engineer or his representative. At all times when work is not in progress, the exposed ends of all pipes shall be fully protected by an approved stopper to prevent earth or other substances from entering the pipe.

In shipping, delivery, and installing pipe and accessories, they shall be handled in such a manner as to insure a sound, undamaged condition.

B. Joints

All joints shall be installed per manufacturer's recommendations and requirements.

C. Valve Settings

All valves placed on branch lines or bends shall be restrained. Valves and valve boxes shall be set plumb at the locations indicated, and in accordance with the details shown on the Drawings. After being positioned, backfill shall be carefully placed and hand tamped. Before installation, care shall be taken to see that all foreign matter has been removed from the interior of the barrel. The valve shall be opened and closed to see that all parts are in working condition.

D. Connection to Existing Mains

Connection to existing utilities shall be made by the Contractor. The Contractor shall be responsible for making all necessary arrangements with the Florida Keys

Aqueduct Authority for these connections and shall bear any costs incurred at no additional cost to the Florida Keys Aqueduct Authority.

Prior to commencing the work of connecting to existing facilities, the Contractor shall uncover or expose the point of connection and ensure that he has all materials, equipment and all other facilities required to complete the installation, and that such connections can be made in accordance with the details shown on the Drawings.

The Contractor shall take every precaution to insure that the alignment or gradient of the existing facilities are not disturbed, or otherwise damaged, as a result of his construction procedures. In the event the existing facilities are damaged or otherwise disturbed, the Contractor will be required to do such necessary repair, realignment, or replacement, so as to restore these facilities to water tight, workable, acceptable condition.

No **existing** valves shall be operated by the Contractor. These valves shall only be operated by personnel of the Florida Keys Aqueduct Authority. The contractor shall advise the Florida Keys Aqueduct Authority Engineering Department, 72 hours in advance of making these connections. This work shall be done under direct supervision of personnel of the Florida Keys Aqueduct Authority. The valves and fittings to be employed in these connections shall be thoroughly swabbed with a 300 ppm solution of chlorine and water. The connections shall be made as rapidly as possible, and any water in the excavation shall be kept below the level of pipe and fittings. The Contractor may have to make connections at off-peak hours. Shut-downs shall be kept to a maximum of 2 hours, unless previously approved by the FKAA, pending extenuating circumstances. Once valves are installed, they shall only be operated by Florida Keys Aqueduct Authority personnel.

E. Customer Service Connections

Service connections shall be installed of the type and size and at the locations shown on the Drawings. All materials shall be as shown on the Drawings and as stated in these specifications. All taps to existing distribution mains shall be made with the main under pressure. All new mains can be dry tapped.

F. Backfill

1. General

All utility trenches shall be backfilled to the level of the bottom of the proposed base course, for utilities to be located in proposed paving area, to the level of the

bottom of the temporary paving for utilities to be located in existing paved areas, or to the level of finished grade for utilities to be located in areas to remain unpaved. The Contractor shall provide a sufficient quantity of suitable backfill material for this purpose from trench excavations or from adjacent project areas, or other sources, at no additional cost or expense to the owner.

2. Materials

a. General Requirements

All backfill material shall be clean and free from all organic material, clay, marl or unstable materials, debris, lumps or paving materials. No rocks or stones larger than two inches in diameter shall be allowed in any backfill; sharp edges not allowed.

b. Select Bedding

Select bedding shall be utilized for 8-inch thick compacted pipe bedding and within the pipe zone to 8-inches above the pipe. Select bedding, as described in these specifications or required by the drawings, shall be a granular material free of rocks, clay, and organic material. One hundred percent of the select bedding shall pass through a 3/8-inch sieve.

When excessive water is encountered in the trench and pumping is not practical due to field conditions, the Florida Keys Aqueduct Authority Field Representative may require crushed limerock bedding. In such a circumstance, the bedding shall be a uniformly graded 3/8-inch limerock with a maximum particle size of 3/8-inch. The material shall be washed and free of all fines and silts and shall be used as bedding as described above or to a point above the water table as directed by the Florida Keys Aqueduct Authority Field Representative whichever is greater. Bedding above that point shall meet the requirements of select bedding as described previously.

When the specified compaction requirements cannot be met in service line trenches, flowable fill shall be substituted, for the trench backfill zone. The flowable fill shall meet the requirements of Section 121, FDOT Specifications and shall be proportioned to product a 28 day compressive strength of 500 psi.

3. Placement

a. General

All pipes shall be installed in dry trenches. Where conditions are such that running or standing water occurs in the trench bottom the water shall be removed by pumps until the pipe and select bedding has been installed and the backfill has been placed over the top of pipe to a depth equal to 1 and 2 diameters. If pumping is not practical, an alternate select bedding of limerock will be required as described on Paragraph 2(b).

Backfill shall be placed in layers as specified herein below, for the particular application, and each layer shall be compacted to the specified density before the next layer is in place. Densities shall be performed in accordance with "Compaction and Densities". Hydraulic methods of settling and compacting backfill may be employed along with specified hand tamping and mechanical compaction as an aid obtain specified densities. The Contractor shall obtain the approval of the Florida Keys Aqueduct Authority Engineer for his selected method of backfill.

Any excess excavation below the levels specified shall be backfilled and compacted as specified below for backfill above pipe, at no additional cost to the Florida Keys Aqueduct Authority.

b. Bedding Around Pipe

Selecting bedding below the pipe shall be a minimum 8-inch thick to provide a firm, stable, and uniform support for the full length of the pipe and fittings before the pipe installed. Bell holes shall be provided at each joint to permit proper assembly and pipe support. After pipe placement, backfilling and compacting of select bedding shall proceed uniformly, on each side and 8-inches above the pipe. Particular attention shall be paid in obtaining thorough support for all valves, fittings, water service connections and to preserve the alignment and gradient of the installed pipe.

c. Backfill Above Pipe

After the placement of the select bedding around the pipe, as specified above, the remainder of the backfill shall be placed.

Backfilling shall proceed by placing backfill in depths of uniform layers and thoroughly compacting with mechanical vibrators or other suitable equipment to the densities specified below. The depth of layers of this backfill shall not exceed the ability of the compacting equipment employed to obtain the specified densities, and in no event shall exceed a depth of 8-inches maximum. The mechanical compacting equipment employed, and its operation shall be such that displacement of pipe alignment or gradient or damage to installed materials, pipe or pipe linings results from its use. Any installed material so displaced or damaged shall be replaced by the Contractor, at no additional cost to the Florida Keys Aqueduct Authority.

For pipe lines not located under existing or proposed pavement, backfill over the installed pipe shall be compacted to obtain not less than ninety-five percent (95%) minimum density ASTM modified proctor.

For pipe lines located under existing pavement, for which pavement replacement will be required, or in areas of proposed paving, backfill shall be placed and compacted as specified above, except that the top 12-inches, measure downward from the level of the bottom of the required base course restoration, or proposed base course, shall be Miami Limerock, in accordance with Section 911 D.O.T. Specifications compacted to not less than ninety-eight (98%) density ASTM modified proctor. The Contractor is responsible for the densities every 200 L.F. and at each road crossing by a certified lab.

Any settlement noted in backfill or within the limits of the excavation within the one year warranty period upon final acceptance, will be considered to be attributed to improper compaction methods and shall be corrected at no cost to the Florida Keys Aqueduct Authority. Pavement or structures damaged by settlement shall be restored to their original condition by the Contractor at no cost to the Florida Keys Aqueduct Authority.

d. Backfill above in service line trenches

Backfill shall meet the requirements of paragraph 3(c). If these requirements can not be met, the trench shall be backfilled with flowable fill as specified in paragraph 2 (b) at no additional cost to Florida Keys Aqueduct Authority.

e. All excavated material

All excavated material shall be stockpiled in a manner that will not hinder the work or obstruct sidewalks, roadways, and driveways. All utility control structures shall be kept accessible. This shall be designed to mean those areas as designed by the Permitting Agency unless otherwise specified. Material stockpiles on private property must have written consent with a copy to Florida Keys Aqueduct Authority.

G. Standards

In general, AWWA C-900 PVC pipe shall be installed in accordance with AWWA Publication No. M23, "PVC PIPE – DESIGN AND INSTALLATION". In event of conflict between procedures described in this publication and those described above, the above procedures shall take precedence. In general, ductile iron pipe shall be installed in accordance with AWWA Standard C-600, "INSTALLATION OF DUCTILE IRON UTILITIES AND THEIR APPURTENANCES". In event of conflict between procedures described in the publication and those described above, the above procedures shall take precedence.

H. Pigging

All water main installations shall be cleaned with polypropylene pigging device to clean all dirt, sand, and debris from the newly installed water main where determined by the Florida Keys Aqueduct Authority representative. The Florida Keys Aqueduct Authority field representative shall determine the extent and type of pigging required. At a minimum, a Bare Type, B3 style pig shall be used as manufactured by Pipeline Pigging Products, Inc. or approved equal.

I. Flushing

After piping installation has been completed, all water line shall be flushed with clear water at the highest velocity obtainable and for a sufficient time to replace the pipe volume at least twice. All water for flushing shall be provided from a proper source, approved by the Florida Keys Aqueduct Authority Engineer.

$$\text{Flushing Time} = \frac{T=2L}{4}$$

T= Time (sec)

L= Length (ft)

VI. PRESSURE TESTING

A. General

The Contractor shall provide necessary pumps, meters, piping, calibrated containers and other equipment and materials, and all labor necessary to conduct the hydrostatic testing and flushing procedures set forth herein. All water required for testing and flushing shall be supplied by the Florida Keys Aqueduct Authority, at Contractor's expense. All piping shall be tested and made tight at test pressures hereinafter specified. All leaks disclosed by pressure testing shall be promptly stopped by an approved method, and such other corrective work shall be conducted as necessary to affect pressure tight work, as specified.

The Contractor shall provide for plugging or valving the installed pipe in specified test sections, and installing necessary taps for the insertion of test water, and removing such valves or plugs, and plugging such taps upon satisfactory completion of testing.

B. Utilities- PVC and Ductile Iron

1. **Leakage Test-** Utilities shall be tested between valved sections. A leakage test shall be conducted for distribution systems at 150 psi. Distribution systems shall be pressure tested up to the curb stop. No installation will be acceptable until the leakage is less than the number of gallons per hour as determined by the formula:

$$Q = \frac{LD\sqrt{P}}{148,000}$$

Q equals Quantity of makeup water in gallons per hour; L equals the length of pipe section being tested in feet, D is the nominal diameter of pipe in inches, and P is the average test pressure during the leakage test in pounds per square inch gauge. The test shall be maintained for two hours unless, after one hour, it becomes apparent that the leakage is substantially less than the amount allowable. Water supplied to the main during the test, to maintain the required pressure, shall be measured by a 5/8-inch meter installed on the discharge side of the test pump, or by pumping from a calibrated container. The test shall be made against a secured bulkhead, blind flange or closed valve. All leaks to be repaired if visible regardless of size.

2. **Corrective Work-** Where leakage exceeds the allowable limits, the defective pipe or joints shall be located and repaired. If the defective portions cannot be located, the Contractor shall remove and reconstruct as much of the work as is necessary in order to conform to the specified limits.

No additional payment will be made for the correction of such defective work, or for damage to other parts of the work resulting from such corrective work. The Contractor will be responsible for payment of retesting.

VII. DISINFECTION

A. General

All new piping, valves, service connections, meters, hydrants and all items to come in contact with treated water shall be thoroughly disinfected in accordance with the requirements of this section of the Specifications and in accordance with AWWA Standard C-651, latest edition. Reservoirs, tanks, standpipes, pumps or other equipment or facilities to come in contact with treated water shall also be thoroughly disinfected, in general compliance with the requirements of this section, and as may be more particularly described or modified in other sections of these Specifications.

B. Disinfection

This disinfection agent shall be liquid chlorine, sodium hypochlorite solution, or calcium hypochlorite powder.

C. Disinfection Procedures

Chlorine shall be introduced into the piping system or facilities to be disinfected in such amounts which will provide a minimum concentration of fifty parts per million (50 ppm), but not to exceed 10 feet from the point of connection. All valves and fittings to be connected to existing piping shall be thoroughly swabbed with a solution containing at least 300 ppm chlorine.

The disinfection agent shall remain in the piping system or facilities for a minimum contact period of 24 hours and the residual shall not drop below 25 ppm before it is flushed out.

D. Residual Chlorine Test

After the disinfection outlined above has been accomplished, flushing shall continue until residual chlorine tests reflect normal system chlorine residuals. Such tests shall be in accordance with standard methods by the use of a standard DPD test set.

E. Bacterial Test

Upon completion of the work of disinfection and flushing described above, samples of water shall be taken from remote points of the system, in suitable sterilized containers, on two consecutive days (24 hours apart). Samples may be forwarded to the Florida Keys Aqueduct Authority Florida City or Stock Island Labs or State certified testing lab (at no expense to the Florida Keys Aqueduct Authority) for bacterial examination. If tests of such samples indicated the presence of coliform organisms, the disinfection as outlined above shall be repeated until tests indicate the absence of such contamination. The bacterial tests shall be satisfactorily completed and submitted into FDEP by a certified sampler. Only following receipt of written approval from FDEP can the system be placed in operation.

VIII. MATERIAL AND INSTALLATION STANDARDS

The following standards are referenced within these specifications; all installations whether implied or indicated shall adhere to the following:

<u>DESCRIPTION</u>	<u>TITLE</u>
AWWA C104	CEMENT MORTAR LINING FOR DUCTILE IRON PIPE AND FITTINGS
AWWA C105	POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE
AWWA C110	DUCTILE IRON AND GRAY-IRON FITTING, 3-INCH THROUGH 48-INCH
AWWA C110	DUCTILE IRON AND GRAY-IRON FITTING, 3-INCH THROUGH 48-INCH
AWWA C111	RUBBER GASKET JOINTS FOR DUCTILE IRON PIPE
AWWA C115	FLANGED JOINTS FOR DUCTILE IRON PIPE
AWWA C150	THICKNESS DESIGN OF DUCTILE IRON PIPE

AWWA C151	DUCTILE IRON PIPE
AWWA C153	COMPACT DUCTILE IRON FITTINGS
AWWA C504	RUBBER SEATED BUTTERFLY VALVES
AWWA C509	RESILIENT SEATED GATE VALVES
AWWA C510	DOUBLE CHECK VALVE BACKFLOW-PREVENTION ASSEMBLY
AWWA C511	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY
AWWA C550	PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES AND HYDRANTS
AWWA C600	INSTALLATION OF DUCTILE IRON WATER MAINS AND THEIR APPURTENANCES
AWWA C651	DISINFECTING WATER MAINS (INCLUDES ADDENDUM C651a-90)
AWWA C800	STANDARD FOR UNDERGROUND SERVICE LINE VALVES AND FITTINGS
AWWA C900	POLYVINYL CHLORIDE (PVC) PRESSURE PIPE 4-INCH THROUGH 12-INCH, FOR WATER
AWWA C901	POLYETHYLENE PRESSURE PIPE, TUBING AND FITTINGS, 1/2-INCH THROUGH 3-INCH

AWWA C905	HDPE HIGH DENSITY POLYTHYLENE
AWWA C906	POLYETHYLENE PRESSURE PIPE AND FITTINGS 4-inch-63-inch
AWWA	M11-A GUIDE FOR THE DESIGN AND INSTALLATION OF MANUALS STEEL PIPE
M14-RECOMMENDED PRACTICE FOR BACKFLOW PREVENTION AND CROSS- CONNECTION CONTROL	

M23-PVC PIPE - DESIGN AND INSTALLATION

AISI	AMERICAN IRON AND STEEL INSTITUTE
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE

ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION

NOTES: When ANSI and AWWA Standards are the same, only the AWWA designation is used in describing the above standards. For instance, AWWA C110 is used instead of ANSI/AWWA-C110/A21.10. It is to be understood that the latest revision of any standard referenced above which exists at the time of design is the version to be used for design purposes.

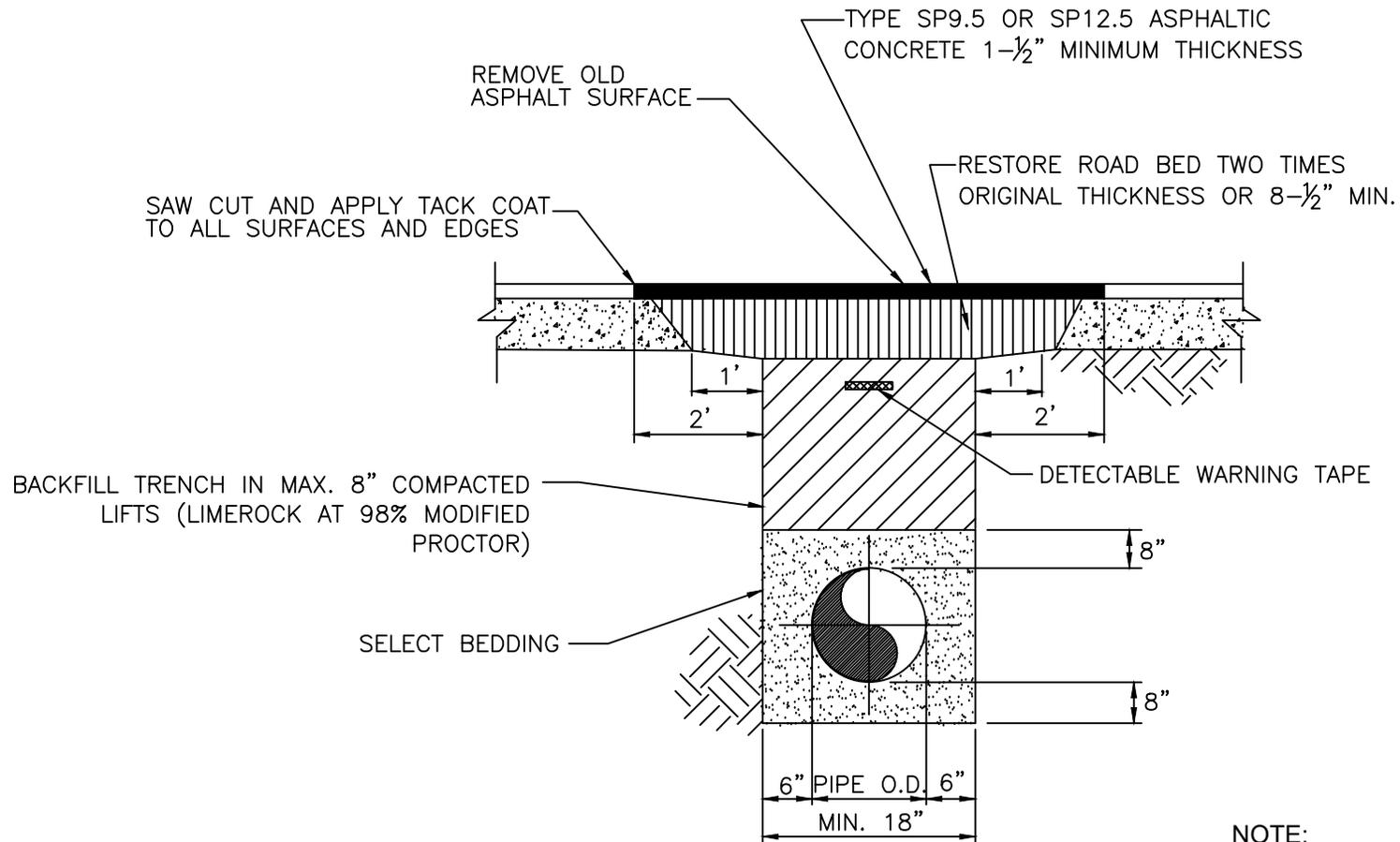
IX. STANDARD DETAILS

<u>DRAWING NO.</u>	<u>TITLE</u>
1.	TRENCH AND PAVEMENT RESTORATION
2.	CUSTOMER SERVICE TRENCHRESTORATION

3. FULL LANE RESTORATION WITH ASPHALT OVERLAY
4. THRUST RESTRAINT
5. GATE VALVE AND BOX
6. BUTTERFLY VALVE AND BOX
7. TAPPING SLEEVE AND VALVE FOR DISTRIBUTION MAIN
8. FLUSH OUT ASSEMBLY
9. HYDRANT INSTALLATION
10. JACK AND BORE DETAIL
11. TYPES OF SERVICE CONNECTIONS
12. 5/8 AND 1-inch METER ASSEMBLY
13. 1-inch AND 2-inch METER ASSEMBLY
14. METER ASSEMBLY 3-inch AND LARGER
15. SERVICE CONNECTION
16. METER BANK
17. FITTINGS FOR 1-inch TAP DUAL SERVICE CONNECTION
18. SEPARATE FIRE LINE INSTALLATION
19. COMBINED DOMESTIC AND FIRE LINE INSTALLATION
20. 2-1/2-inch TO 10-inch REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION
21. 3/4-inch TO 2-inch REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION
22. 3/4-inch TO 10-inch DOUBLE CHECK VALVE ASSEMBLY INSTALLATION

- 23. ACCEPTABLE AIR GAP CONSTRUCTION
- 24. IRRIGATION PIPING
- 25. DEDUCT METER INSTALLATION
- 26. STANDARD MASTER METER VAULT
- 27. 2-inch TRANSMISSION MASTER METER PIPING
- 28. 4-inch TRANSMISSION MASTER METER PIPING

* * * * *



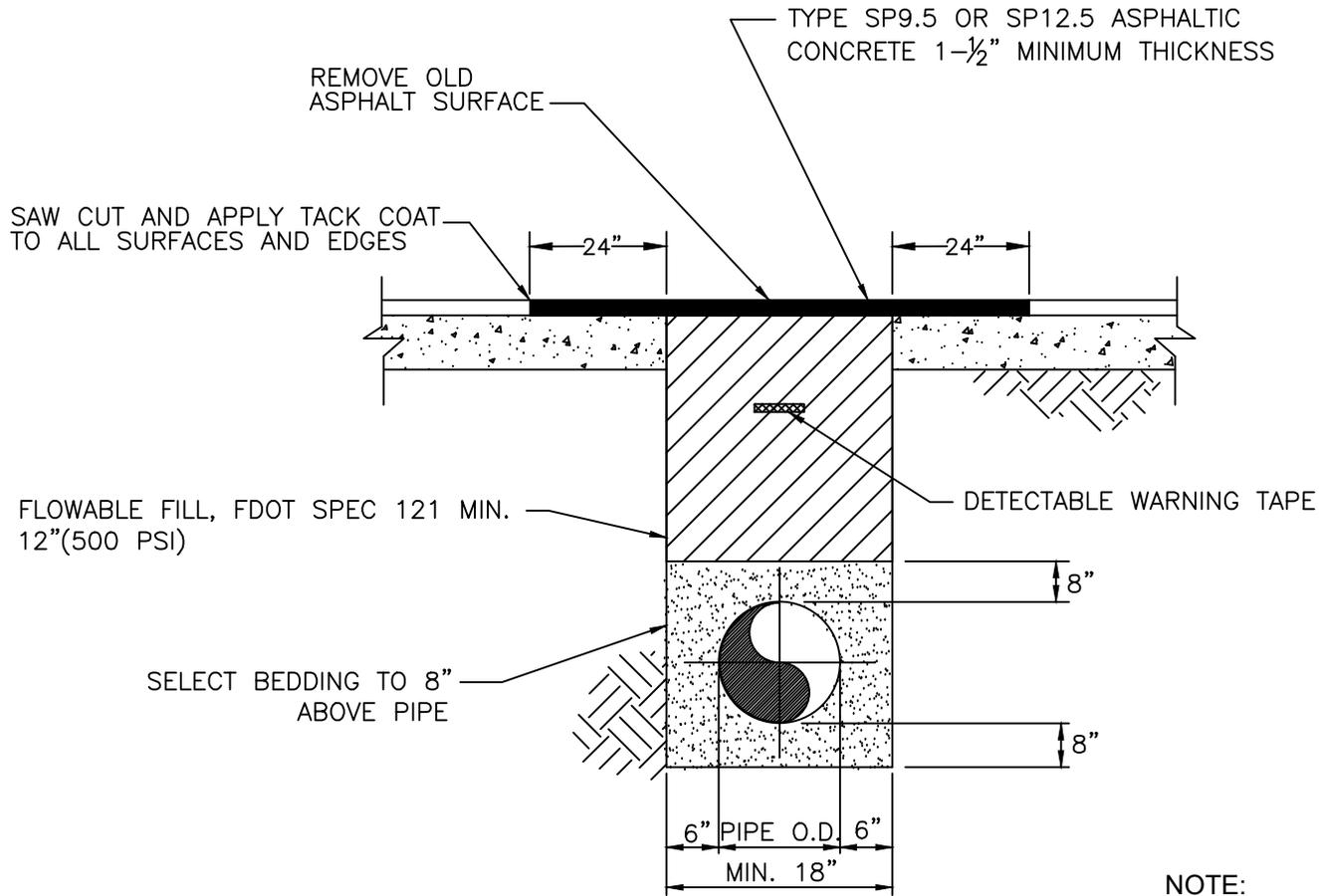
NOTE:
 ASPHALT MIX & THICKNESS SHALL BE
 PER MUNICIPALITY STANDARD
 REQUIREMENTS IF IT EXCEEDS FCAA
 MINIMUM STANDARDS.

SCALE N.T.S.
DATE 03/96
REVISED 02/24

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

**PAVEMENT RESTORATION
 WITH BACKFILL**

STANDARD DETAIL
 DRAWING NO.
1a



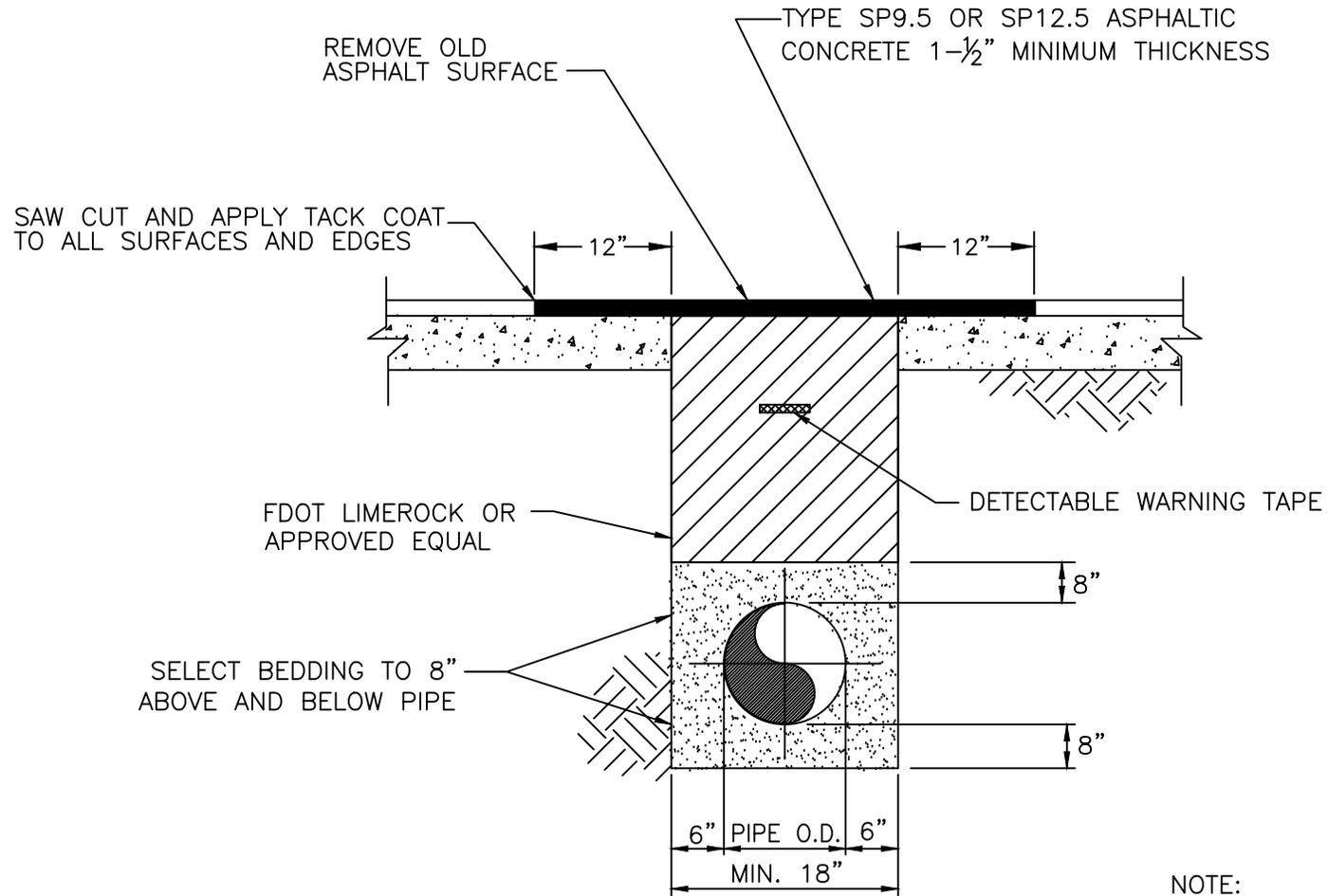
NOTE:
 ASPHALT MIX & THICKNESS SHALL BE PER MUNICIPALITY STANDARD REQUIREMENTS IF IT EXCEEDS FCAA MINIMUM STANDARDS.

SCALE
 N.T.S.
 DATE
 06/13
 REVISED
 02/24

FLORIDA KEYS AQUEDUCT AUTHORITY
 KEY WEST, FLORIDA

PAVEMENT RESTORATION
 WITH FLOWABLE FILL

STANDARD DETAIL
 DRAWING NO.
 1b



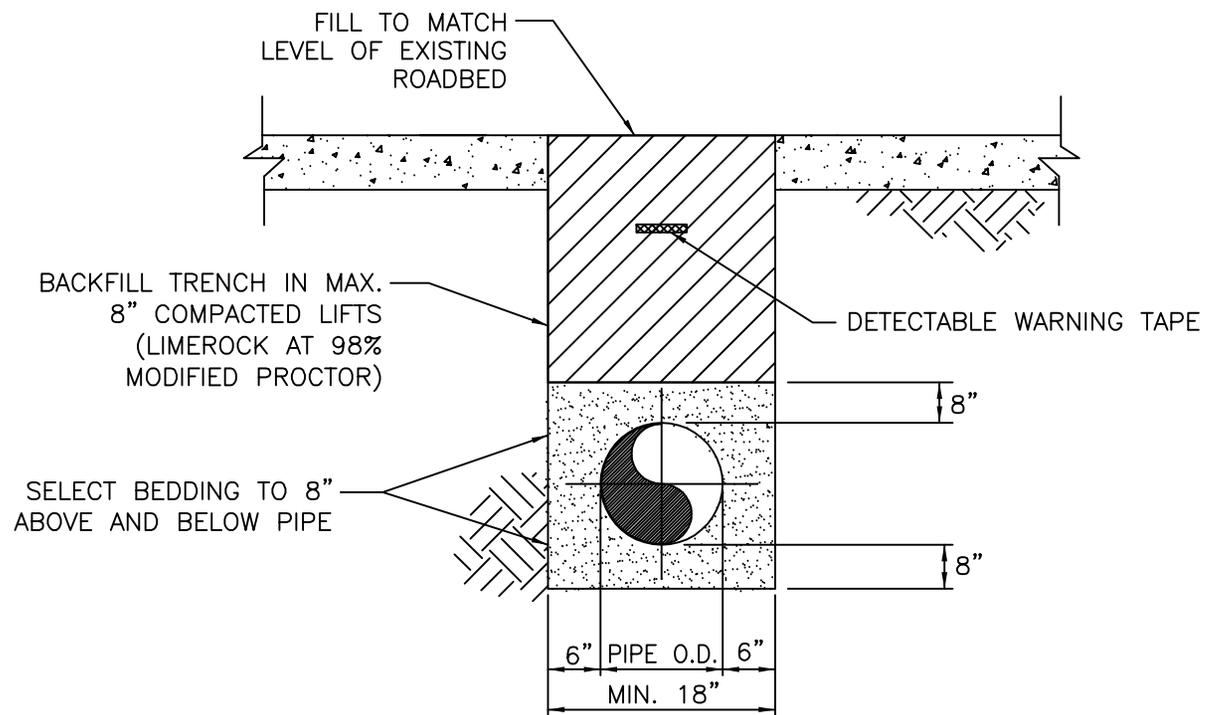
NOTE:
 ASPHALT MIX & THICKNESS SHALL BE
 PER MUNICIPALITY STANDARD
 REQUIREMENTS IF IT EXCEEDS FCAA
 MINIMUM STANDARDS.

SCALE
 N.T.S.
 DATE
 07/15
 REVISED
 10/24

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

**TEMPORARY PAVEMENT
 RESTORATION
 WITH LIMEROCK**

**STANDARD DETAIL
 DRAWING NO.
 1c**

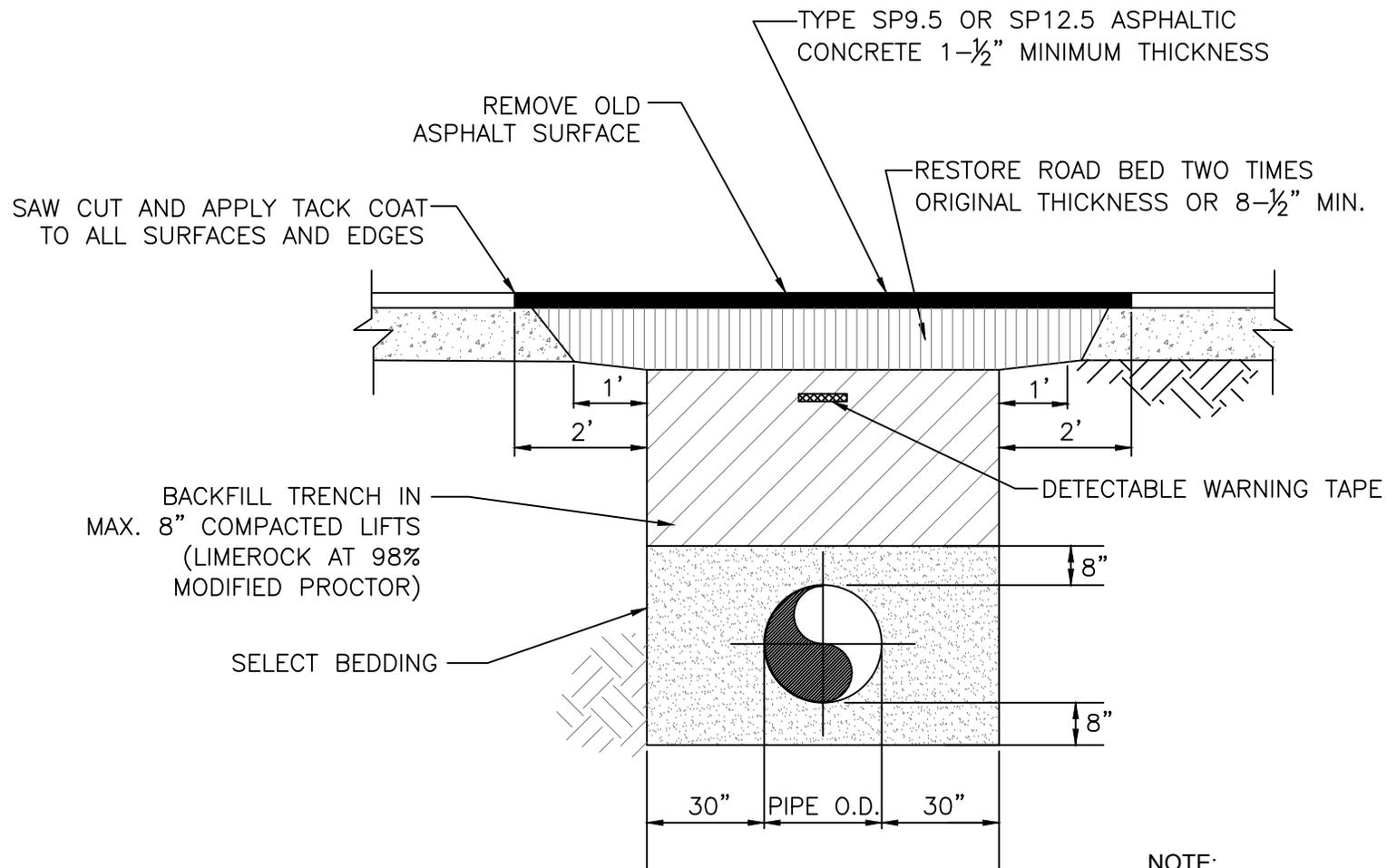


SCALE
N.T.S.
DATE
02/18
REVISED

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

**ROADWAY
RESTORATION
WITH LIMEROCK**

STANDARD DETAIL
DRAWING NO.
1d



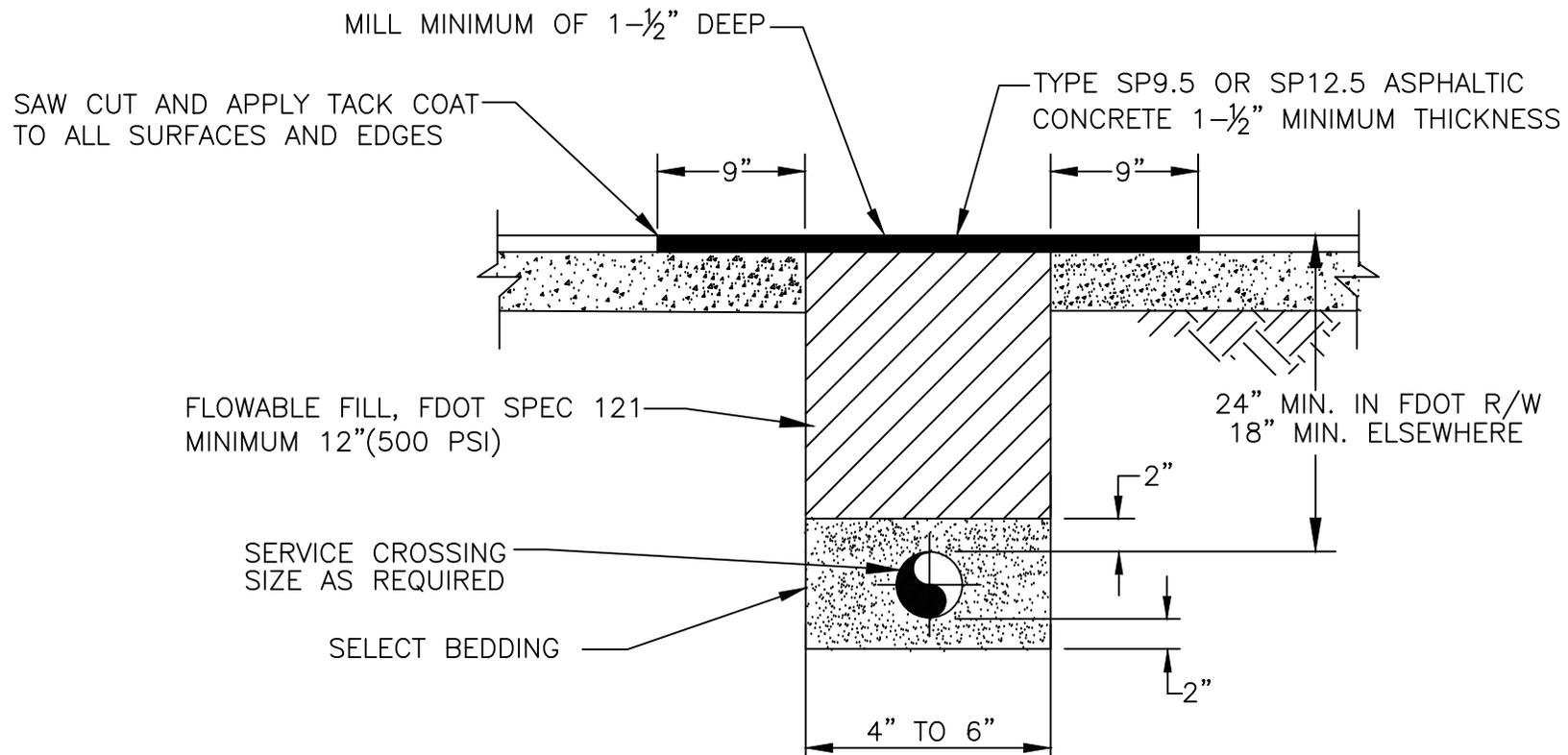
NOTE:
 ASPHALT MIX & THICKNESS SHALL BE PER MUNICIPALITY STANDARD REQUIREMENTS IF IT EXCEEDS FCAA MINIMUM STANDARDS.

SCALE
 N.T.S.
 DATE
 06/21
 REVISED
 10/24

FLORIDA KEYS AQUEDUCT AUTHORITY
 KEY WEST, FLORIDA

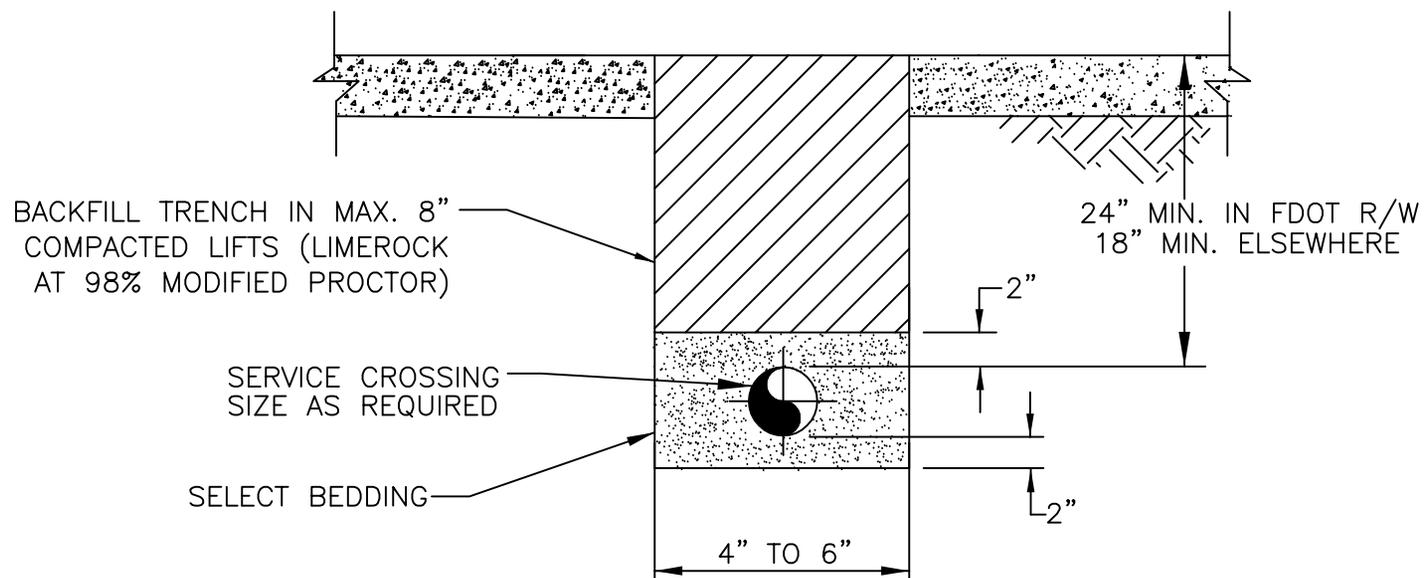
PAVEMENT RESTORATION
 WITH BACKFILL
 FOR TRANSMISSION MAIN

STANDARD DETAIL
 DRAWING NO.
 1e



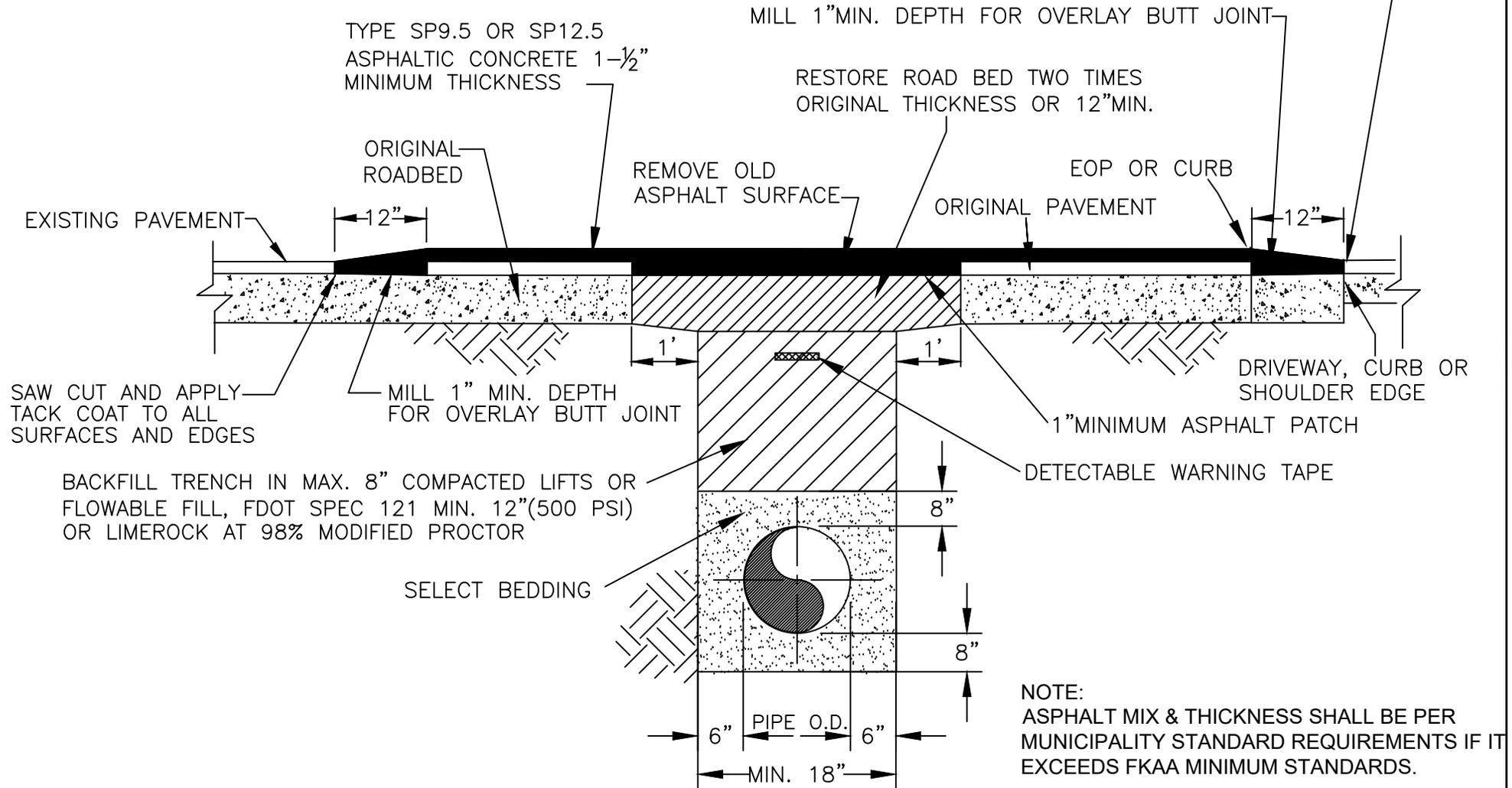
NOTE:
 ASPHALT MIX & THICKNESS SHALL BE PER MUNICIPALITY STANDARD REQUIREMENTS IF IT EXCEEDS FCAA MINIMUM STANDARDS.

SCALE N.T.S.	FLORIDA KEYS AQUEDUCT AUTHORITY KEY WEST, FLORIDA	CUSTOMER SERVICE TRENCH RESTORATION	STANDARD DETAIL DRAWING NO. 2
DATE 6/03			
REVISED 11/24			



SCALE N.T.S.	FLORIDA KEYS AQUEDUCT AUTHORITY KEY WEST, FLORIDA	CUSTOMER SERVICE TRENCH RESTORATION	STANDARD DETAIL DRAWING NO. 2b
DATE 2/18			

IN SECTIONS WITH DRIVEWAYS: SAW CUT & APPLY TACK COAT TO ALL SURFACES AND EDGES



SCALE
N.T.S.

DATE
06/01

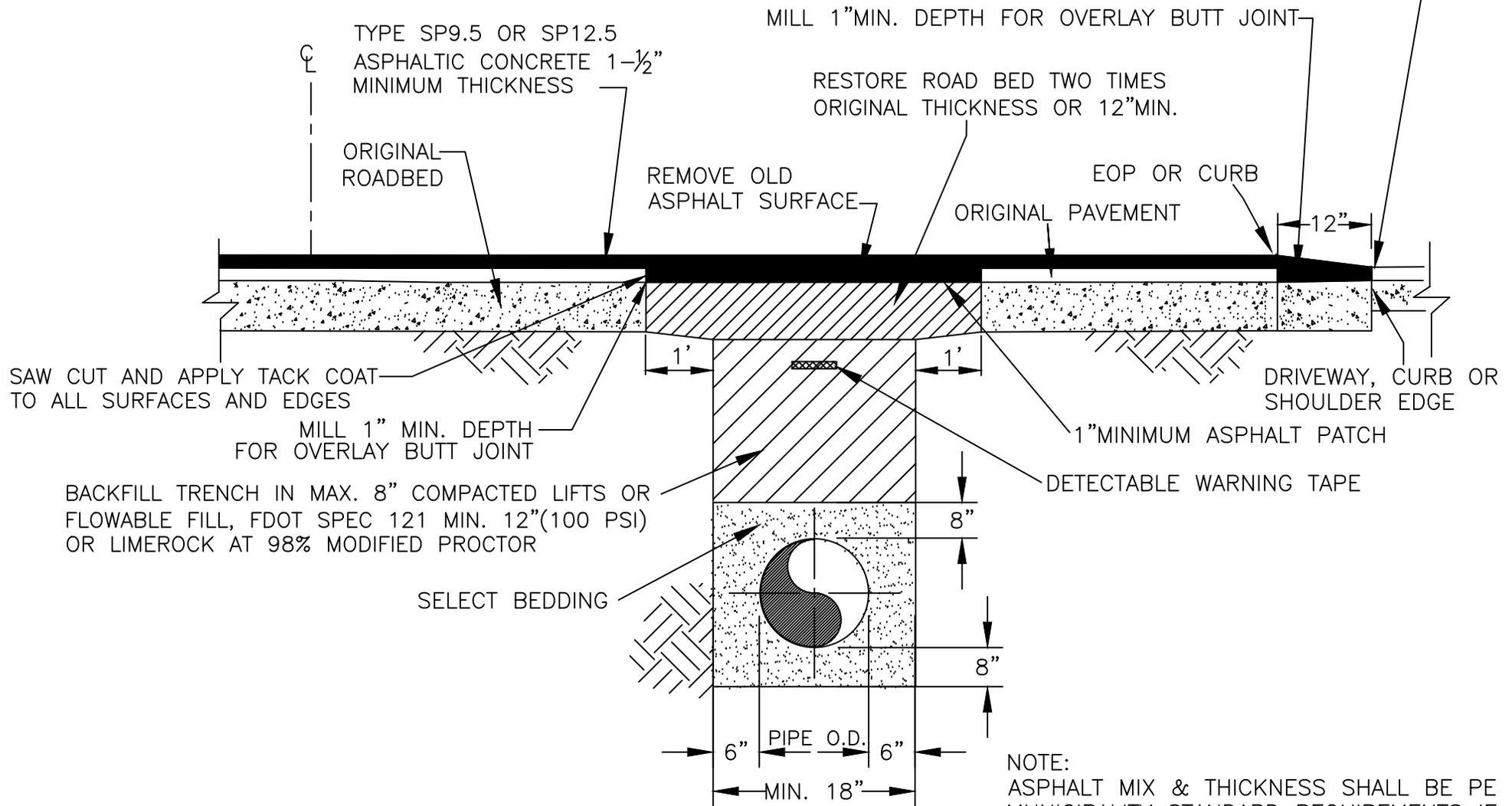
REVISED
10/24

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

FULL LANE
RESTORATION WITH BACKFILL
AND ASPHALT OVERLAY

STANDARD DETAIL
DRAWING NO.
3a

IN SECTIONS WITH DRIVEWAYS: SAW CUT & APPLY TACK COAT TO ALL SURFACES AND EDGES



NOTE:
ASPHALT MIX & THICKNESS SHALL BE PE MUNICIPALITY STANDARD REQUIREMENTS IF EXCEEDS FCAA MINIMUM STANDARDS.

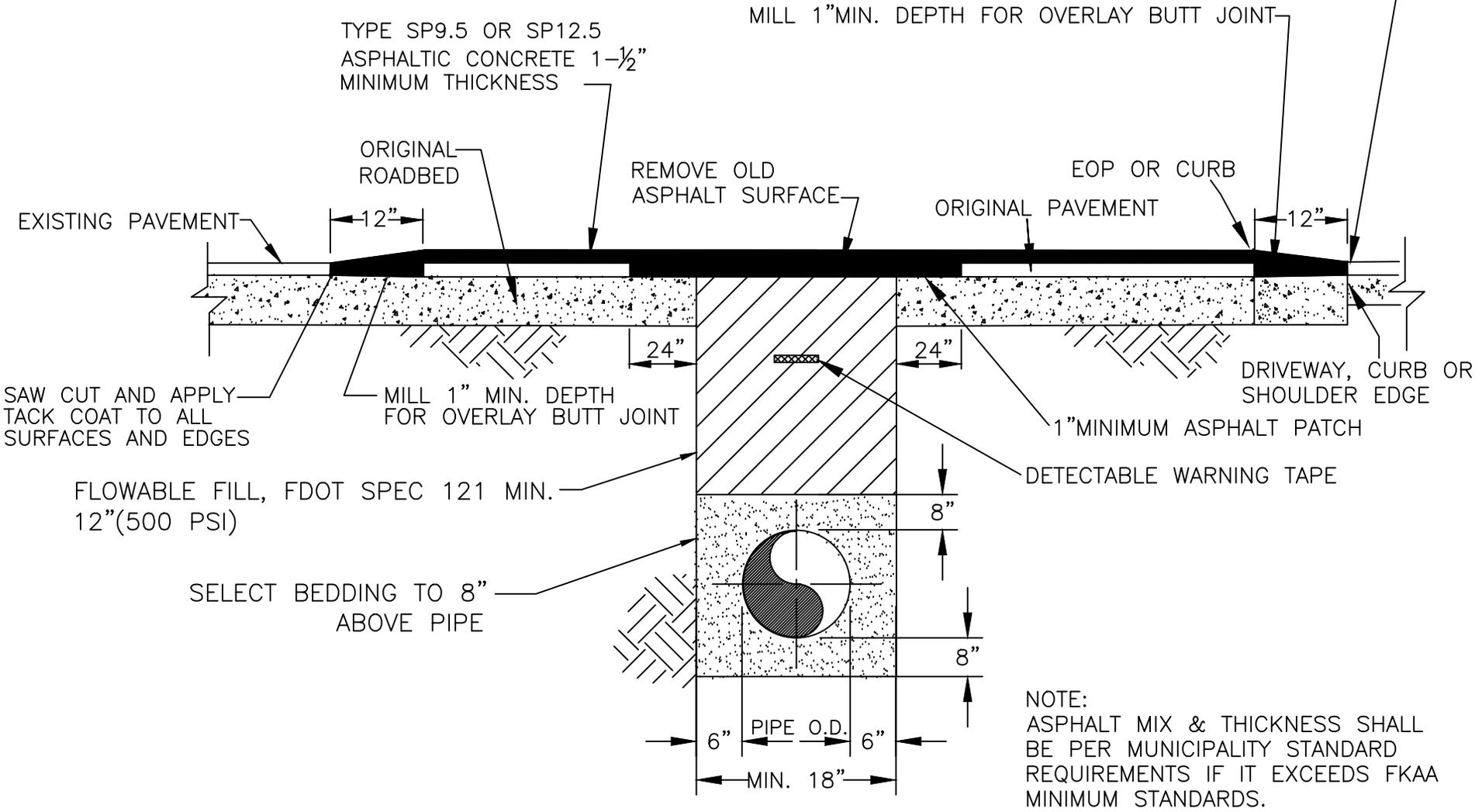
SCALE
N.T.S.
DATE
06/13
REVISED
11/24

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

FULL ROADWAY
RESTORATION WITH BACKFILL
AND ASPHALT OVERLAY

STANDARD DETAIL
DRAWING NO.
3b

IN SECTIONS WITH DRIVEWAYS: SAW CUT & APPLY TACK COAT TO ALL SURFACES AND EDGES

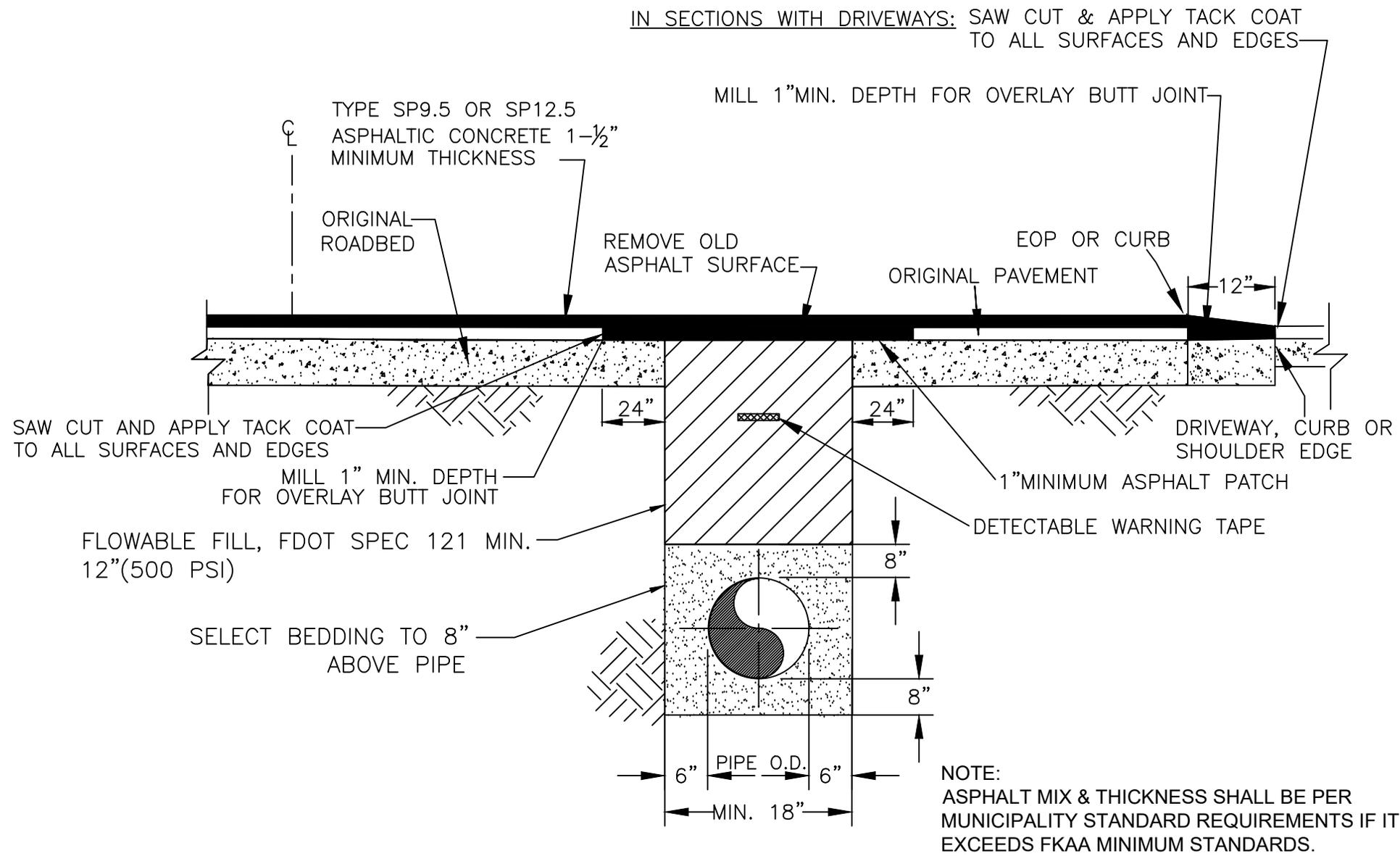


SCALE
N.T.S.
DATE
06/16
REVISED
10/24

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

**FULL LANE
RESTORATION WITH
FLOWABLE FILL
AND ASPHALT OVERLAY**

STANDARD DETAIL
DRAWING NO.
3c



SCALE N.T.S.	FLORIDA KEYS AQUEDUCT AUTHORITY KEY WEST, FLORIDA	FULL ROADWAY RESTORATION WITH FLOWABLE FILL AND ASPHALT OVERLAY	STANDARD DETAIL DRAWING NO. 3d
DATE 06/16			
REVISED 10/24			

PVC PIPE RESTRAINT JOINT SCHEDULE

LENGTH (L) TO BE RESTRAINED

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS		VALVES OR DEAD-ENDS L(FT.)	REDUCERS		TEES (NOTE 5)		
	90° BENDS L(FT.)	45° BENDS L(FT.)	22.5° BENDS L(FT.)	11.25° BENDS LR(FT.)	45° BENDS (SEE NOTE 4)			(SIZE)	L FT.	RUN SIZE	BRANCH SIZE	L FT.
					LU(FT.)	LI(FT.)						
4	20	8	4	2	20	3	50	6 X 4	35	4"	4"	F.O.
6	28	10	5	2	28	4	70	8 X 6	35	6"	6"	10
8	36	14	6	3	36	5	90	8 X 4	65	8"	4"<LESS	F.O.
10	40	18	8	4	45	6	110	10 X 8	35	8"	8"	30
12	50	20	9	4	52	8	120	10 X 6	65	10"	6"<LESS	F.O.
14	56	23	10	5	60	9	140	12 X 10	35	10"	10"	48
16	60	26	11	6	67	10	160	10 X 6	65	12"	8"	14
18	69	29	12	6	74	12	180	12 X 8	65	12"	6"<LESS	F.O.
20	75	32	13	7	80	13	195	16 X 12	65	12"	10"<LESS	F.O.
24	76	33	15	7	81	14	200	16 X 10	95	16"	16"	100
30	88	36	18	9	97	16	235	20 X 18	35	16"	12"	40
36	100	40	20	10	110	20	270	20 X 16	65	20"	10"<LESS	F.O.
42	115	48	23	11	125	24	300	20 X 12	120	20"	20"	130
48	125	52	25	12	140	30	340	24 X 20	65	24"	16"	80
								24 X 18	95	24"	12"<LESS	F.O.
								24 X 16	120	30"	30"	140
								30 X 24	80	30"	24"	80
								30 X 20	150	30"	20"	50
								36 X 30	80	36"	16"<LESS	F.O.
								36 X 24	150	36"	36"	180
								42 X 36	80	36"	30"	120
								42 X 30	150	42"	24"	50
								48 X 42	80	42"	20"<LESS	F.O.
								48 X 36	150	42"	42"	220
										48"	36"	160
										48"	30"	80
										48"	24"	40
										48"	20"<LESS	F.O.
										48"	48"	250
										48"	42"	180
										48"	36"	90
										48"	30"	40
										48"	24"<LESS	F.O.

PVC PIPE RESTRAINT NOTES

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.
2. ASSUMPTIONS: PVC PIPE, SAFETY FACTOR = 1.5, TEST PRESSURE = 150 PSI, SOIL = GM OR SM, TRENCH TYPE 3, DEPTH OF COVER = 36".
3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, LU IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. LI IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.
5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN) SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.
6. HDPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 35 FEET (MIN.).

F.O. = FITTING ONLY

SCALE N.T.S.	PVC PIPE RESTRAINT JOINT SCHEDULE	STANDARD DETAIL DRAWING NO.
DATE 03/96		4 (1 OF 2)
REVISED 01/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE

LENGTH (L) TO BE RESTRAINED

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS		VALVES OR DEAD-ENDS	REDUCERS		TEES (NOTE 5)		
	90° BENDS L(FT.)	45° BENDS L(FT.)	22.5° BENDS L(FT.)	11.25° BENDS LR(FT.)	45° BENDS (SEE NOTE 4)			(SIZE)	L FT.	RUN SIZE	BRANCH SIZE	L FT.
					LU(FT.)	LI(FT.)	L(FT.)					
4	18	6	4	2	12	2	30	6 X 4	20	4"	4"	F.O.
6	22	10	5	2	17	3	40	8 X 6	20	6"	6"	6
8	30	13	6	3	22	4	50	8 X 4	40	8"	4"<LESS	F.O.
10	35	14	7	4	26	5	64	10 X 8	20	8"	8"	18
12	42	16	8	4	31	6	75	10 X 6	40	10"	6"<LESS	F.O.
14	46	20	9	5	35	7	85	12 X 10	20	10"	10"	27
16	53	22	11	5	40	8	95	10 X 6	40	12"	8"	8
18	57	24	12	6	44	9	105	12 X 8	40	12"	6"<LESS	F.O.
20	62	26	13	6	48	10	110	16 X 12	40	12"	12"	38
24	64	27	14	6	50	11	111	12 X 8	40	16"	10"	20
30	73	30	15	7	57	13	137	16 X 10	57	16"	8"<LESS	F.O.
36	85	34	18	8	66	17	159	20 X 18	20	16"	12"<LESS	F.O.
42	93	38	20	9	75	20	176	20 X 16	40	20"	16"	40
48	102	43	22	10	82	22	198	20 X 12	73	20"	12"<LESS	F.O.
								24 X 20	40	24"	24"	76
								24 X 18	50	24"	20"	53
								24 X 16	60	24"	16"	20
								30 X 24	50	30"	12"<LESS	F.O.
								30 X 20	76	30"	20"	37
								36 X 30	50	30"	16"<LESS	F.O.
								36 X 24	88	36"	36"	118
								42 X 36	40	36"	30"	88
								42 X 30	88	36"	24"	52
								48 X 42	40	36"	20"	20
								48 X 36	88	42"	16"<LESS	F.O.
										42"	42"	138
										42"	36"	110
										42"	30"	78
										42"	24"	37
										42"	20"<LESS	F.O.
										48"	48"	154
										48"	36"	132
										48"	30"	99
										48"	24"	59
										48"	20"<LESS	F.O.

DIP PIPE RESTRAINT NOTES

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.

2. ASSUMPTIONS: DUCTILE IRON PIPE (WITHOUT POLY WRAP), SAFETY FACTOR = 1.5, TEST PRESSURE = 150 PSI, SOIL = GM OR SM, TRENCH TYPE 3, DEPTH OF COVER = 36".

3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.

4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, LU IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. LI IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.

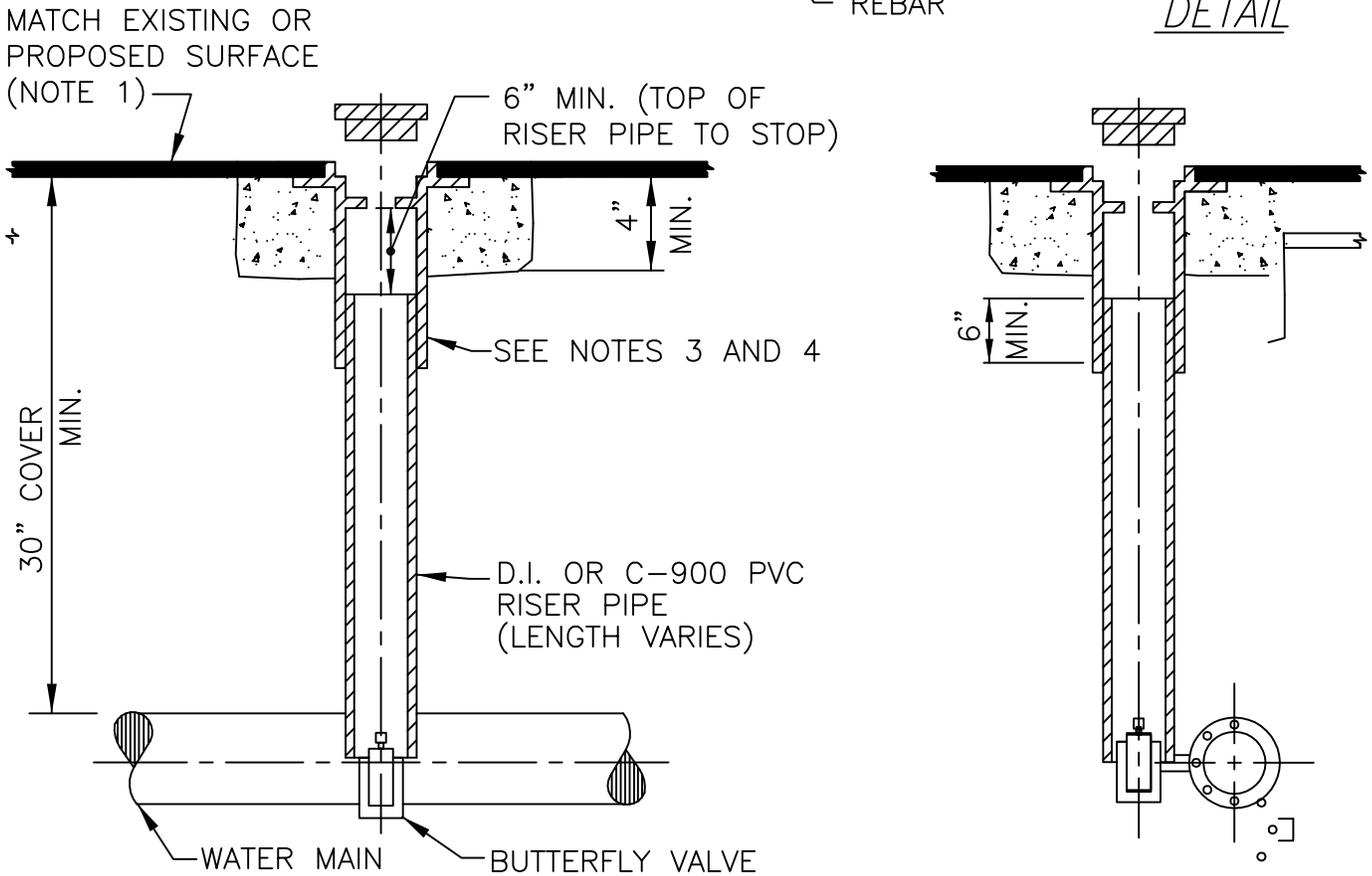
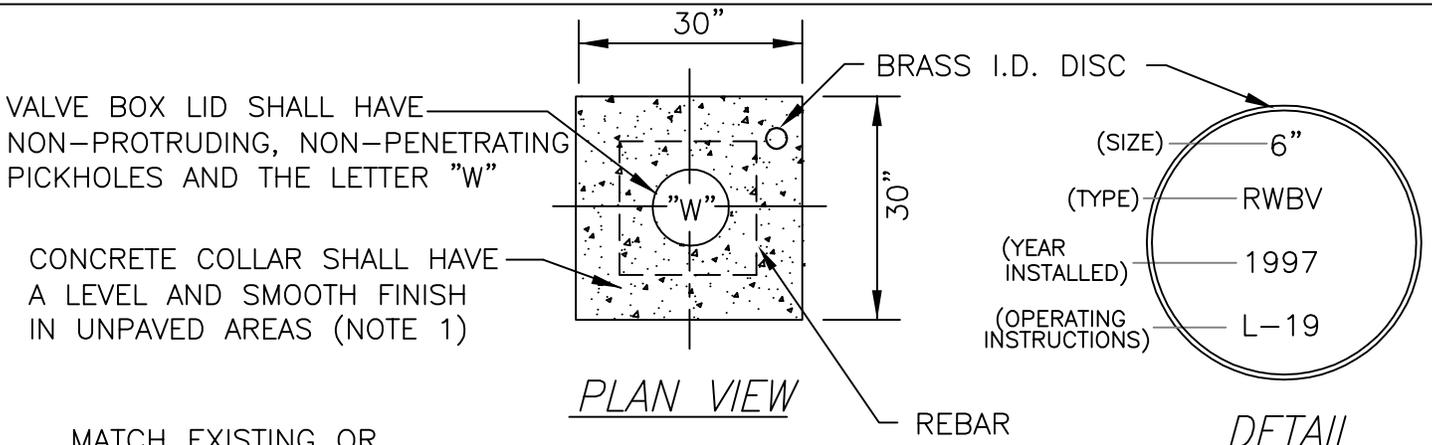
5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN) SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.

6. HDPE TO D.I.P. TRANSITIONS: THE D.I.P. SIDE SHALL BE RESTRAINED 35 FEET (MIN.).

F.O. = FITTING ONLY

SCALE N.T.S.	DIP RESTRAINT JOINT SCHEDULE	STANDARD DETAIL DRAWING NO. 4 (2 OF 2)
DATE 03/96		
REVISED 01/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

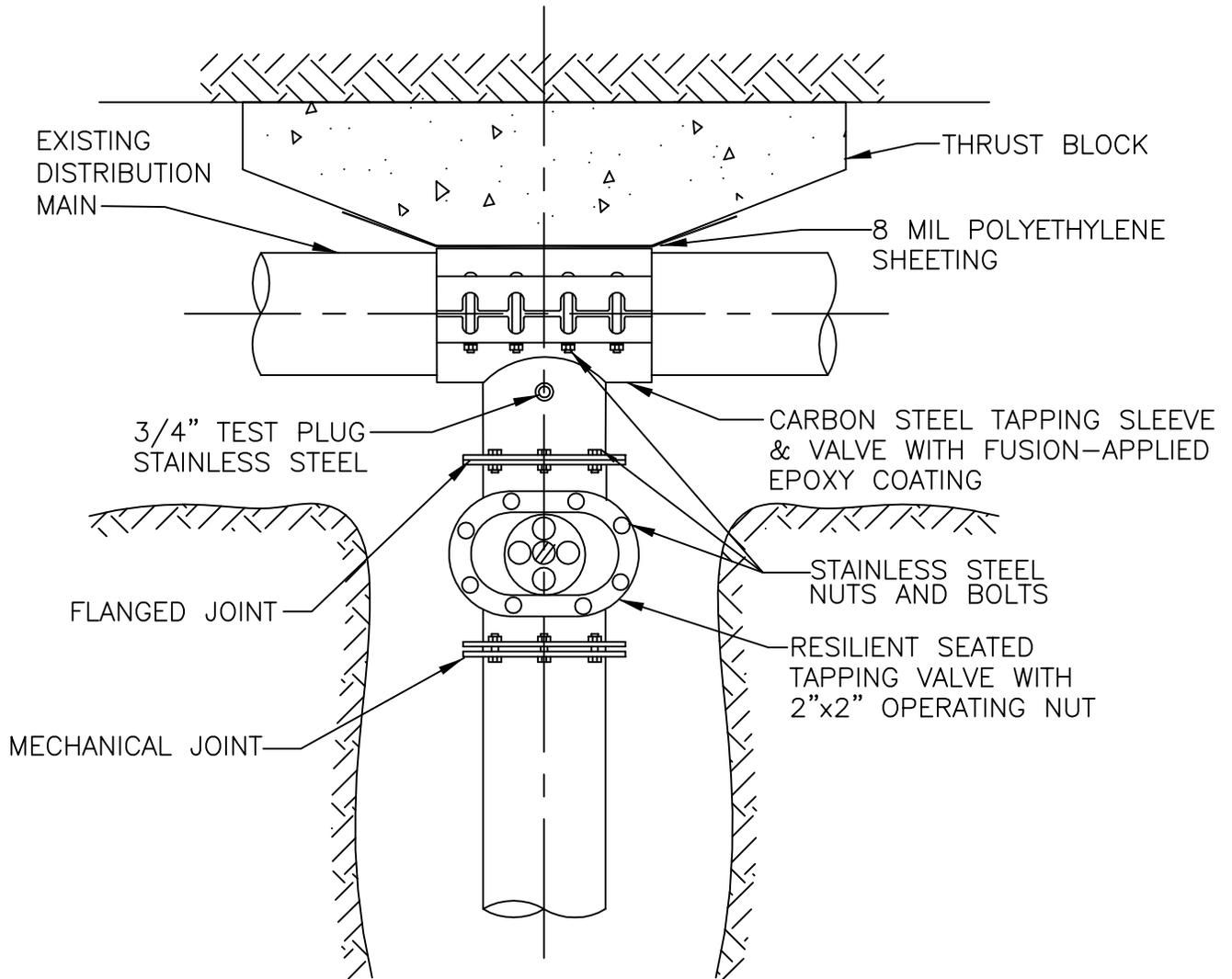


NOTES:

1. CONCRETE COLLAR ALSO MAY BE FORMED AS A 30" DIA. CIRCLE.
2. IN UNPAVED AREA INSTALL VALVE BOX LID 1/2" ABOVE SURFACE. #5 REBAR SHALL BE REQUIRED.
3. U.S.F. No. 7615 OR APPROVED EQUAL W/ 6" DIA. RISER FOR VALVES 6" DIA. OR SMALLER.
4. U.S.F. No. 7630 OR APPROVED EQUAL W/ 10" DIA. RISER FOR VALVES 8" DIA. OR LARGER.

SCALE N.T.S.	BUTTERFLY VALVE AND BOX	STANDARD DETAIL DRAWING NO. 6
DATE 03/96		
REVISED 01/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



PLAN VIEW

NOTES:

1. PRESSURE TEST INSTALLED TAPPING SLEEVE AND VALVE ASSEMBLY BEFORE TAPPING EXISTING MAIN. SEE FCAA MINIMUM CONSTRUCTION STANDARDS & SPECIFICATIONS.
2. SEE FCAA MINIMUM CONSTRUCTION STANDARDS & SPECIFICATIONS FOR LIST OF APPROVED TAPPING SLEEVES AND VALVES.
3. ALL TAPS SHALL BE MADE WITH AN APPROVED TAPPING DEVICE.

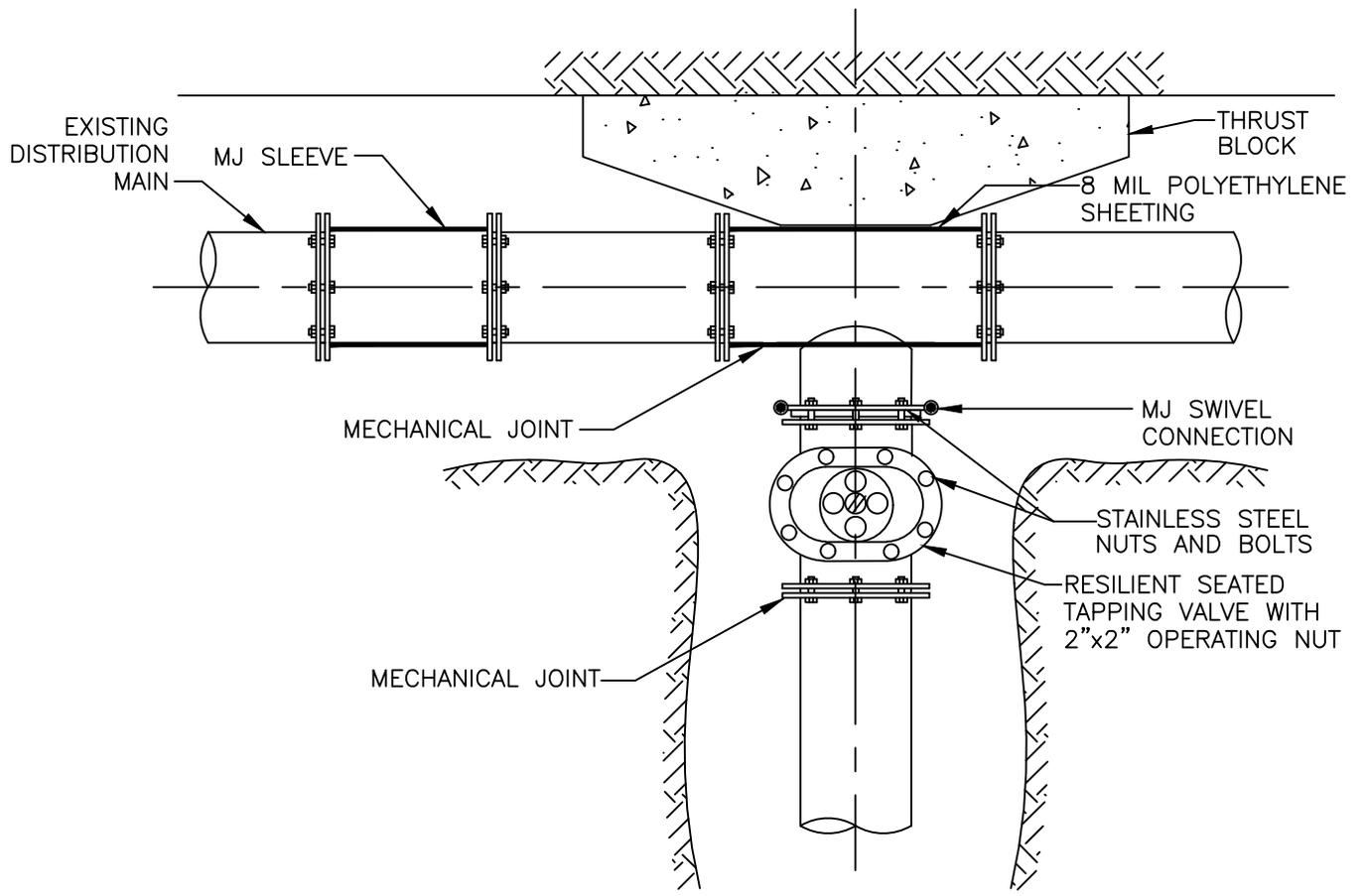
SCALE N.T.S.
DATE 03/96
REVISED 01/14

**TAPPING SLEEVE AND VALVE
FOR DISTRIBUTION MAIN**

STANDARD DETAIL
DRAWING NO.

7

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



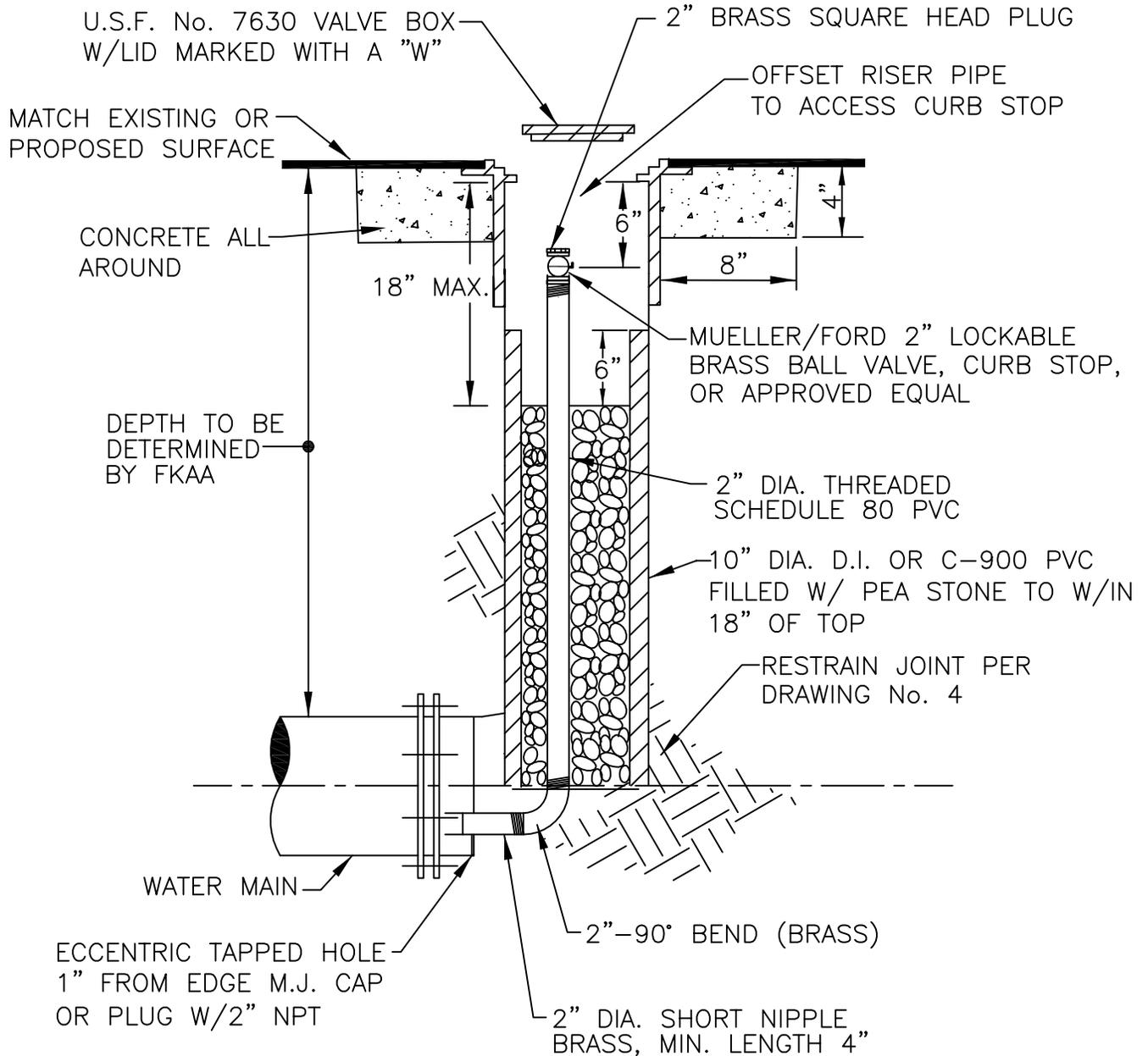
PLAN VIEW

NOTES:

1. USE MJ x SWIVEL TEE ON SAME SIZE MAIN.
2. INSTALL MJ SLEEVE ON ONE SIDE OF THE TEE AS PART OF THE INSTALLATION ASSEMBLY.
3. INSPECT ASSEMBLY FOR LEAKAGE ONCE THE LINE IS PRESSURIZED.
4. COVER TEE, VALVE AND SLEEVE WITH 8 MIL POLYETHYLENE SHEETING.

SCALE N.T.S.	TEE ASSEMBLY FOR SAME SIZE MAIN ON DISTRIBUTION MAIN	STANDARD DETAIL DRAWING NO. 7a
DATE 11/25		
REVISED		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



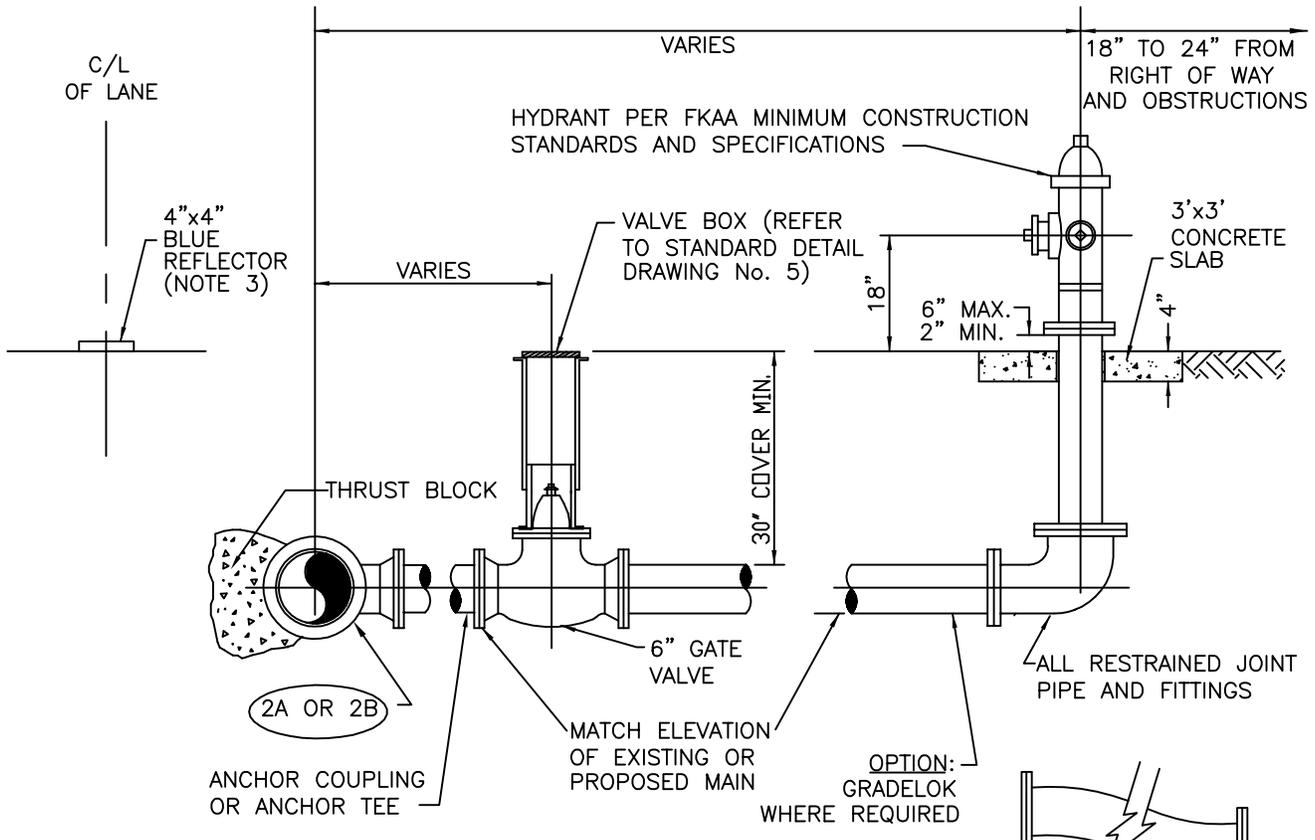
ELEVATION VIEW

NOTES:

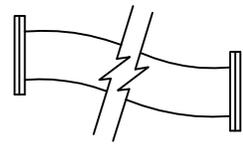
1. TO BE USED AT LINE END WHERE FLUSH-OUT ASSEMBLY IS SPECIFIED.
2. IN UNPAVED AREA INSTALL VALVE BOX LID 1/2" ABOVE SURFACE. #5 REBAR SHALL BE REQUIRED.
3. ALL PIPE TO BE SCHEDULE 80 PVC.
4. ALL FITTINGS TO BE BRASS.

SCALE N.T.S.	FLUSH-OUT ASSEMBLY	STANDARD DETAIL DRAWING NO.
DATE 06/03		8
REVISED 01/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



ELEVATION VIEW



GRADELOK



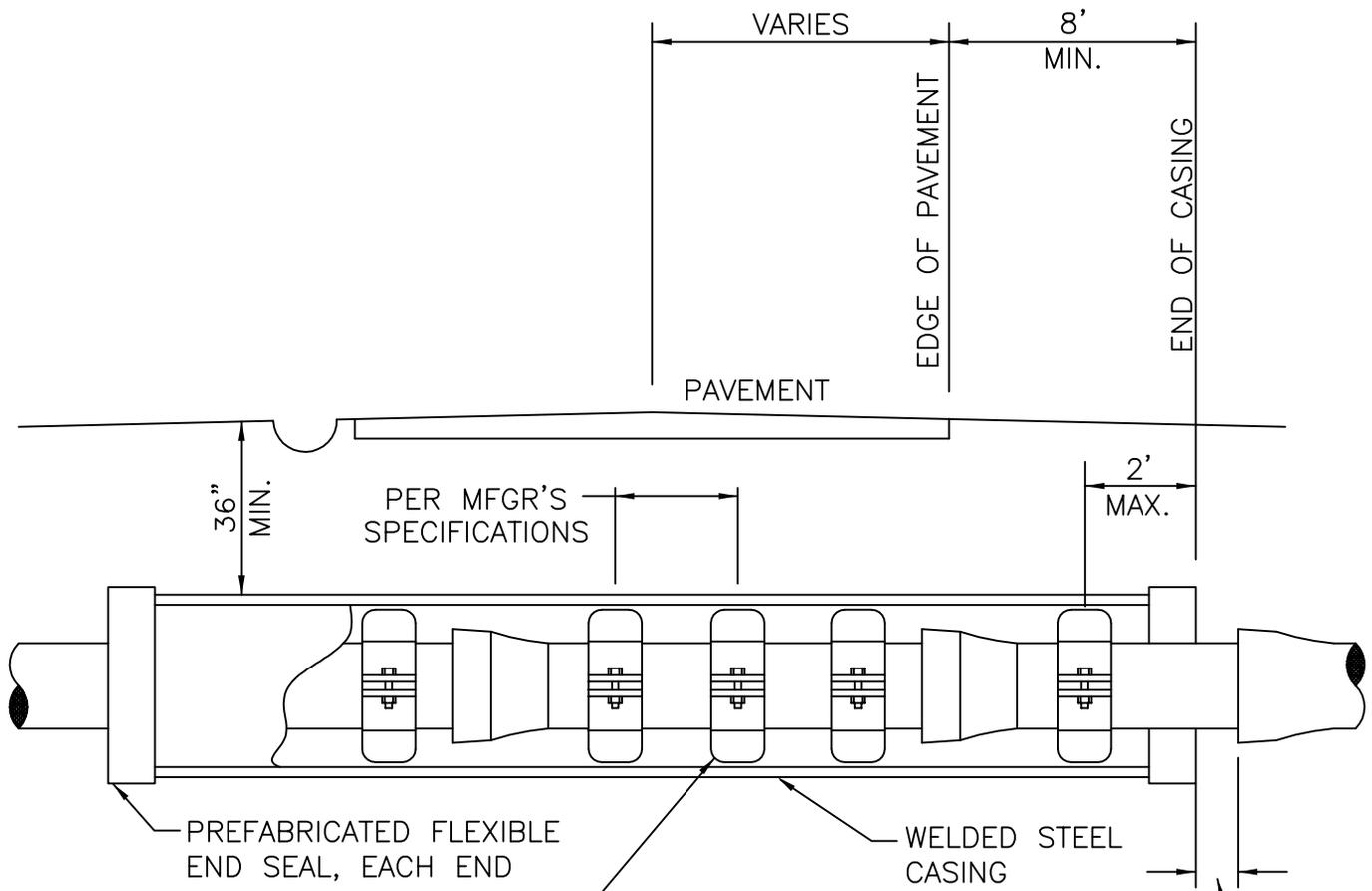
TYPICAL PLAN VIEWS

NOTES:

1. CONCRETE SLAB MAY BE ELIMINATED IN AREAS WHERE SIDEWALK IS INSTALLED PRIOR TO FINAL ACCEPTANCE OF THE HYDRANT.
- 2A. TAPPING SLEEVE AND VALVE USED WHEN EXISTING LINE IS HOT.
- 2B. TEE—USED WHEN LINE IS NEW.
3. INSTALL 2—SIDED BLUE REFLECTORS WITH BUTYL PADS. INSTALL IN THE CENTER OF THE LANE ON THE SIDE OF HYDRANT INSTALLATION.

SCALE N.T.S.	HYDRANT ASSEMBLY INSTALLATION	STANDARD DETAIL DRAWING NO.
DATE 03/96		9
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



PIPE SIZE	NOMINAL CASING SIZE	WALL THICKNESS
4"	10"	.250
6"	12"	.250
8"	14"	.375
10"	18"	.375
12"	22"	.375

PREFABRICATED SPACERS LOCATED PER MANUFACTURER'S SPECIFICATIONS

JOINT TO BE 6" MINIMUM FROM END OF CASING

ELEVATION VIEW

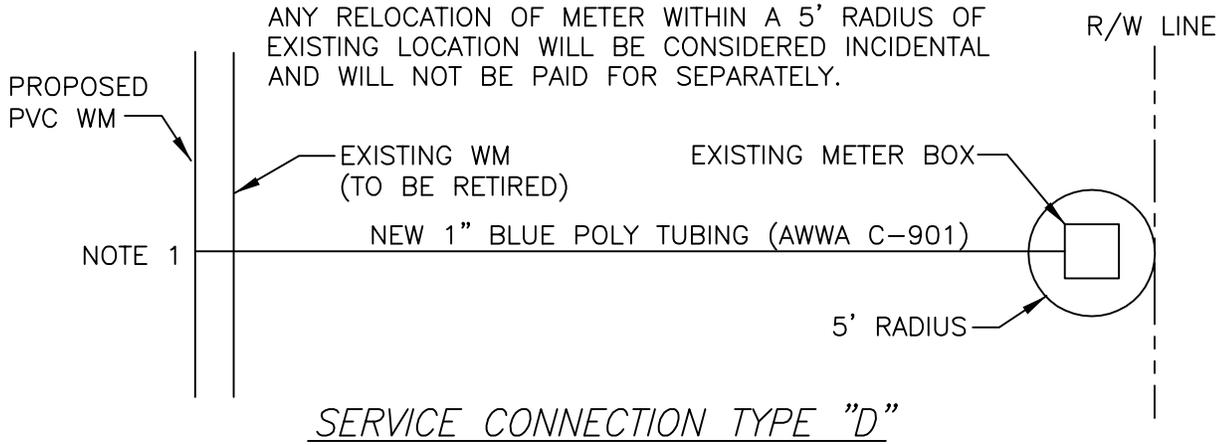
NOTES:

- JACK AND BORE OPERATIONS SHALL BE IN ACCORDANCE WITH FDOT "UTILITY ACCOMODATION GUIDE".
- LOCATE PIT MINIMUM OF 8' FROM EDGE OF PAVEMENT AND ERECT TRAFFIC BARRIER AROUND PIT IN FDOT RIGHT-OF-WAY ONLY.

SCALE N.T.S.	JACK AND BORE DETAIL	STANDARD DETAIL DRAWING NO. 10
DATE 03/96		
REVISED 06/13		

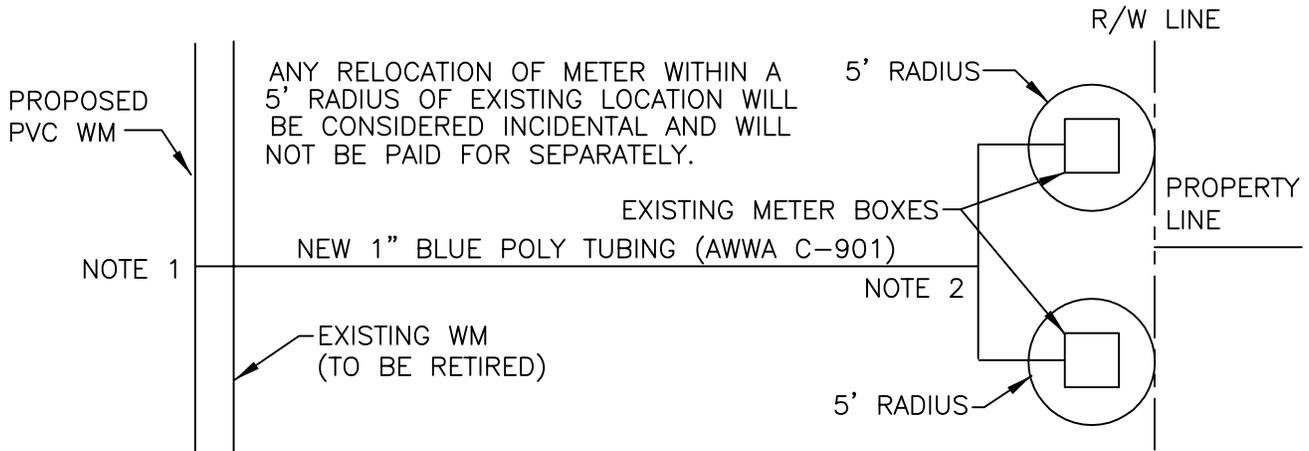
**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

ANY RELOCATION OF METER WITHIN A 5' RADIUS OF EXISTING LOCATION WILL BE CONSIDERED INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.

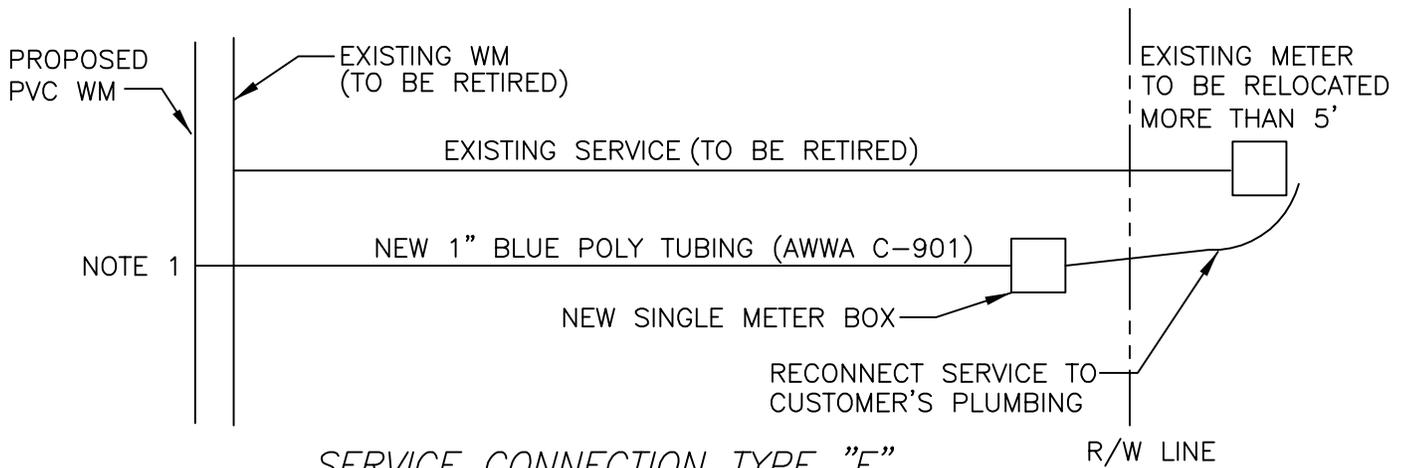


SERVICE CONNECTION TYPE "D"

ANY RELOCATION OF METER WITHIN A 5' RADIUS OF EXISTING LOCATION WILL BE CONSIDERED INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.



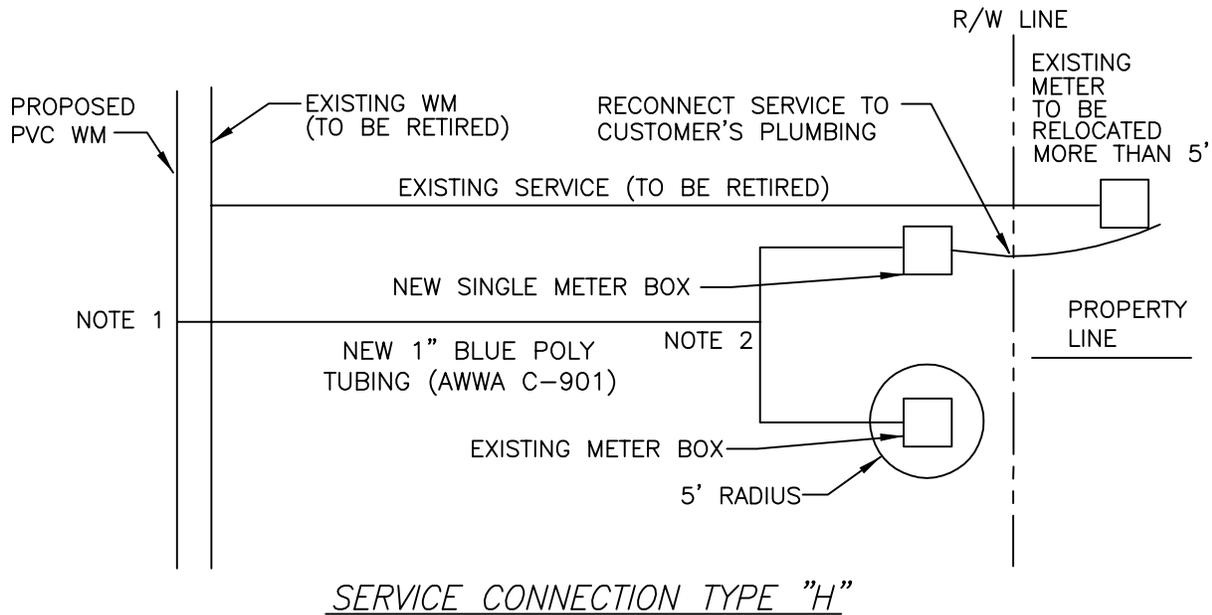
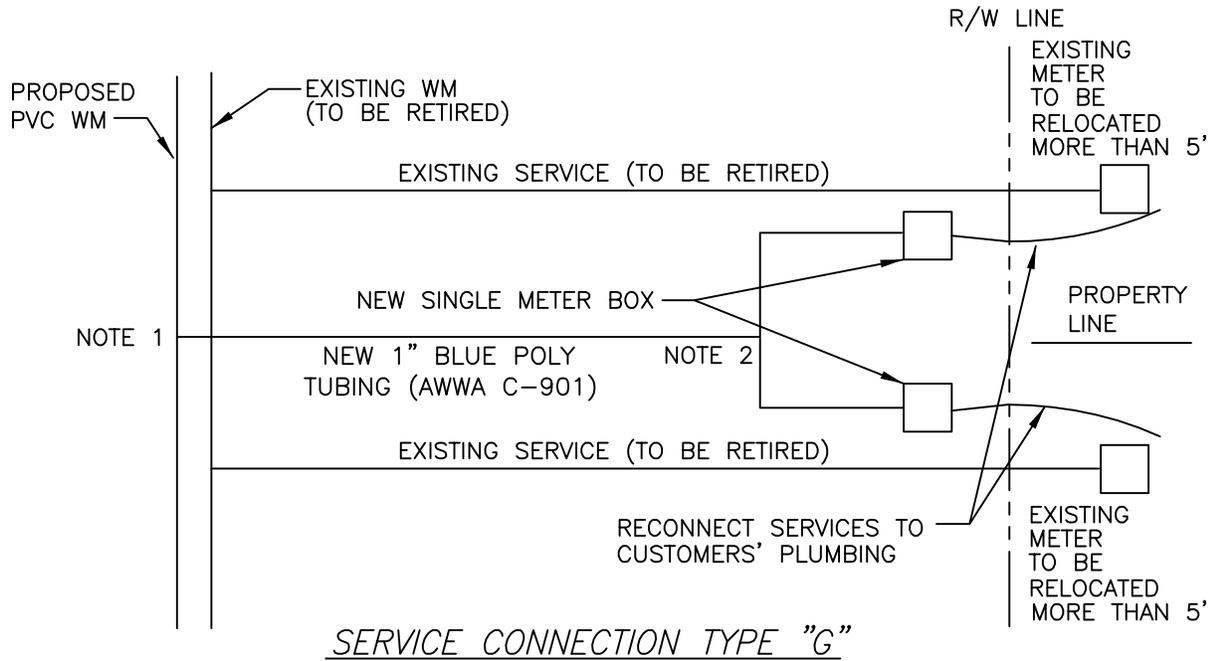
SERVICE CONNECTION TYPE "E"



SERVICE CONNECTION TYPE "F"

SCALE N.T.S.	TYPES OF SERVICE CONNECTIONS	STANDARD DETAIL DRAWING NO. 11 (1 of 3)
DATE 06/03		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



SCALE N.T.S.	TYPES OF SERVICE CONNECTIONS (CONTINUED)	STANDARD DETAIL DRAWING NO. 11 (2 of 3)
DATE 06/03		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

NOTES FOR TYPES OF SERVICE CONNECTIONS:

1. REFER TO STANDARD DETAIL DRAWING No. 15 FOR SERVICE CONNECTION TO WATER MAIN.
2. REFER TO STANDARD DETAIL DRAWING No. 17 FOR BRANCH DETAILS.
3. CUT AND PLUG EXISTING SERVICE PIPES AT POINT OF CONNECTION TO EXISTING WATER MAIN.
4. REMOVE RETIRED SERVICE PIPES.
5. MAKE CONNECTIONS TO METERS WITH APPROPRIATELY SIZED COUPLINGS, FITTINGS, OR ADAPTERS.
6. METER LOCATION TO BE 6" FROM PROPERTY LINE OR 6" FROM BACK OF CONCRETE SIDEWALK. EXACT METER AND SERVICE LOCATIONS SHALL BE DETERMINED BY FKA FIELD REPRESENTATIVE.
7. WHEN SERVICE LINE IS INSTALLED THROUGH CONCRETE, SERVICE LINE MUST BE SLEEVED.

8. DESCRIPTIONS OF SERVICE CONNECTIONS:

TYPE "D" – CONNECT TO EXISTING METER WITHIN R/W WITH NEW POLY TUBING (AWWA C-901). METER CAN BE MOVED WITHIN A 5' RADIUS OF CURRENT LOCATION.

TYPE "E" – CONNECT TO TWO EXISTING METERS W/IN R/W WITH NEW POLY TUBING (AWWA C-901). METERS CAN BE MOVED WITHIN A 5' RADIUS OF CURRENT LOCATIONS.

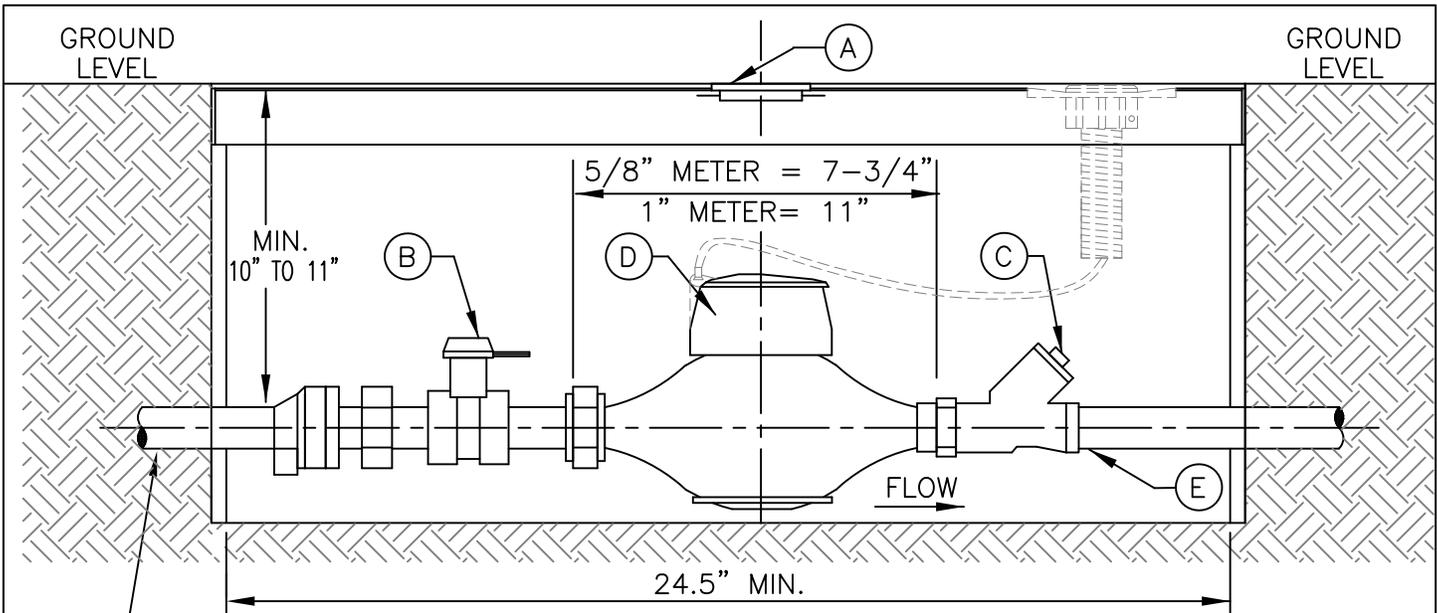
TYPE "F" – CONNECT TO NEW METER LOCATION (MORE THAN 5' FROM CURRENT LOCATION) IN R/W WITH NEW POLY TUBING (AWWA C-901). RECONNECT SERVICE TO CUSTOMER'S PLUMBING.

TYPE "G" – CONNECT TO TWO NEW METER LOCATIONS (MORE THAN 5' FROM CURRENT LOCATIONS) IN R/W WITH NEW POLY TUBING (AWWA C-901). RECONNECT SERVICES TO CUSTOMERS' PLUMBING.

TYPE "H" – CONNECT TO ONE EXISTING METER LOCATION (WITHIN 5' RADIUS OF CURRENT LOCATION) AND ONE NEW METER LOCATION (MORE THAN 5' FROM CURRENT LOCATION) IN R/W WITH NEW POLY TUBING (AWWA C-901). RECONNECT SERVICE TO CUSTOMER'S PLUMBING.

SCALE N.T.S.	TYPES OF SERVICE CONNECTIONS (CONTINUED)	STANDARD DETAIL DRAWING NO. 11 (3 of 3)
DATE 06/03		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



1" POLYETHYLENE TUBING
(AWWA C-901)

ELEVATION VIEW

A= METER BOX AND LID

BOX-OLDCASTLE PRECAST #02001032-FL12T FIBRELYTE GRAY COMPOSITE BOX (W/MOUSE HOLES)

LID-OLDCASTLE PRECAST #02001381-FL12 LID(1118)FIBRELYTE GRAY COMPOSITE NEPTUNE OFFSET-PROBE PROVISION FKA A WATER

NOTE: METER BOXES MUST HAVE LIDS IN PLACE PRIOR TO POURING THE CONCRETE.

B= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
3/4" x 5/8"	No. B43-342 W*
1"	No. B43-344 W*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

C= FKA A APPROVED DUAL CHECK VALVE: MUELLER No. H-14242 OR FORD HHS 31-323, HHS 31-344, OR APPROVED EQUAL

IF DOWNSTREAM BACKFLOW PREVENTOR (RPZ OR DCVA) IS REQUIRED, CURB STOP SHOULD BE INSTALLED IN LIEU OF DUAL CHECK.

D= SEALED REGISTER WATER METER

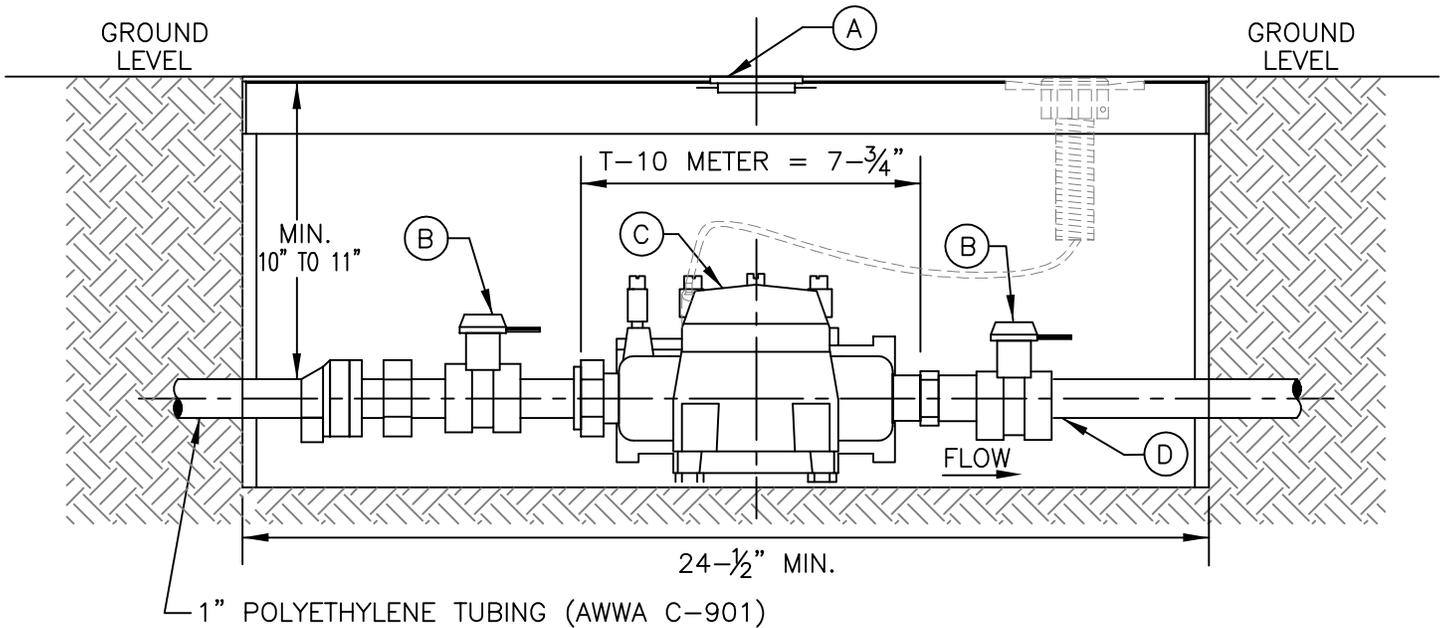
E= CUSTOMER TIE-IN POINT

NOTE:

1. MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE N.T.S.	5/8" AND 1" METER WITH DUAL CHECK VALVE	STANDARD DETAIL DRAWING NO.
DATE 03/96		12 (1 of 2)
REVISED 01/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



ELEVATION VIEW

A= METER BOX AND LID

BOX—OLDCASTLE PRECAST #02001032—FL12T FIBRELYTE GRAY COMPOSITE BOX (W/MOUSE HOLES)

LID—OLDCASTLE PRECAST #02001381—FL12 LID(1118)FIBRELYTE GRAY COMPOSITE NEPTUNE OFFSET—PROBE PROVISION FKA WATER

NOTE: METER BOXES MUST HAVE LIDS IN PLACE PRIOR TO POURING THE CONCRETE.

B= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
3/4"x5/8"	No. B43-342 W
1"	No. B43-344 W*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

C= NEPTUNE METER/DOUBLE CHECK T-10 ASSEMBLY

D= CUSTOMER TIE-IN POINT

NOTE:

MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE
N.T.S.

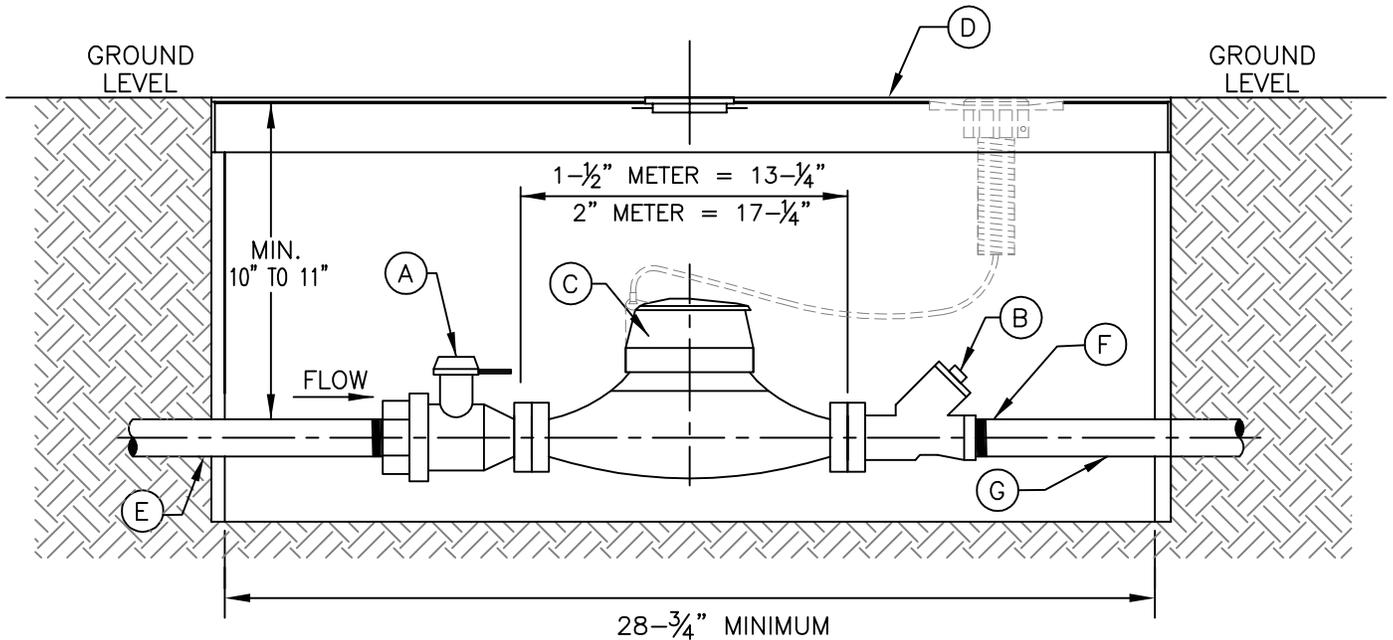
DATE
06/98

REVISED
01/14

5/8" T-10 DOUBLE CHECK METER

STANDARD DETAIL
DRAWING NO.
12 (2 of 2)

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA



ELEVATION VIEW

A= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
1-1/2"	No. BF13-676 W*
2"	No. BF13-777 W*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

B= FCAA APPROVED DUAL CHECK VALVE: MUELLER No. H-14242

C= SEALED REGISTER WATER METER

D= METER BOX AND LID

OLDCASTLE PRECAST #FL36-18 WITH 2 AMR(s) - "FCAA WATER"

E= 2" POLYETHYLENE TUBING (AWWA C-901)

F= CUSTOMER TIE-IN POINT

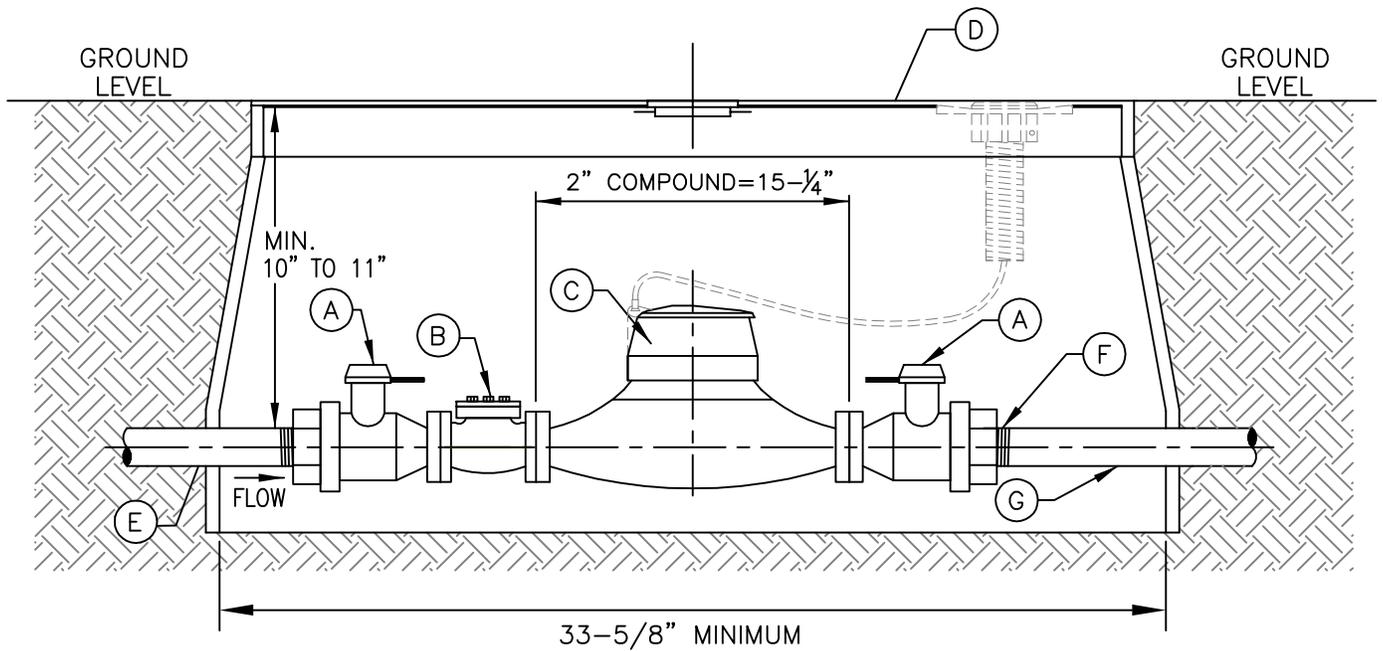
G= CUSTOMER FURNISHED PIPING/TUBING

NOTE:

MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE N.T.S.	1-1/2" AND 2" METER WITH DUAL CHECK VALVE	STANDARD DETAIL DRAWING NO. 13 (1 of 2)
DATE 03/96		
REVISED 01/17		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



ELEVATION VIEW

A= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
2"	No. BF13-777 W-NL*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

B= STRAINER (7")

C= SEALED REGISTER WATER METER

D= METER BOX AND LID

OLDCASTLE PRECAST #FL36-18 WITH 2 AMR(s) - "FKAA WATER"

E= 2" POLYETHYLENE TUBING (AWWA C-901)

F= CUSTOMER TIE-IN POINT

G= CUSTOMER FURNISHED PIPING/TUBING

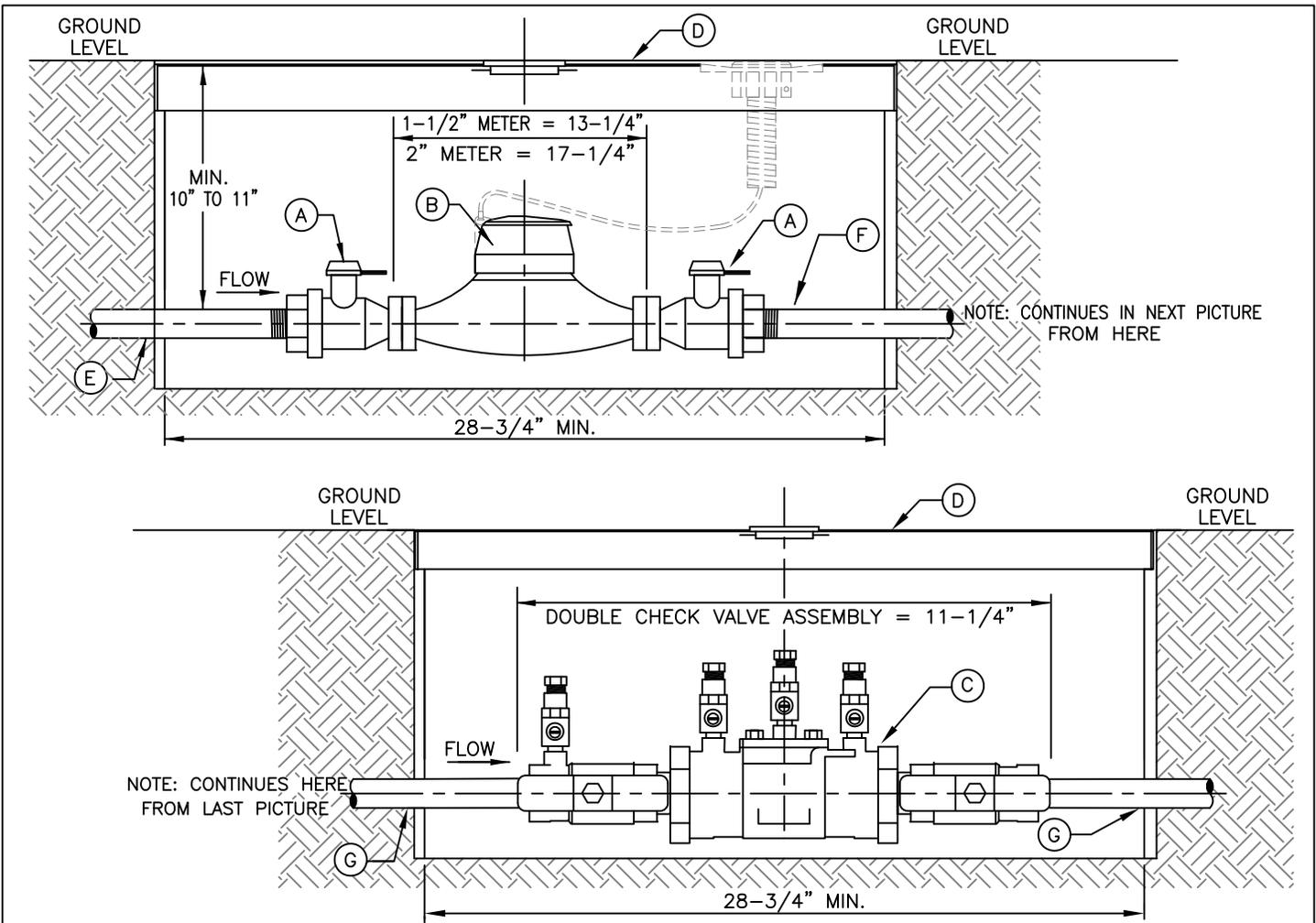
NOTE:

-MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

-METER BOXES MUST HAVE LIDS IN PLACE PRIOR TO POURING THE CONCRETE.

SCALE N.T.S.	2" COMPOUND METER	STANDARD DETAIL DRAWING NO.
DATE 03/96		13 (1a of 2)
REVISED 07/16		

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA



ELEVATION VIEW

A= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
1-1/2"	No. BF13-676 W *
2"	No. BF13-777 W *

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

B= SEALED REGISTER WATER METER

C= USC APPROVED DOUBLE CHECK VALVE ASSEMBLY (CUSTOMER FURNISHED)*
* WITH VERTICAL TEST COCKS AND PLUGS

D= METER BOX AND LID
OLDCASTLE PRECAST #FL36-18 WITH 1 AMR - "FKAA WATER"

E= 1" OR 2" POLYETHYLENE TUBING (AWWA C-901)

F= CUSTOMER TIE-IN POINT

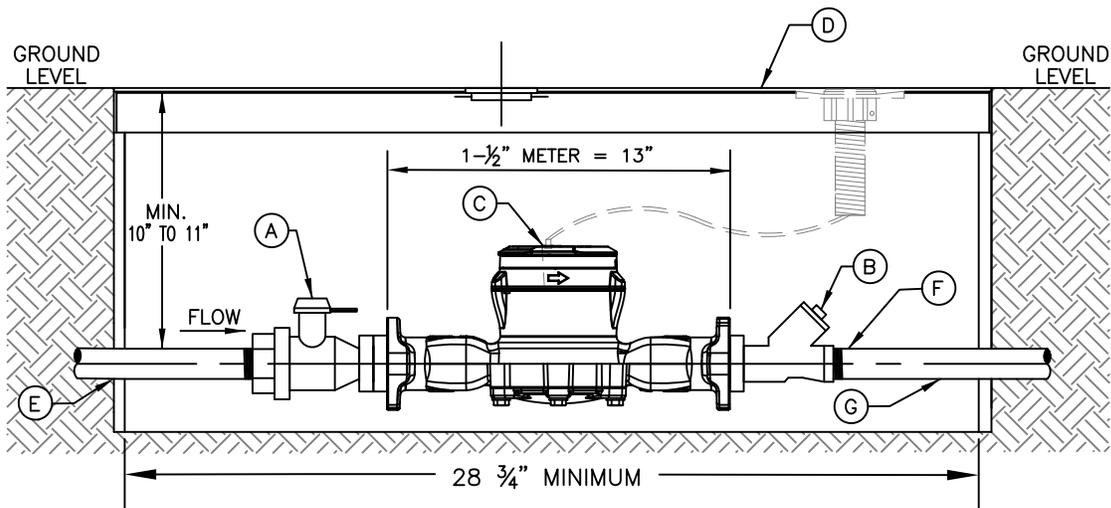
G= CUSTOMER FURNISHED PIPING/TUBING

NOTE:

MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE N.T.S.	1" AND LARGER METER WITH DOUBLE CHECK VALVE ASSEMBLY	STANDARD DETAIL DRAWING NO. 13 (2 of 2)
DATE 06/98		
REVISED 03/19		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



ELEVATION VIEW

A= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
1-1/2"	No. BF13-676 W*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

B= FKA A APPROVED DUAL CHECK VALVE: MUELLER No. H-14242

C= NEPTUNE MACH 10 ULTRASONIC WATER METER OR APPROVED EQUAL

D= METER BOX AND LID
OLDCASTLE PRECAST #FL36-18 WITH 2 AMR(s) - "FKA A WATER"

E= 2" POLYETHYLENE TUBING (AWWA C-901)

F= CUSTOMER TIE-IN POINT

G= CUSTOMER FURNISHED PIPING/TUBING

NOTE:

MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE:
N.T.S.

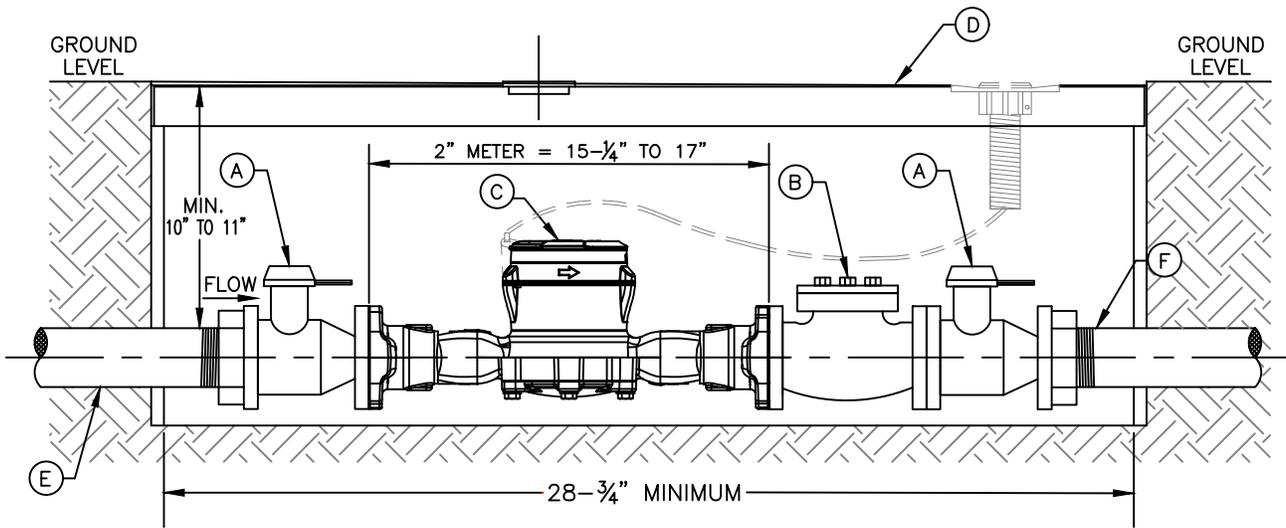
DATE:
10/20

REVISED:

1-1/2" MACH 10 METER
WITH DUAL CHECK VALVE

STANDARD DETAIL
DRAWING NO.
13-M1.5

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



ELEVATION VIEW

A= FORD LOCKABLE CURB STOP OR APPROVED EQUAL

METER DIAMETER	CURB STOP
2"	No. BF13-777 W*

* "W" ON CATALOG NUMBER IS FOR PADLOCK WINGS & SHOULD OPEN TO THE LEFT.

B= STRAINER

C= NEPTUNE MACH 10 ULTRASONIC WATER METER OR APPROVED EQUAL

D= METER BOX AND LID
 OLDCASTLE PRECAST #FL36-18 WITH 2 AMR(s) - "FKAA WATER"

E= 2" POLYETHYLENE TUBING (AWWA C-901)

F= CUSTOMER TIE-IN POINT

G= CUSTOMER FURNISHED PIPING/TUBING

NOTE:

MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTINGS SHALL BE MAINTAINED PER METER MANUFACTURER'S REQUIREMENTS.

SCALE:
 N.T.S.

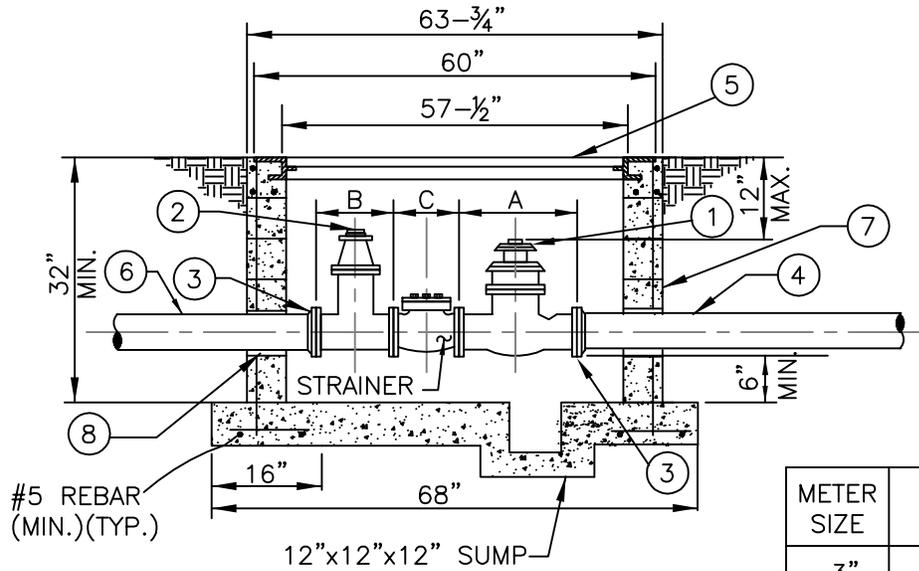
DATE:
 12/24

REVISED:

2" MACH 10 ULTRASONIC METER
 WITH STRAINER AND CURB STOP

STANDARD DETAIL
 DRAWING NO.
 13-M2

FLORIDA KEYS AQUEDUCT AUTHORITY
 KEY WEST, FLORIDA



SECTION VIEW

METER SIZE	"A"	"B"	"C"
3"	17"	8"	6"
4"	20"	9"	7-½"
6"	24"	10-½"	9"

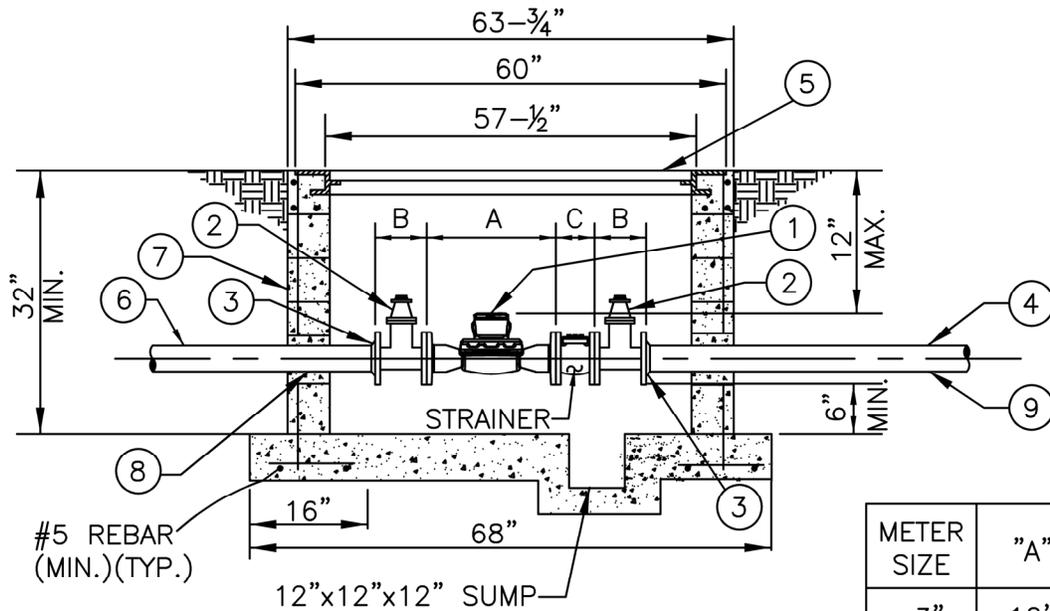
- ① COMPOUND WATER METER
- ② FLANGED RESILIENT SEAT, NON-RISING STEM GATE VALVE, MAY BE LOCATED INSIDE OR OUTSIDE OF METER VAULT
- ③ UNI-FLANGE OR EQUAL FLANGE PIPE ADAPTER
- ④ TO BACKFLOW PREVENTER (D.I. FOR PIPE DIA. GREATER THAN 3") (REFER TO STANDARD DETAIL DRAWING Nos. 20, 21, AND 22)
- ⑤ U.S. FOUNDRY TYPE AHD 36"x78" ALUMINUM HATCH COVER, CAST IN PLACE (OR APPROVED EQUAL)
- ⑥ TO MAIN AND/OR VALVE (D.I. FOR PIPE DIA. GREATER THAN 3")
- ⑦ 8" CONCRETE BLOCK WALLS WITH CELLS FILLED WITH NON-SHRINK GROUT (NOTE 1)
- ⑧ GROUT AROUND PIPE TO SEAL OPENING, COMPLETELY WRAP PIPE WITH #15 FELT BEFORE GROUTING

NOTES:

- 1. REBAR AS SHOWN ARE MINIMUM REQUIRED. VAULT TO BE DESIGNED BY PRECASTER.
- 2. MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTING SHALL BE MAINTAINED PER MANUFACTURER'S REQUIREMENTS.

SCALE N.T.S.	3", 4" AND 6" METER ASSEMBLY	STANDARD DETAIL DRAWING NO. 14
DATE 10/99		
REVISED 05/14		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



SECTION VIEW

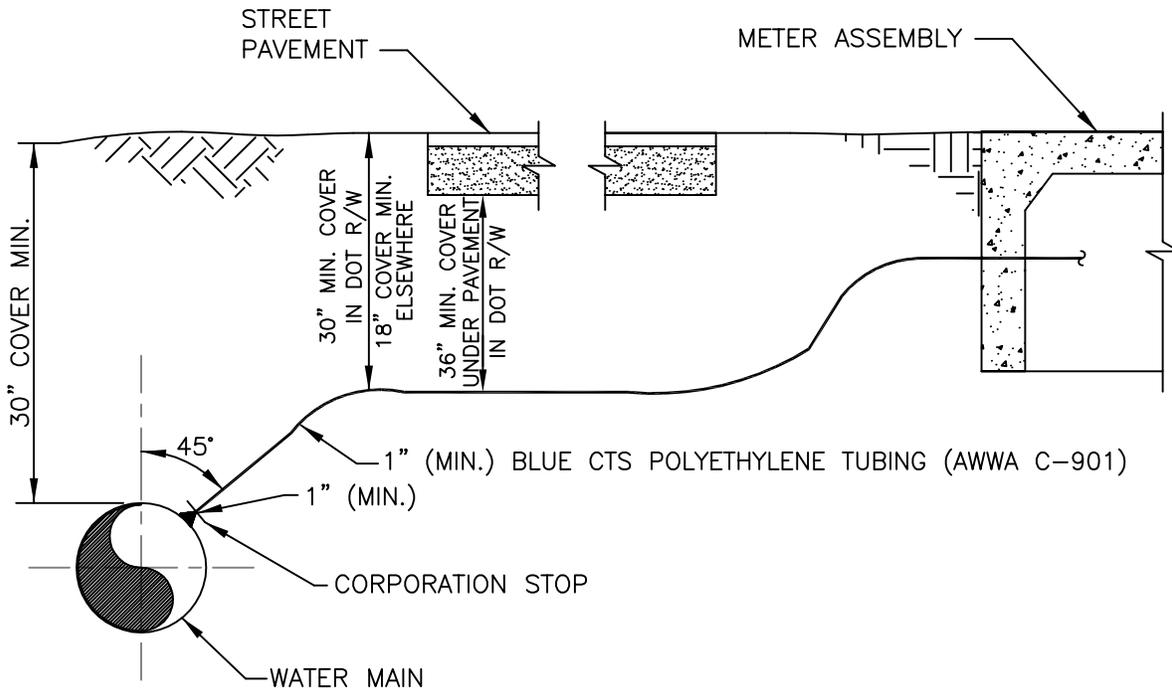
- ① NEPTUNE MACH 10 ULTRASONIC WATER METER OR APPROVED EQUAL
- ② FLANGED RESILIENT SEAT, NON-RISING STEM GATE VALVE, MAY BE LOCATED INSIDE OR OUTSIDE OF METER VAULT
- ③ UNI-FLANGE OR EQUAL FLANGE PIPE ADAPTER
- ④ TO BACKFLOW PREVENTER (D.I. FOR PIPE DIA. GREATER THAN 3") (REFER TO STANDARD DETAIL DRAWING Nos. 20, 21, AND 22)
- ⑤ U.S. FOUNDRY TYPE AHD 36"x78" ALUMINUM HATCH COVER, CAST IN PLACE (OR APPROVED EQUAL)
- ⑥ TO MAIN AND/OR VALVE (D.I. FOR PIPE DIA. GREATER THAN 3")
PIPE LENGTH TO BE 5 TIMES PIPE DIAMETER
- ⑦ 8" CONCRETE BLOCK WALLS WITH CELLS FILLED WITH NON-SHRINK GROUT (NOTE 1)
- ⑧ GROUT AROUND PIPE TO SEAL OPENING, COMPLETELY WRAP PIPE WITH #15 FELT BEFORE GROUTING
- ⑨ PIPE LENGTH TO BE 2 TIMES PIPE DIAMETER

NOTES:

- 1. REBAR AS SHOWN ARE MINIMUM REQUIRED. VAULT TO BE DESIGNED BY PRECASTER.
- 2. MINIMUM DISTANCES BETWEEN METER INLETS/OUTLETS AND THE CLOSEST FITTING SHALL BE MAINTAINED PER MANUFACTURER'S REQUIREMENTS.

SCALE: N.T.S.	3" OR 4" MACH 10 ULTRASONIC METER WITH DUAL CHECK VALVE	STANDARD DETAIL DRAWING NO. 14-M3-4
DATE: 01/21		
REVISED: 05/22		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



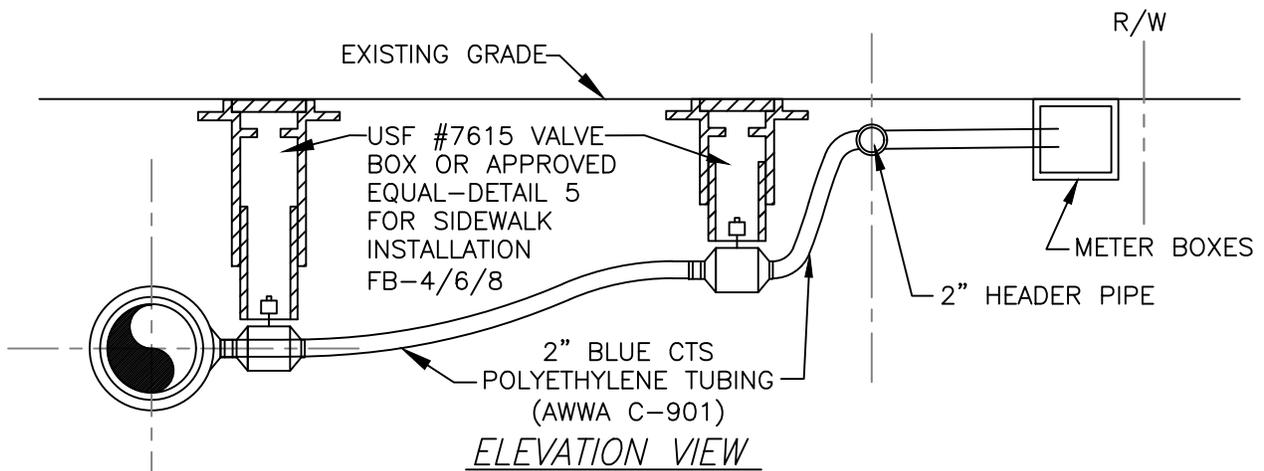
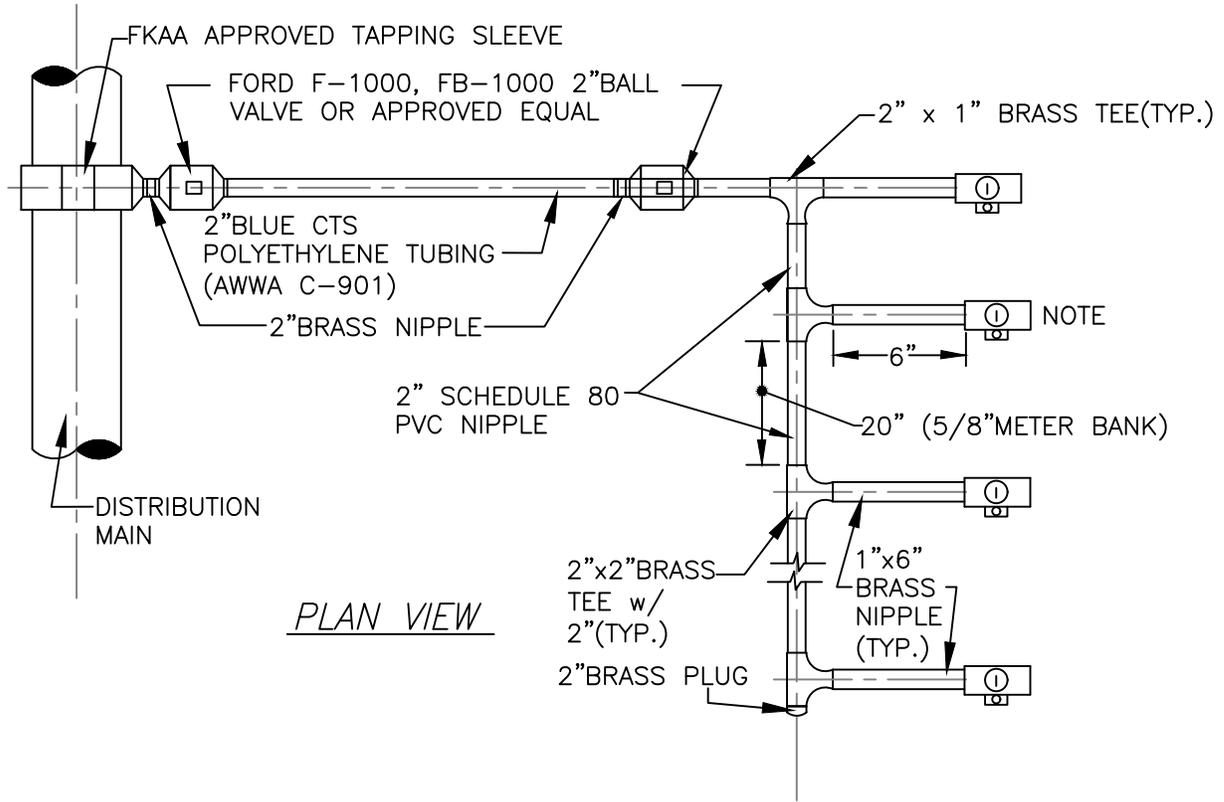
ELEVATION VIEW

NOTE:

1. SADDLES SHALL BE ROCKWELL INTERNATIONAL, TYPE 323, STYLE DOUBLE STRAP BRONZE SADDLES, FOR PVC AND DUCTILE IRON PIPE, OR APPROVED EQUAL. TAPPING SADDLES SHALL BE USED FOR ALL TAPS ON 2" PVC PIPE. 4" PVC PIPE OR GREATER SHALL HAVE A TAPPING SLEEVE AND VALVE.
2. CORPORATION STOPS SHALL BE FORD F-1000, FB-1000, OR APPROVED EQUAL. THE LARGEST CORPORATION STOP WHICH CAN BE TAPPED DIRECTLY INTO THE PIPE IS 1-INCH.

SCALE N.T.S.	SERVICE CONNECTION	STANDARD DETAIL DRAWING NO. 15
DATE 03/96		
REVISED 01/14		

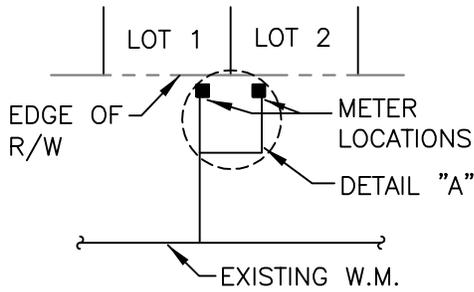
**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



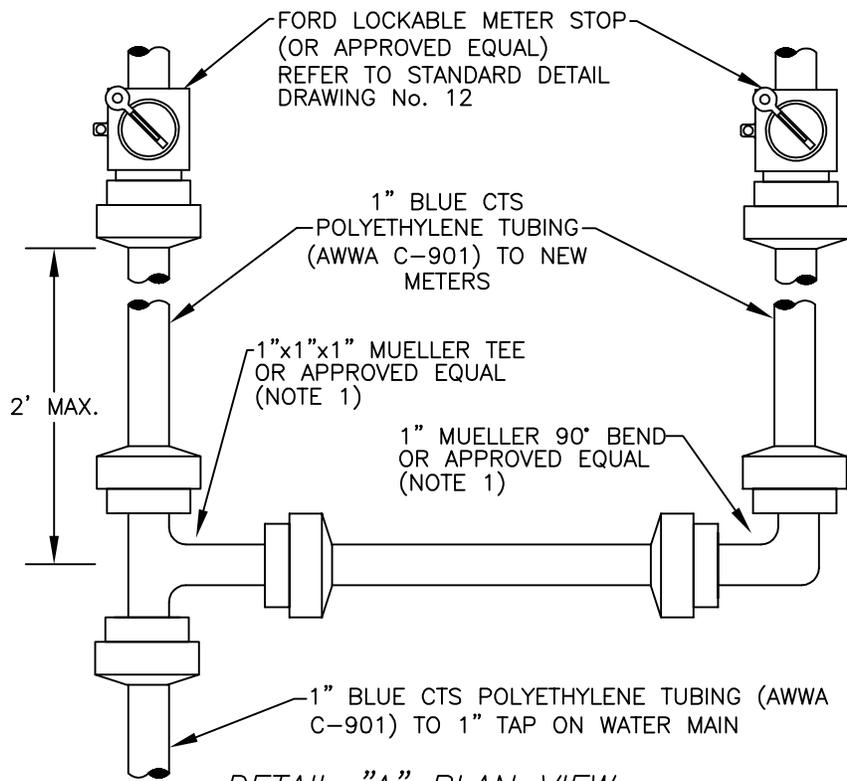
NOTE: REFER TO STANDARD DETAIL DRAWING No. 12 FOR METER ASSEMBLY ONLY.

SCALE N.T.S.	METER BANK	STANDARD DETAIL DRAWING NO. 16
DATE 03/96		
REVISED 07/22		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



PLAN VIEW



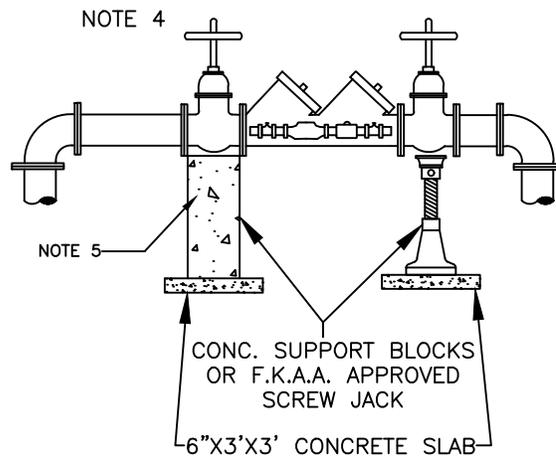
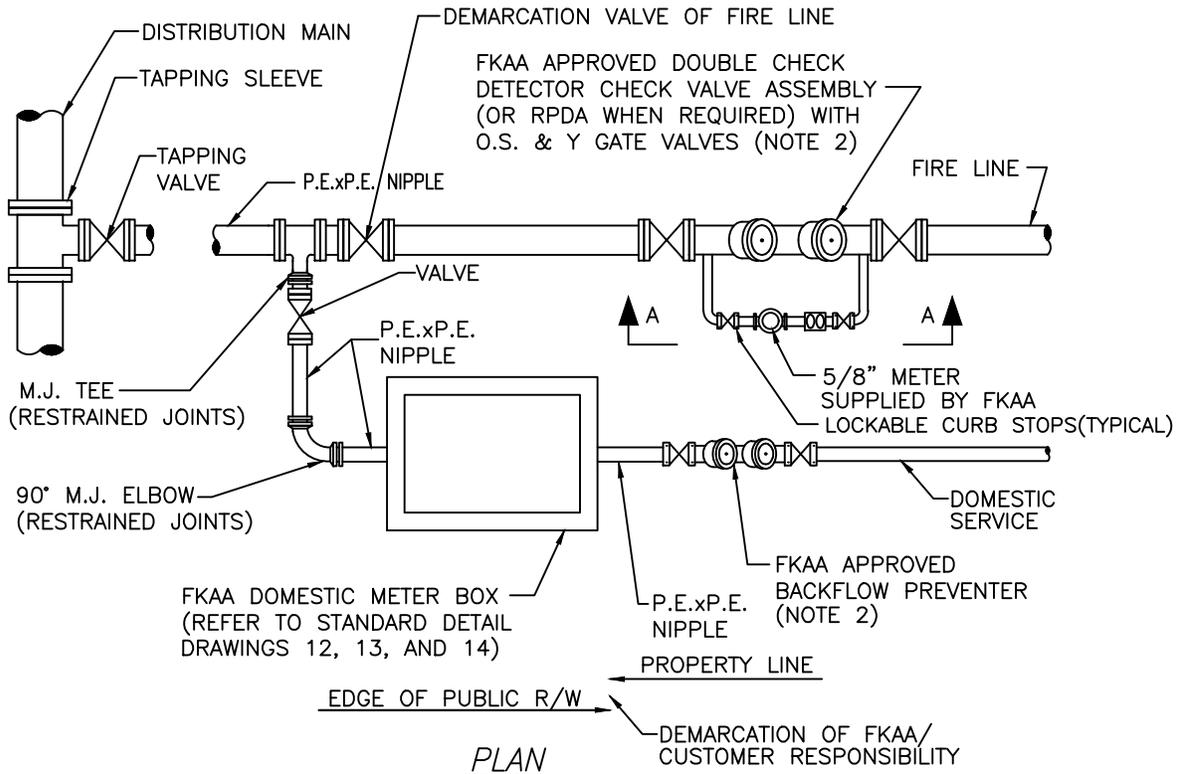
DETAIL "A" PLAN VIEW

NOTES:

1. USE MUELLER 110 CONDUCTIVE COMPRESSION CONNECTIONS FOR BLUE CTS POLYETHYLENE TUBING (AWWA C-901), OR APPROVED EQUAL.

SCALE N.T.S.	FITTINGS FOR 1" TAP DUAL SERVICE CONNECTION	STANDARD DETAIL DRAWING NO. 17
DATE 03/96		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

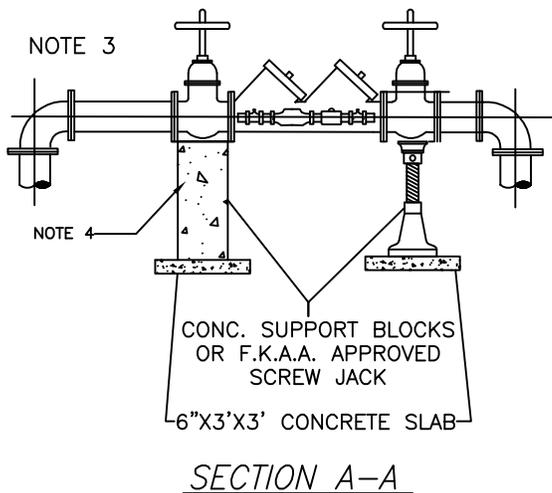
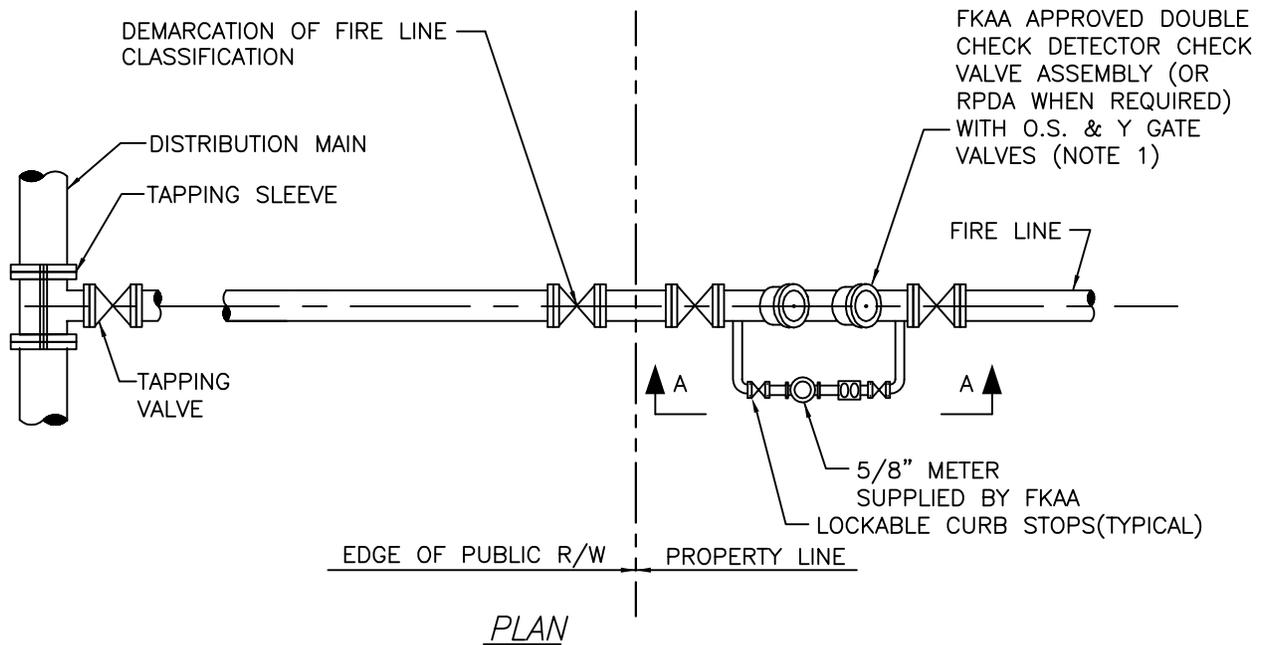


NOTES:

1. P.E. — PLAIN END, M.J. — MECHANICAL JOINT
2. REFER TO FKAA CROSS-CONNECTION CONTROL MANUAL AND FIRE PROTECTION SERVICE REQUIREMENTS IN FKAA MINIMUM CONSTRUCTION STANDARDS AND SPECIFICATIONS.
3. "Y" STRAINER NOT PERMITTED ON SEPARATE FIRE LINE.
4. REFER TO STANDARD DETAIL DRAWING No. 20, 21 or 22 FOR INSTALLATION DETAILS.
5. CONCRETE SUPPORT BLOCKS REQUIRED ON 2 1/2" AND LARGER DOUBLE CHECK VALVES.

SCALE N.T.S.	SEPARATE FIRE LINE W/ DOMESTIC METER	STANDARD DETAIL DRAWING NO. 18 (1 of 2)
DATE 03/96		
REVISED 06/25		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

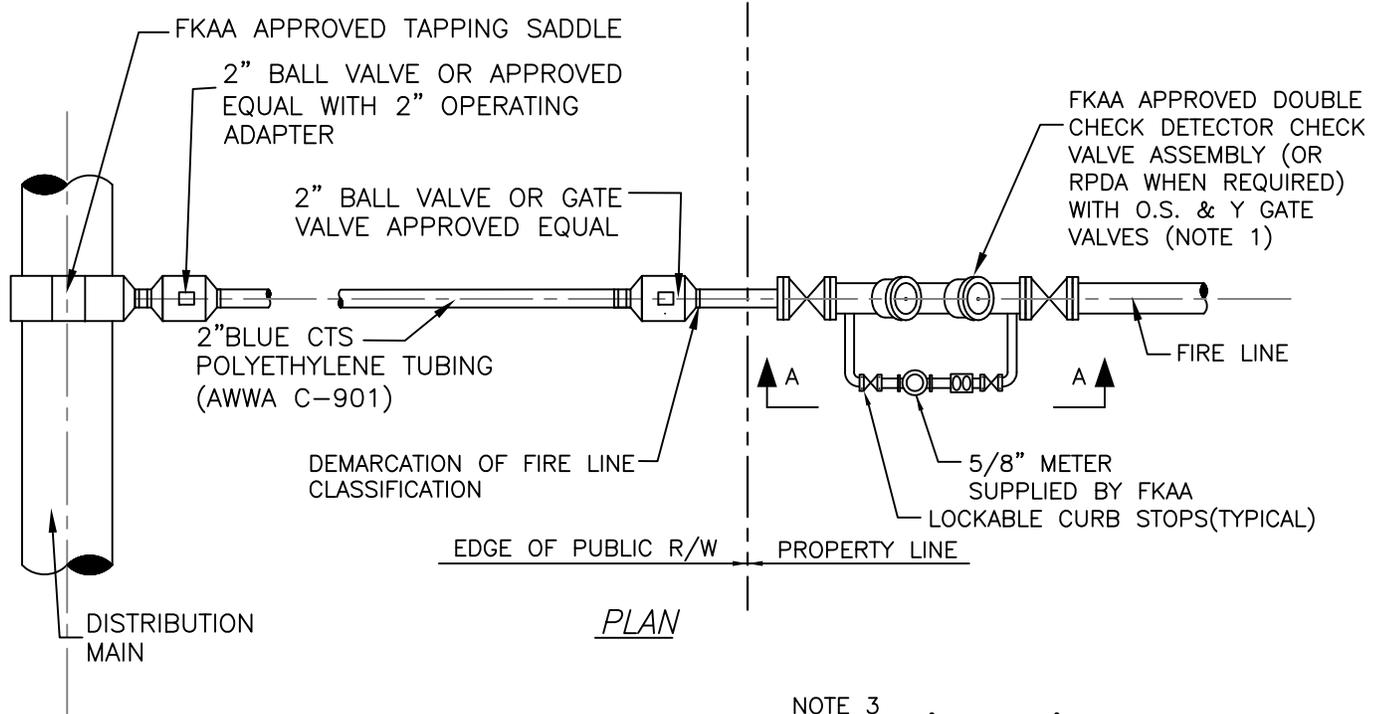


NOTES:

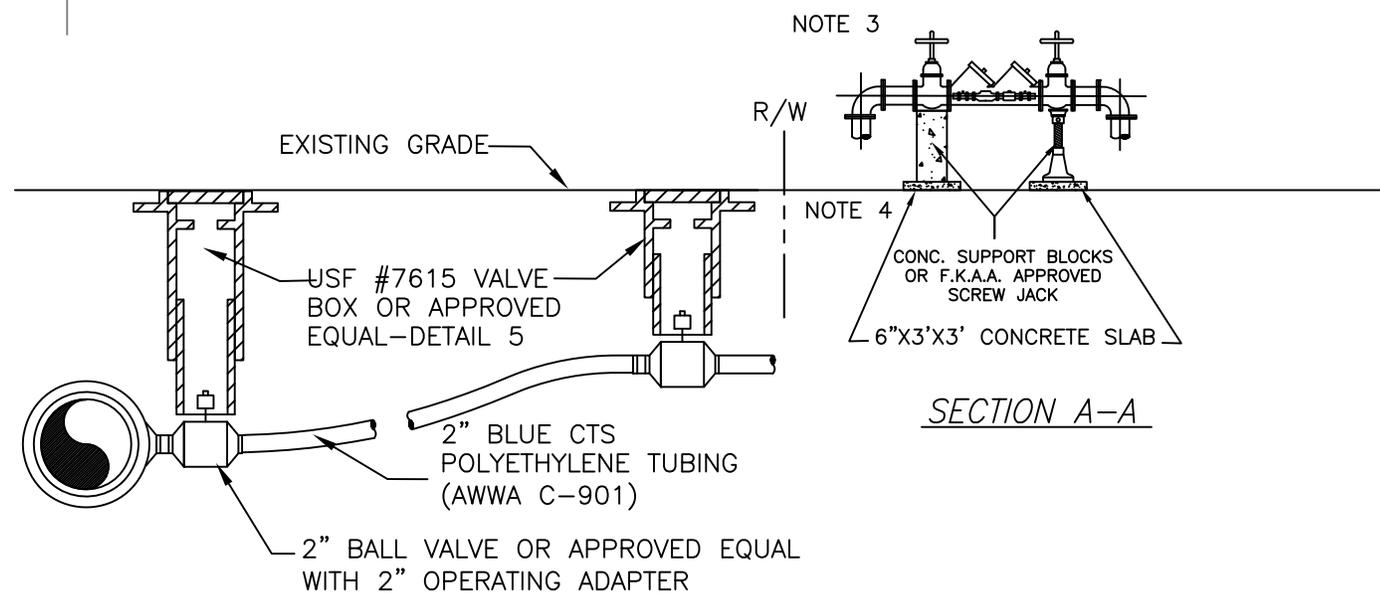
1. REFER TO FCAA CROSS-CONNECTION CONTROL MANUAL AND FIRE PROTECTION SERVICE REQUIREMENTS IN FCAA MINIMUM CONSTRUCTION STANDARDS AND SPECIFICATIONS.
2. "Y" STRAINER NOT PERMITTED ON SEPARATE FIRE LINE.
3. REFER TO STANDARD DETAIL DRAWING No. 20, 21 or 22 FOR INSTALLATION DETAILS.
4. CONCRETE SUPPORT BLOCKS REQUIRED ON 2-1/2" AND LARGER DOUBLE CHECK VALVES.

SCALE N.T.S.	SEPARATE FIRE LINE INSTALLATION	STANDARD DETAIL DRAWING NO. 18 (2 of 2)
DATE 03/96		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



PLAN



ELEVATION VIEW

NOTES:

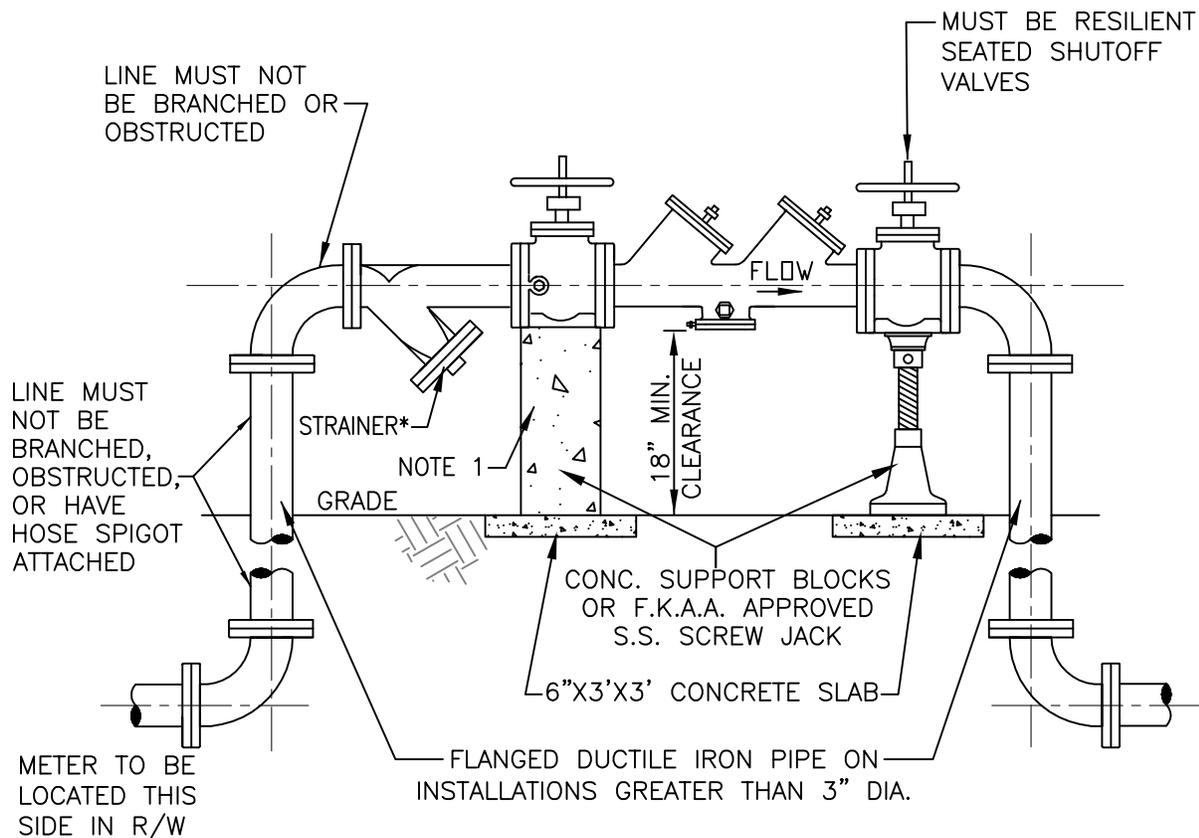
1. REFER TO FKA CROSS-CONNECTION CONTROL MANUAL AND FIRE PROTECTION SERVICE REQUIREMENTS IN FKA MINIMUM CONSTRUCTION STANDARDS AND SPECIFICATIONS.
2. "Y" STRAINER NOT PERMITTED ON SEPARATE FIRE LINE.
3. REFER TO STANDARD DETAIL DRAWING No. 20, 21 or 22 FOR INSTALLATION DETAILS.
4. CONCRETE SUPPORT BLOCKS REQUIRED ON 2-1/2" AND LARGER DOUBLE CHECK VALVES(RP).

SCALE N.T.S.
DATE 01/21
REVISED

2" FIRE LINE INSTALLATION

STANDARD DETAIL
DRAWING NO.
18 (2A)

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



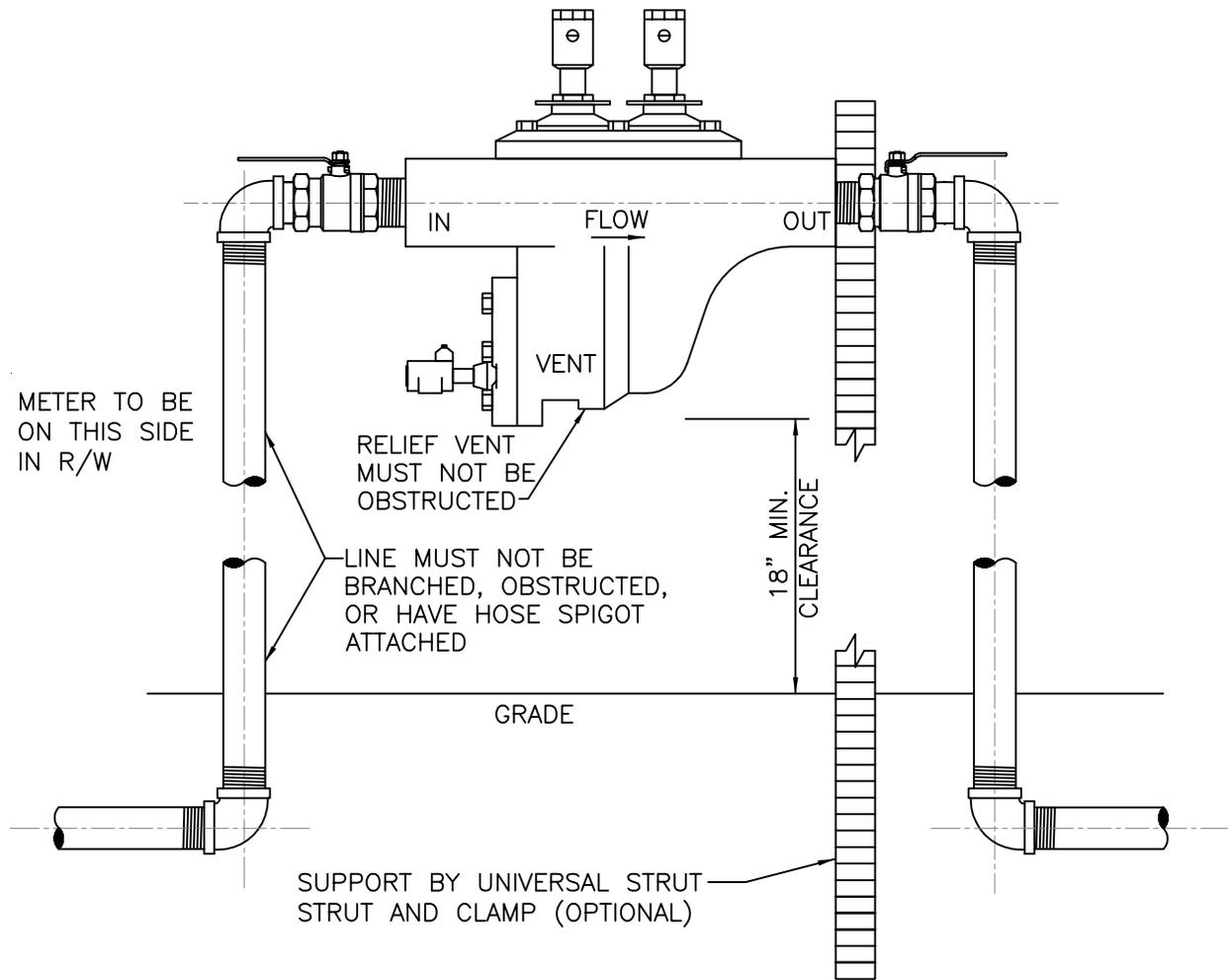
ELEVATION VIEW

NOTES:

1. CONCRETE SUPPORT BLOCKS AND "Y" TYPE STRAINER (WITH STANDARD PERFORATED SCREEN) ON 2 1/2" AND LARGER BACKFLOW PREVENTERS.
 2. THE ASSEMBLY MUST BE INSTALLED WITH MINIMUM HORIZONTAL CLEARANCES OF 30" FOR THE SIDE WITH TEST COCKS AND 8" FOR THE BACK SIDE.
 3. ACCEPTABLE ASSEMBLIES ARE THOSE THAT ARE APPROVED BY EITHER ASSE OR FCCCHR AND MEET THE MINIMUM DESIGN STANDARDS OF THE AWWA.
- * NO STRAINER REQUIRED ON FIRE LINES.

SCALE N.T.S.	2-1/2" TO 10" REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION	STANDARD DETAIL DRAWING NO.
DATE 03/96		20
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



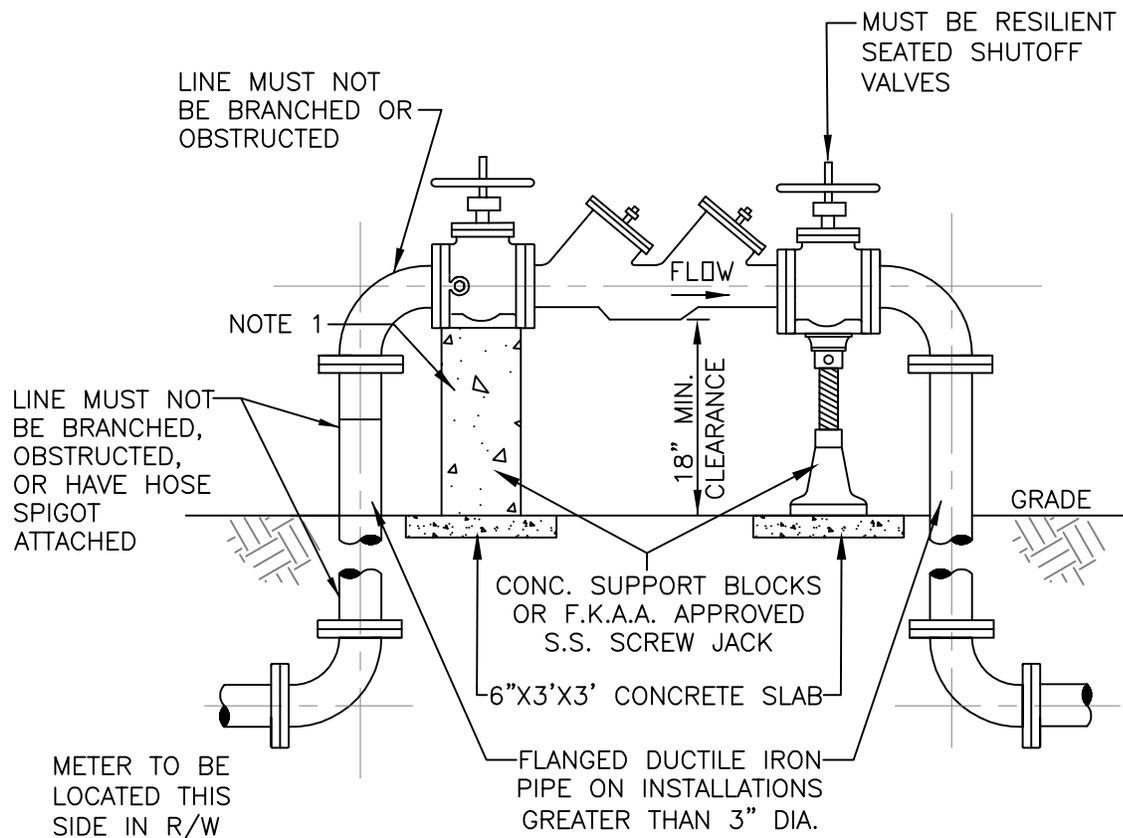
ELEVATION VIEW

NOTES:

1. THE ASSEMBLY MUST BE INSTALLED ON THE CUSTOMER'S PROPERTY, AS CLOSE TO THE METER AS PRACTICAL.
2. THE ASSEMBLY MUST BE ACCESSIBLE FOR TESTING ANNUALLY, AND FOR OVERHAUL EVERY FIVE YEARS.
3. ACCEPTABLE ASSEMBLIES ARE THOSE THAT ARE APPROVED BY EITHER ASSE OR FCCCHR AND MEET THE MINIMUM DESIGN STANDARDS OF THE AWWA.

SCALE N.T.S.	3/4" TO 2" REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION	STANDARD DETAIL DRAWING NO.
DATE 03/96		21
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



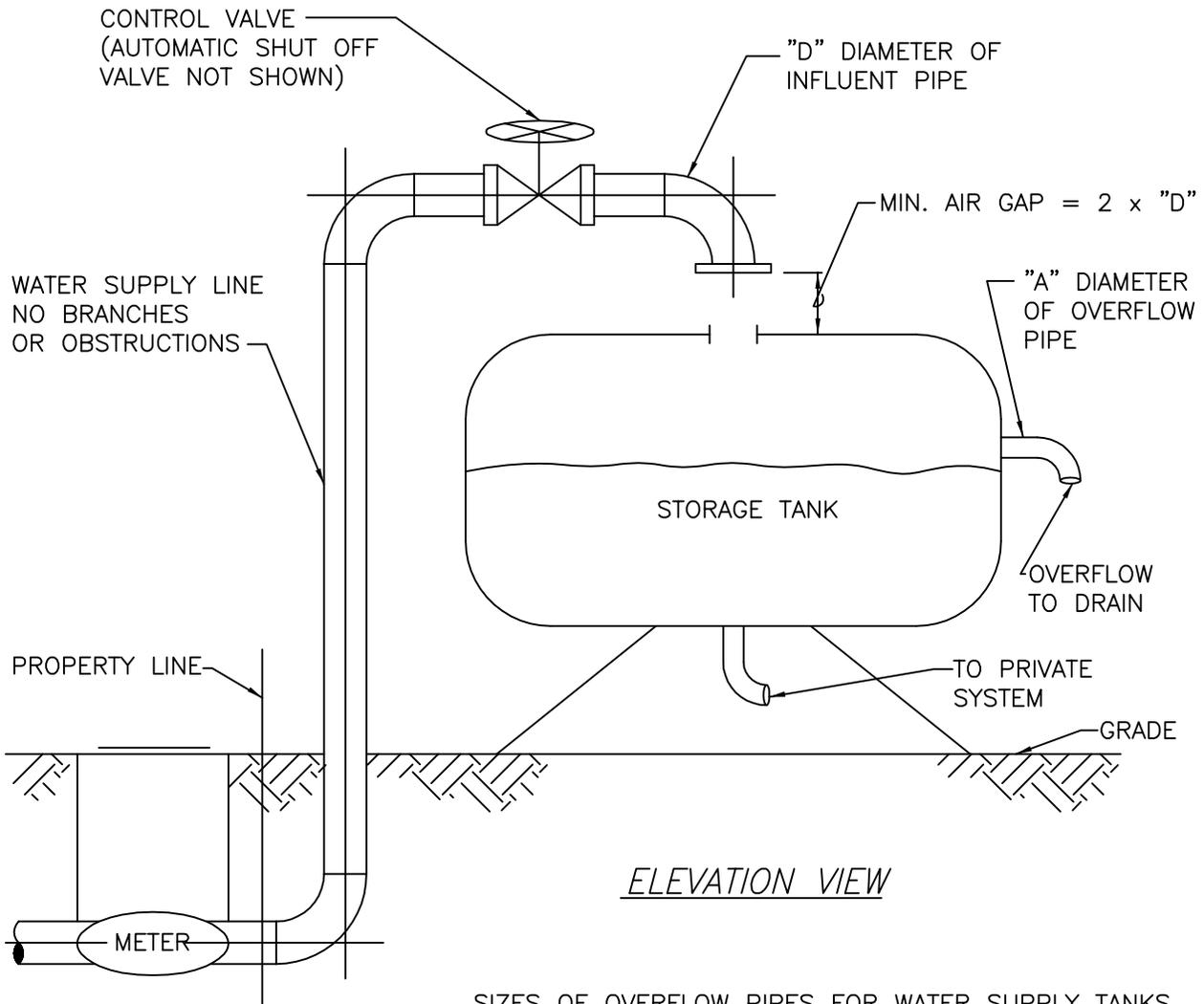
ELEVATION VIEW

NOTES:

1. CONCRETE SUPPORT BLOCKS REQUIRED ON 2 1/2" AND LARGER DOUBLE CHECK VALVES.
2. THE DEVICE MUST BE INSTALLED WITH MINIMUM HORIZONTAL CLEARANCES OF 30" FOR THE SIDE WITH TEST COCKS AND 8" FOR BACK SIDE.
3. ASSEMBLY IS NOT COMPLETE UNLESS ALL TEST COCKS ARE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
4. ACCEPTABLE ASSEMBLIES ARE THOSE THAT ARE APPROVED BY EITHER ASSE OR FCCCHR AND MEET THE MINIMUM DESIGN STANDARDS OF THE AWWA.

SCALE N.T.S.	3/4" TO 10" DOUBLE CHECK VALVE ASSEMBLY INSTALLATION	STANDARD DETAIL DRAWING NO.
DATE 03/96		22
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



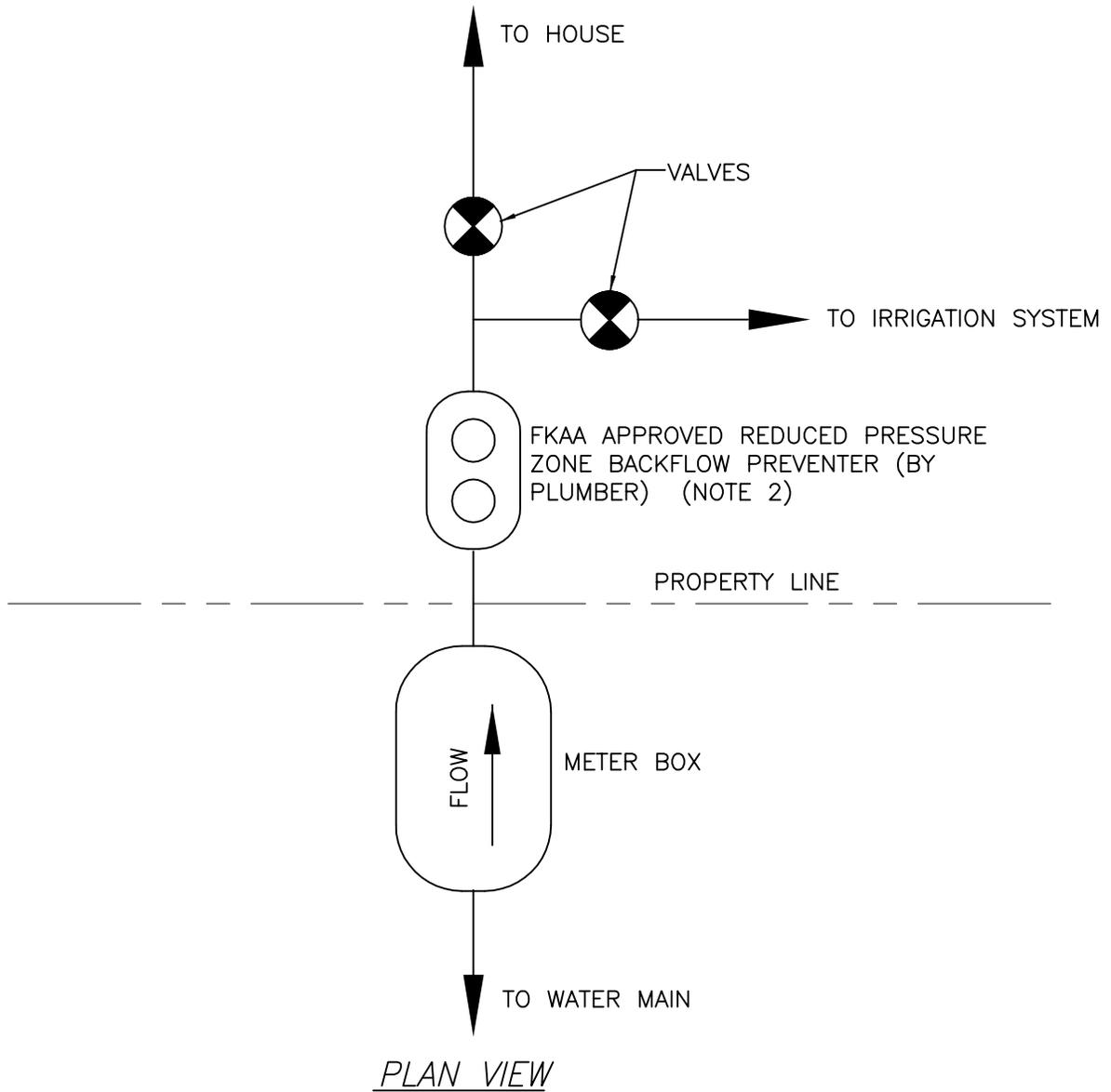
ELEVATION VIEW

SIZES OF OVERFLOW PIPES FOR WATER SUPPLY TANKS

MAXIMUM CAPACITY OF WATER SUPPLY LINE TO TANK	DIAMETER OF OVERFLOW PIPE, "A"
0 - 50 gpm	2"
50 - 100 gpm	2 1/2"
100 - 200 gpm	3"
200 - 400 gpm	4"
400 - 700 gpm	5"
700 - 1000 gpm	6"
OVER 1000 gpm	8"

SCALE N.T.S.	ACCEPTABLE AIR GAP CONSTRUCTION	STANDARD DETAIL DRAWING NO. 23
DATE 03/96		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**

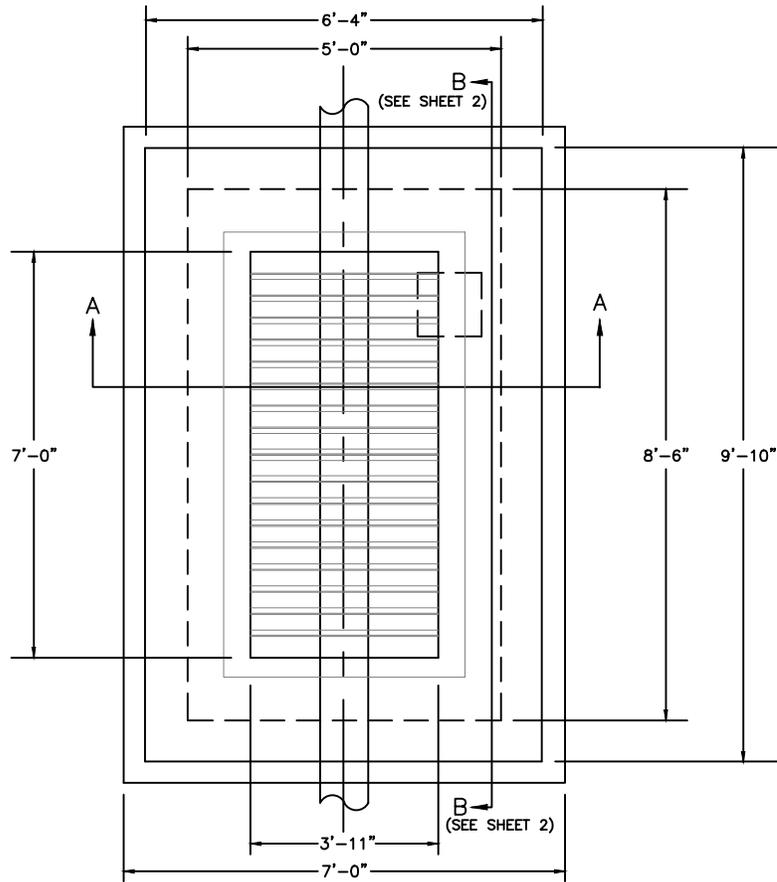


NOTE:

1. FKAA APPROVED PIPING FOR RESIDENTIAL IRRIGATION SYSTEM SERVED THROUGH DOMESTIC METER.
2. REFER TO FKAA MANUAL OF CROSS-CONNECTION CONTROL AND STANDARD DETAIL DRAWINGS No. 20 AND 21.

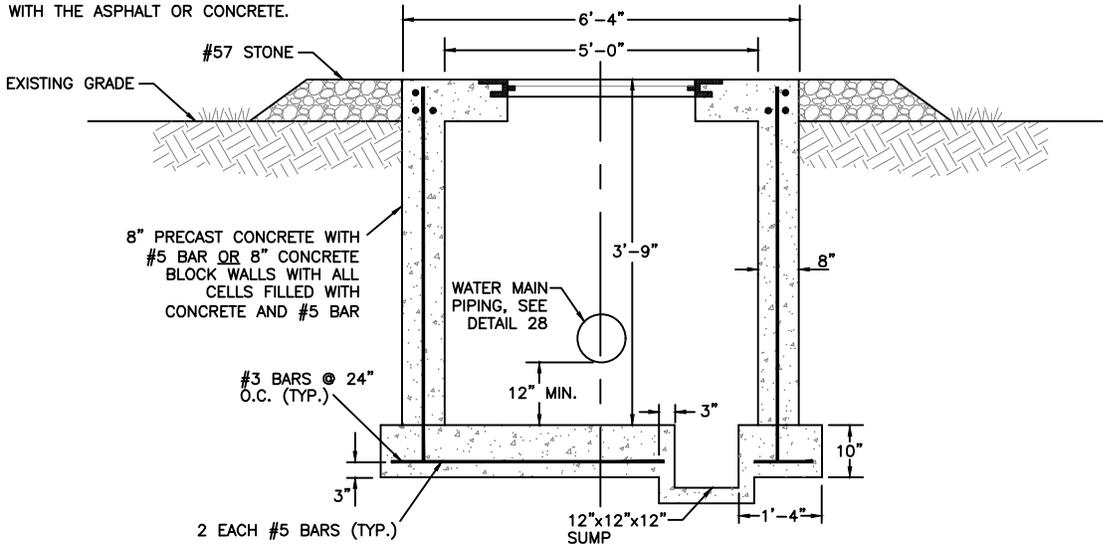
SCALE N.T.S.	IRRIGATION PIPING	STANDARD DETAIL DRAWING NO. 24
DATE 03/96		
REVISED 06/13		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



PLAN VIEW

NOTE:
 -IF THE VAULT IS LOCATED WITHIN A PAVED TRAVELWAY OR SIDEWALK, THE TOP OF THE VAULT MUST BE FLUSH WITH THE ASPHALT OR CONCRETE.



SECTION A-A

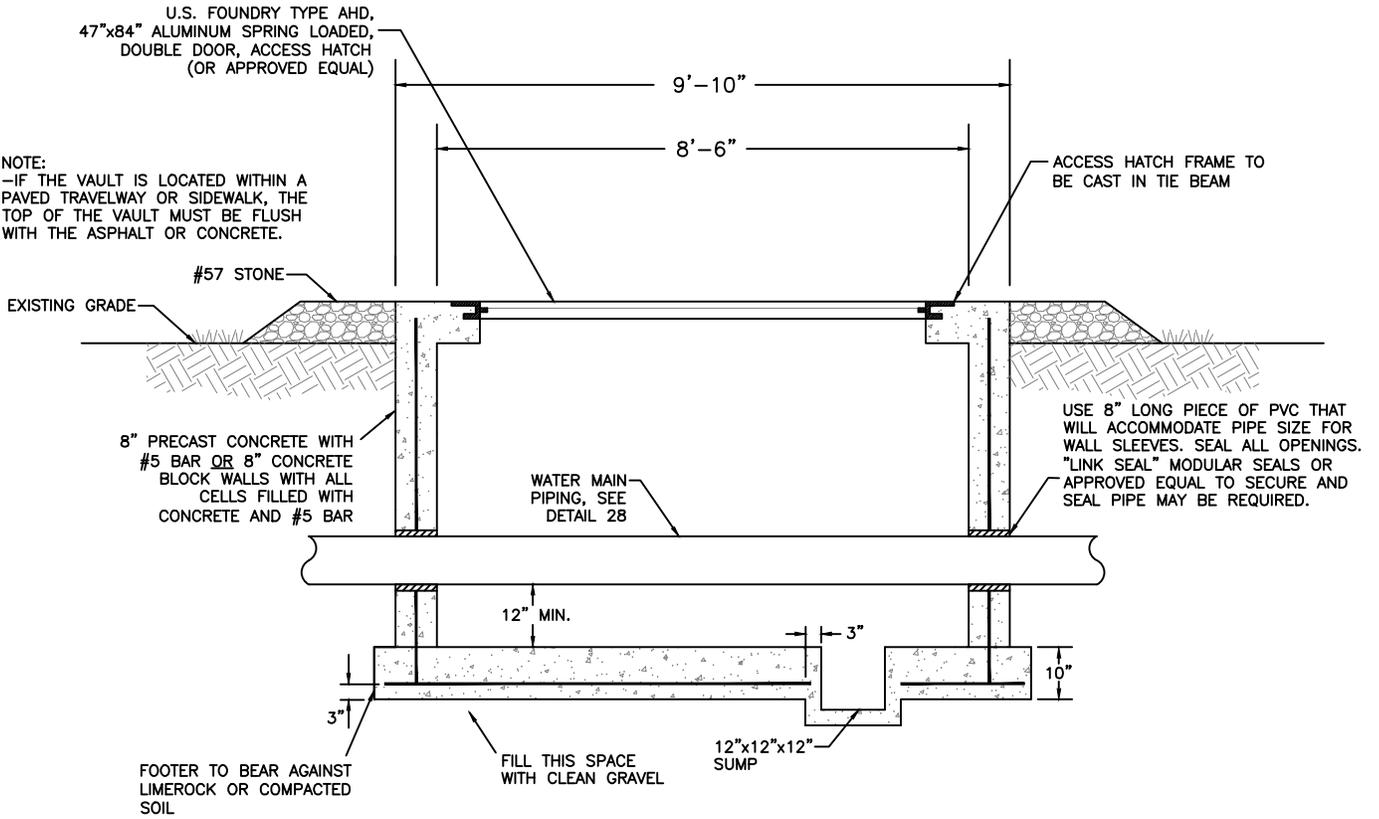
NOTES:
 1. REBAR AS SHOWN ARE MINIMUM REQUIRED. APPLICABLE VAULTS TO BE DESIGNED BY OTHERS.

SCALE N.T.S.	STANDARD MASTER METER VAULT	STANDARD DETAIL DRAWING NO. 26 (1 of 3)
DATE 03/96		
REVISED 05/22		

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

U.S. FOUNDRY TYPE AHD,
47"x84" ALUMINUM SPRING LOADED,
DOUBLE DOOR, ACCESS HATCH
(OR APPROVED EQUAL)

NOTE:
-IF THE VAULT IS LOCATED WITHIN A
PAVED TRAVELWAY OR SIDEWALK, THE
TOP OF THE VAULT MUST BE FLUSH
WITH THE ASPHALT OR CONCRETE.

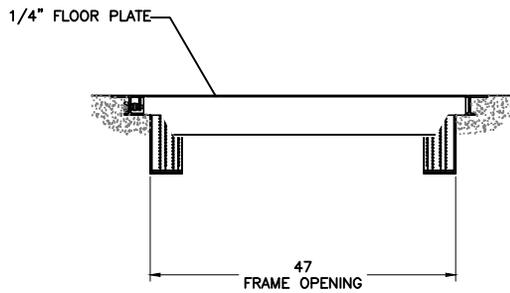
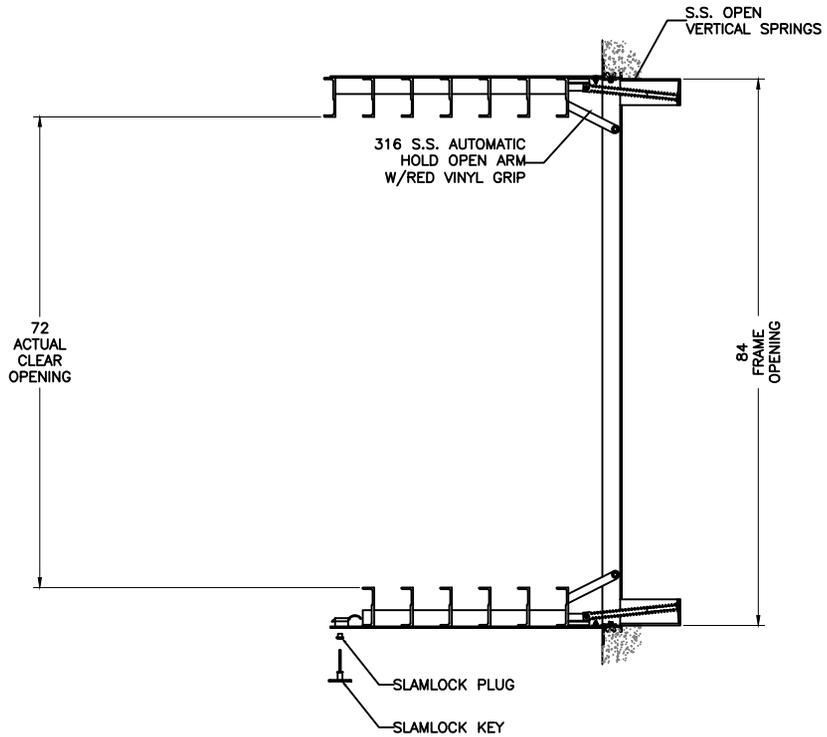
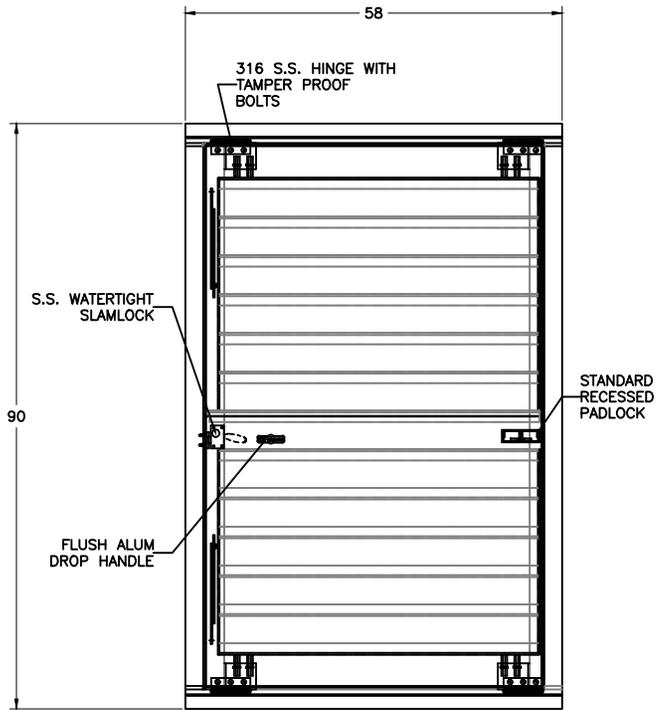


SECTION B-B

- NOTES:
1. REBAR AS SHOWN ARE MINIMUM REQUIRED. APPLICABLE VAULTS TO BE DESIGNED BY OTHERS.
 2. SOIL TO BE COMPACTED TO 95% DENSITY, AASHTO T-180 STANDARD.

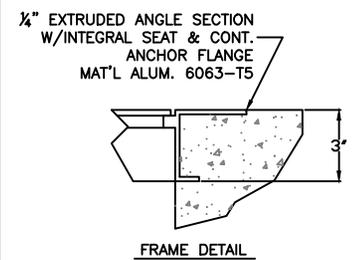
SCALE N.T.S.	STANDARD MASTER METER VAULT	STANDARD DETAIL DRAWING NO. 26 (2 of 3)
DATE 03/96		
REVISED 05/22		

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA



- SELECTED FEATURES**
1. OPEN VERTICAL SPRINGS
 2. SLAMLOCK
 3. STD. RECESSED PADLOCK
 4. BITUMINOUS COATING

- NOTES**
1. MATERIAL: ALUMINUM
 2. FINISH: MILL
 3. LOADING: DESIGNED FOR AASHTO H-20 WHEEL LOADS WITH MAX DEFL OF 1/150 OF THE SPAN DESIGNED FOR OCCASIONAL TRAFFIC ONLY.
 4. 316 SS NUTS & BOLTS
 5. AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING
 6. APPROX HATCH WT: 386.49 LBS



NOTE:
AS AN AUTOMATED DRAWING, THE DESIGN HAS NOT BEEN REVIEWED BY USFF ENGINEERING AND IS THEREFORE TO BE USED FOR REFERENCE ONLY. USFF RESERVES THE RIGHT TO ADJUST DIMENSIONS TO INSURE ADHERENCE TO CUSTOMER REQUIREMENTS AND PROPER OPERATION OF THE PRODUCT.

UNLESS OTHERWISE NOTED ON THIS DRAWING, CLEARANCE BETWEEN FRAME AND COVER(S) IS DESIGNED NOT TO EXCEED 3/8".

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INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M
BREAK ALL SHARP CORNERS & EDGES TO 0.01

TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL

<10' = ± 1/8
>10' = ± 1/4

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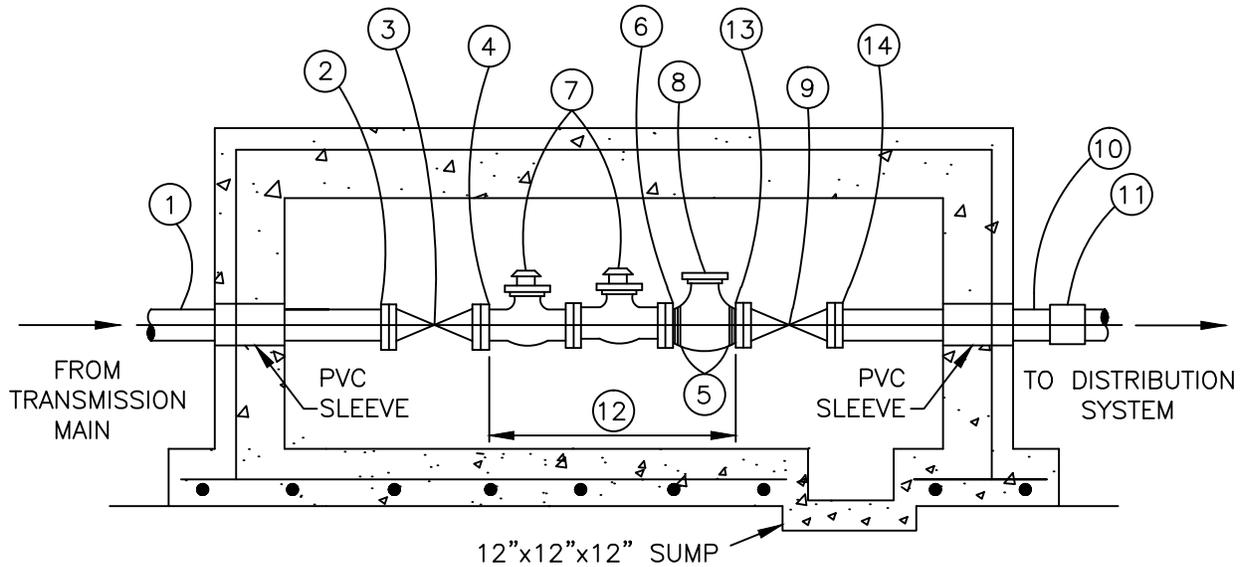
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SCALE	N.T.S.
DATE	05/22
REVISED	

FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA

STANDARD MASTER
METER VAULT

STANDARD DETAIL
DRAWING NO.
26 (3 of 3)



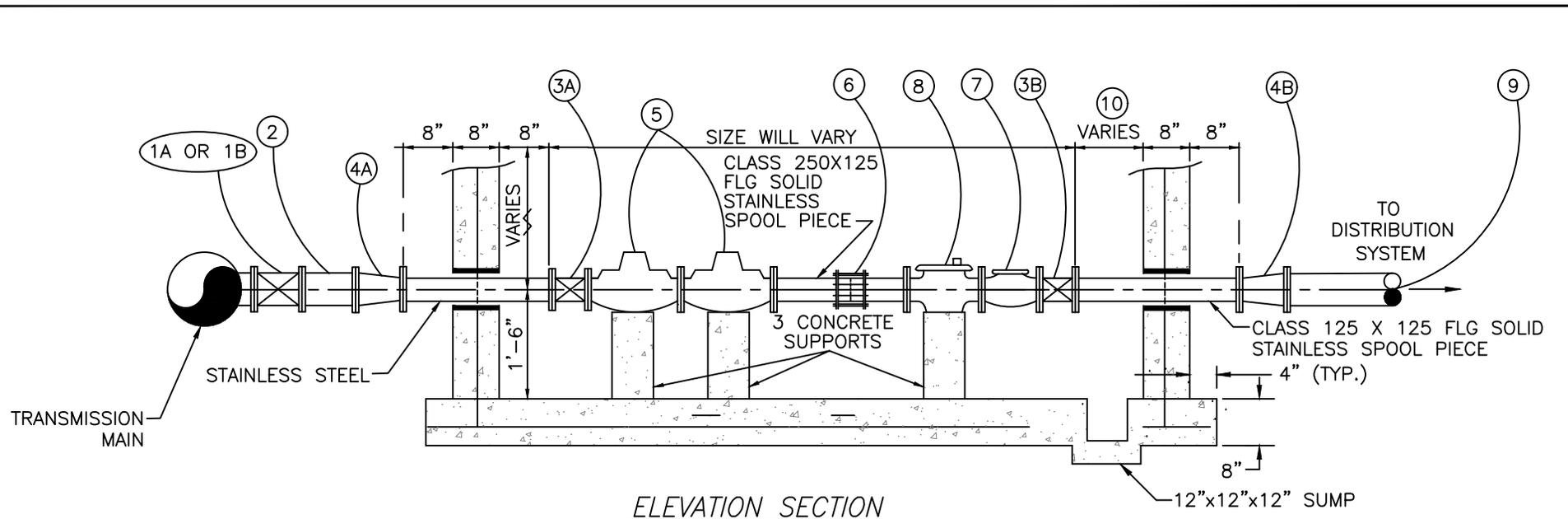
ELEVATION SECTION

1. 3" STAINLESS STEEL, SCHEDULE 80 WELDED
2. 3" WELDED CLASS 250 FLANGE
3. 3" GATE VALVE, 250 PSI
4. 3" BLIND FLANGE, CLASS 250, TAPPED FOR 2" PIPE
5. 2" MNPT STAINLESS STEEL SHORT NIPPLE, SCHEDULE 80
6. 2" BLIND FLANGE, CLASS 250, TAPPED FOR 2" PIPE.
FLANGE TO BE FORD CF-31-77-NL BRASS, NO LEAD.
7. 2" STAINLESS STEEL FLANGED CLA-VALVES
8. 2" FLANGED WATER METER (SUPPLIED BY FKA)
9. 3" GATE VALVE, 150 PSI
10. 3" STAINLESS STEEL, SCHEDULE 80 NIPPLE
11. 3" M.J.C.I. TRANSITION SLEEVE, AS REQUIRED
12. DISTANCE BETWEEN GATE VALVE FLANGES SHALL BE 58"
13. 3" BLIND FLANGE, CLASS 125, TAPPED FOR 2" PIPE
14. 3" WELDED CLASS 125 FLANGE

REFER TO STANDARD DETAIL DRAWING No. 26 FOR VAULT CONSTRUCTION.

SCALE N.T.S.	2" T10 - TRANSMISSION MASTER METER PIPING	STANDARD DETAIL DRAWING NO. 27
DATE 03/96		
REVISED 03/19		

**FLORIDA KEYS AQUEDUCT AUTHORITY
KEY WEST, FLORIDA**



- 1A. "STEEL TRANSMISSION PIPE SIZE" WELD O-LET X MINIMUM 6" GATE VALVE (CLASS 250) & BOX.
- 1B. "DUCTILE IRON TRANSMISSION PIPE SIZE" TAPPING SLEEVE X MINIMUM 6" GATE VALVE (CLASS 250) & BOX.
2. 6" STAINLESS STEEL FLANGED SPOOL PIECE OR W/STAINLESS STEEL BENDS AS REQUIRED (CLASS 250).
- 3A. 4" GATE VALVE (CLASS 250) AND BOX. IF NEEDED, VALVE CAN BE LOCATED OUTSIDE OF VAULT. ADJUST VALVE SIZE ACCORDINGLY.
- 3B. 4" GATE VALVE (CLASS 125) AND BOX. IF NEEDED, VALVE CAN BE LOCATED OUTSIDE OF VAULT. ADJUST VALVE SIZE ACCORDINGLY.
- 4A. 6"x4", 6"x3" OR 6"x2" REDUCER (CLASS 250).
- 4B. 6"x4", 6"x3" OR 6"x2" REDUCER (CLASS 125).
5. 6", 4", 3" OR 2" CLA-VAL (MODEL #590G-01 BDSY TT SSB 300 FG) STAINLESS STEEL PRESSURE REDUCING VALVES (CLASS 300).
6. 6", 4", 3" OR 2" ROCKWELL DRESSER COUPLING #411-FUSION BONDED EPOXY & EPDM GASKETS.
STAINLESS STEEL SPOOL PIECE MINIMUM OF 4 PIPE DIAMETERS OF STRAIGHT RUN PIPE UPSTREAM OF THE METER STRAINER.
7. 6", 4", 3" OR 2" NEPTUNE STRAINER (CLASS 125).
8. 6", 4", 3" OR 2" NEPTUNE MACH 10 ULTRASONIC WATER METER OR APPROVED EQUAL
9. TRANSITION FROM STAINLESS STEEL TO C-900 ON DOWNSTREAM SIDE WILL NEED AN MJ COUPLING, MEGALUGS AND WELDED RESTRAINTS ON THE STAINLESS PIPE.
10. STAINLESS STEEL SPOOL PIECE MINIMUM OF 4 PIPE DIAMETERS OF STRAIGHT RUN PIPE DOWNSTREAM OF THE METER.

REFER TO STANDARD DETAIL DRAWING No. 26 FOR VAULT CONSTRUCTION.

SCALE N.T.S.	FLORIDA KEYS AQUEDUCT AUTHORITY KEY WEST, FLORIDA	2" TURBO & LARGER - TRANSMISSION MASTER METER PIPING	STANDARD DETAIL DRAWING NO. 28
DATE 03/19			
REVISED 05/22			