Fauquier County Water and Sanitation Authority

7172 Kennedy Road

Warrenton, Virginia 20187

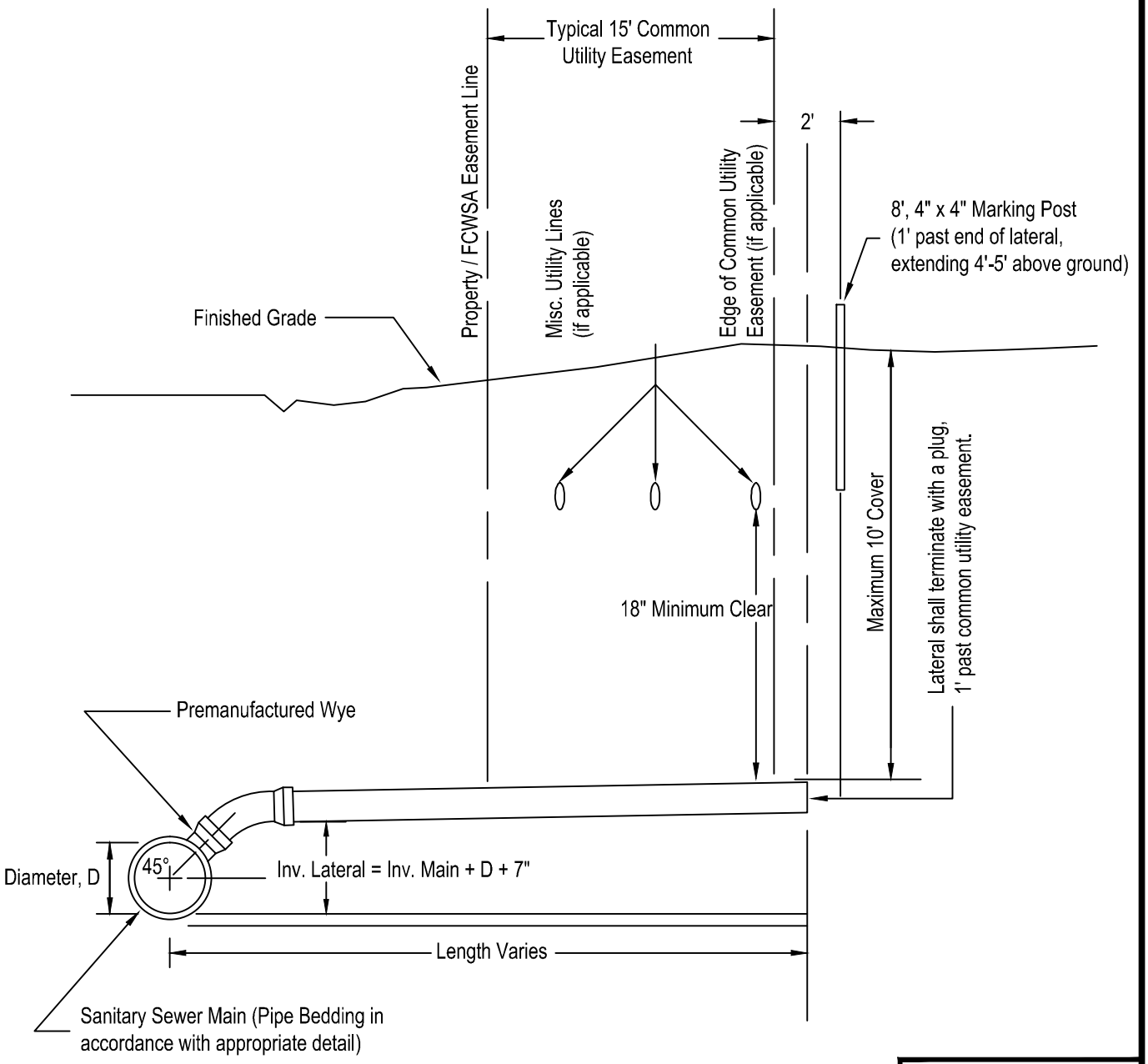
Standard Details

Part 2

February 2015

Notes:

1) The entire length of lateral shall be bedded in accordance with the appropriate FCWSA Detail for the pipe material used.
2) An appropriate riser shall be used where maximum depth requirement cannot be met (see Detail for Sanitary Sewer Service Lateral Connection with Vertical Bends).
3) Minimum slope for 4" laterals shall be 2.08%.
4) Minimum slope for 6" laterals shall be 1.00%.
4) Maximum slope shall be 4.16% for any lateral.
5) A 3M Brand, Full Range Sewer Marker, shall be located along the main at the point of connection for each lateral and at the terminal point of the lateral.
6) If no common utility easement is present then end of lateral and marker post shall be located relative to the property/easement line.



SC-08

Fauquier County
Water and Sanitation Authority

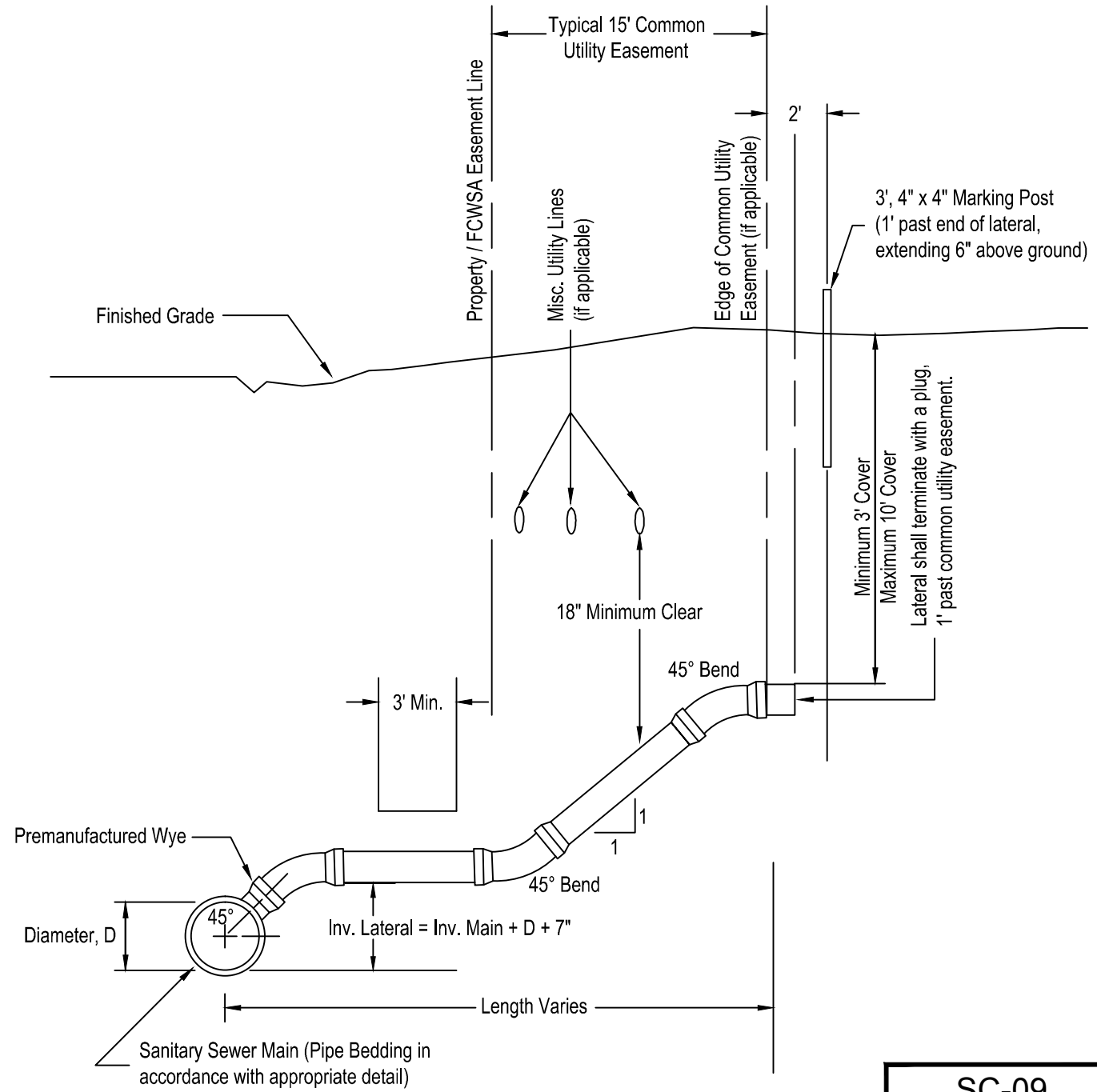
Standard Sanitary Sewer Service Lateral Connection

Not to Scale

Revised: 03/31/05

Notes:

1) The entire length of lateral shall be bedded in accordance with the appropriate FCWSA Detail for the pipe material used.
2) Minimum slope for 4" laterals shall be 2.08%.
3) Minimum slope for 6" laterals shall be 1.00%.
4) Riser slope shall be 1:1.
5) Maximum slope shall be 4.16% for any lateral.
6) A 3M Brand, Full Range Sewer Marker, shall be located along the main at the point of connection for each lateral, at each vertical bend and at the terminal point of the lateral.
7) The first vertical bend of the riser shall be located at the FCWSA utility easement line or a minimum of 5' from the main, whichever is greater.
8) If no common utility easement is present then the first vertical bend of the riser shall be located minimum 5' from the main.



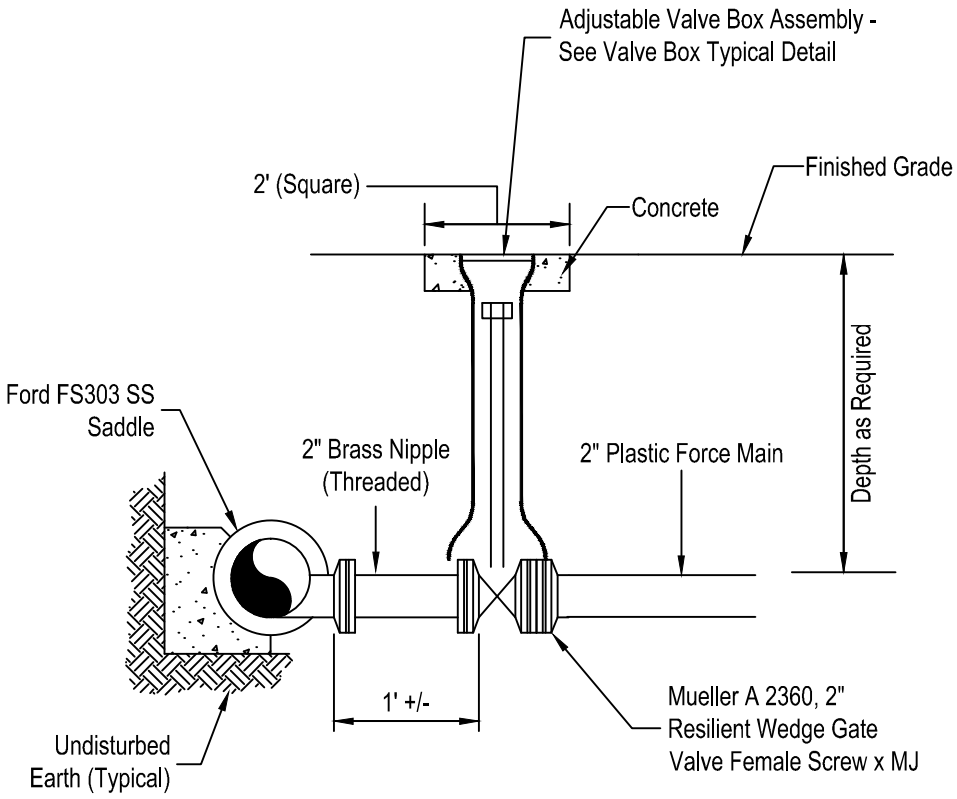
SC-09

Fauquier County
Water and Sanitation Authority

Sanitary Sewer Service
Lateral Connection with Riser

Not to Scale

Revised: 03/31/05



Notes:

1) All methods and materials shall be in conformance with the FCWSA Utility Standards Manual (USM).
2) The 2" gate valve shall be installed with concrete support block in accordance with the appropriate detail form the USM.
3) Mechanical joint restraining glands shall be EBBA Iron Mega Lug or approved equal.
4) Force main connections may only be made with the specific approval of the General Manager.
5) All pipe shall be bedded in accordance with the appropriate FCWSA Pipe Embedment Deatail.

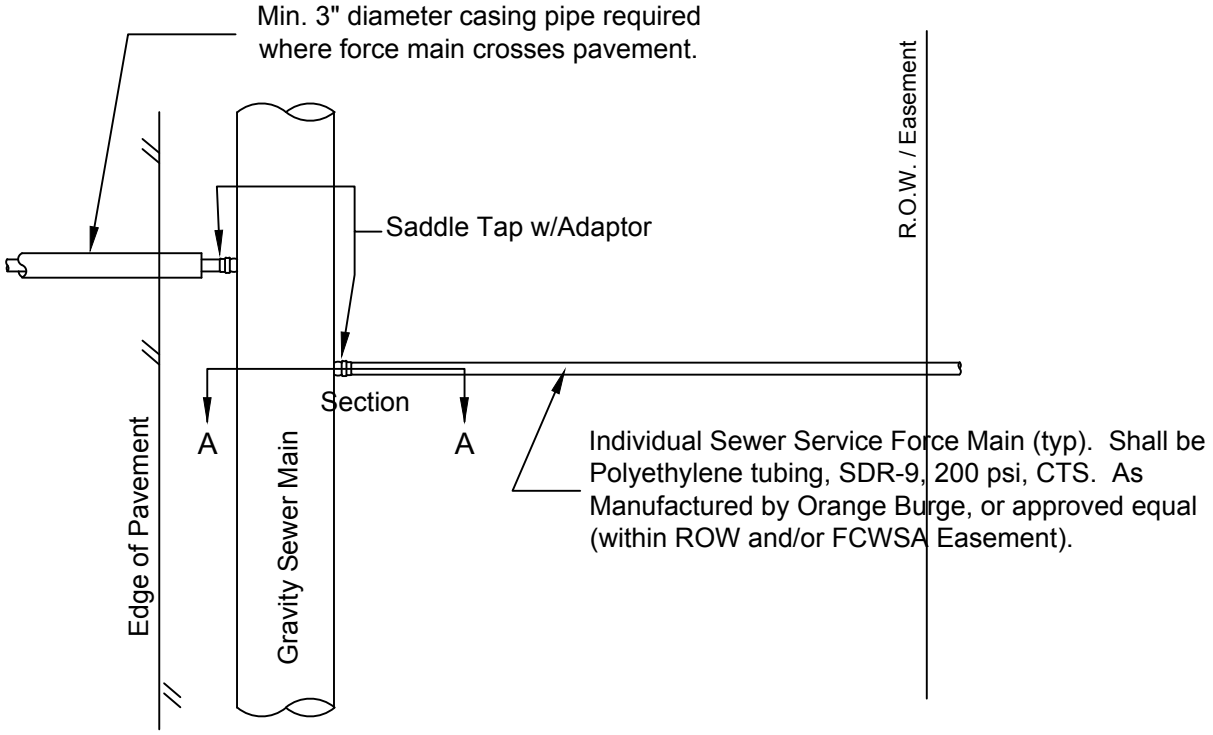
SC-10

Fauquier County
Water and Sanitation Authority

Sewage Force Main
2" Connection

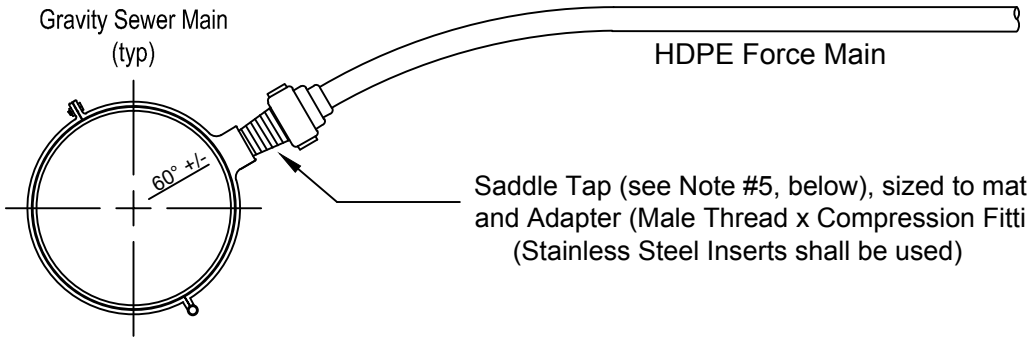
Not to Scale

Revised: 03/31/05



Typical Private Force Main Connection
(NTS)

Section A - A
(NTS)



Notes:

1) A Casing Pipe (min. 3" diameter) shall be used wherever a force main crosses a public road and/or sidewalk.
2) All portions of any force main located within a public ROW and/or FCWSA Utility Easement(s) shall meet FCWSA Materials Specifications.
3) 14 GA Insulated Copper tracer wire and marker tape shall follow the HDPE Force Main route.
4) A 3M Full range Sewer Marker (green) shall be placed above the connection point during backfill.
5) For SCH 40 and SDR21 - SDR 35 Mains, use Gennco Saddle. For Clay and DIP Mains use Standard FP Saddle Tap.

SC-11

Fauquier County
Water and Sanitation Authority

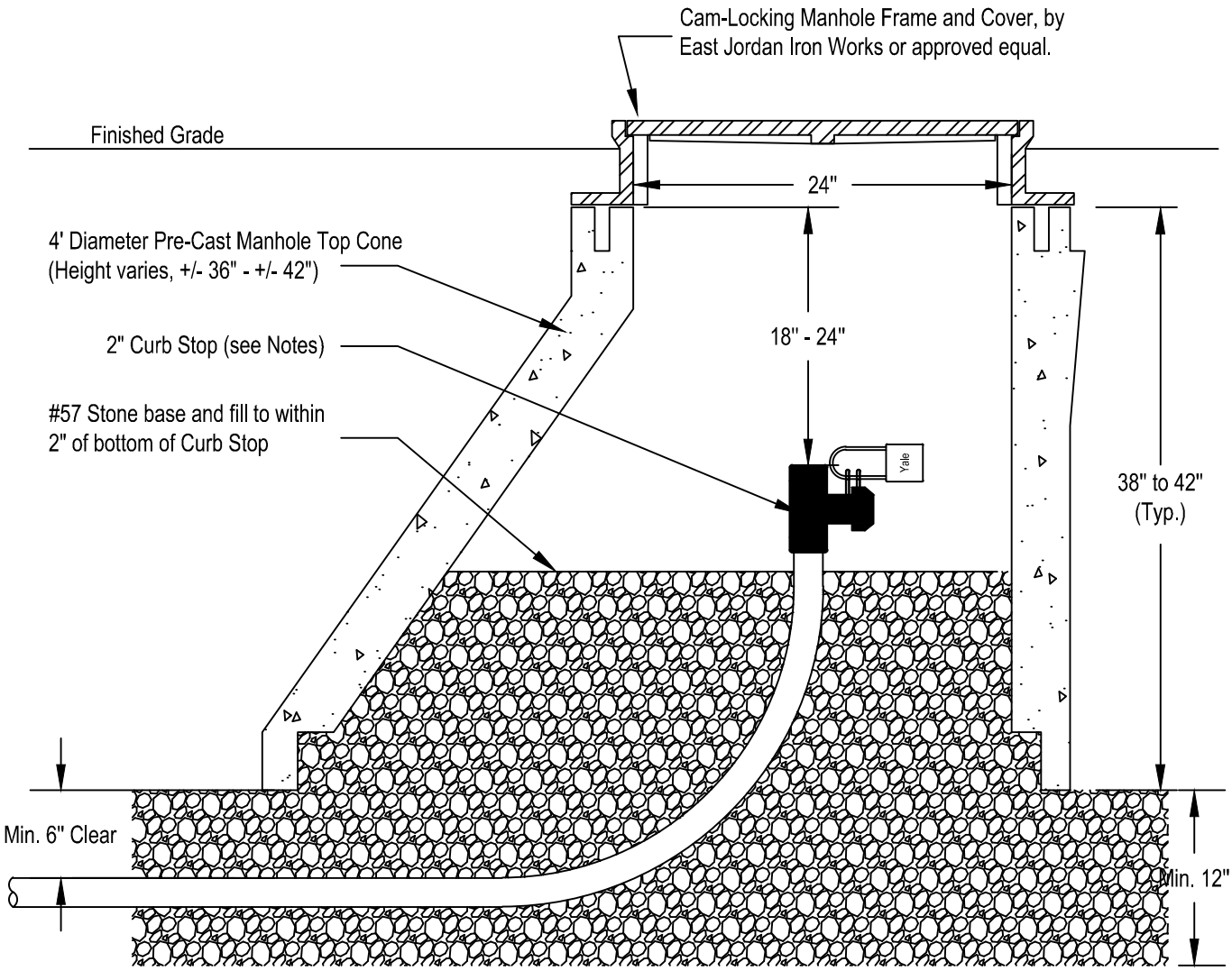
Small Diameter Sewage Force Main Service Connection to Gravity Sewer

Not to Scale

Revised: 05/07/09

Notes:

1) This Standard Detail shall be used for constructing the upstream terminus of any/all Sewage Force Mains constructed of HDPE pipe material which are 2" and smaller in diameter and which are to be owned and maintained by the Authority.
2) Manhole Cone-Section shall meet the current requirements of ASTM Specification C-476.
3) Concrete to be 4000 psi minimum compressive strength.
4) All reinforcing steel shall meet the current requirements of ASTM Specification A-615.
5) Manhole Frame and Cover shall be sealed to top of Cone with 301 Mastic and Bolted Down (Min. 4 Bolts).
6) 2" Curb Stop shall be Ball Type, compression fittings, by Ford or approved equal; shall be equipped with padlock wings.
7) Stainless Steel Inserts shall be used on HDPE Pipe at all fittings.



SC-12

Fauquier County
Water and Sanitation Authority

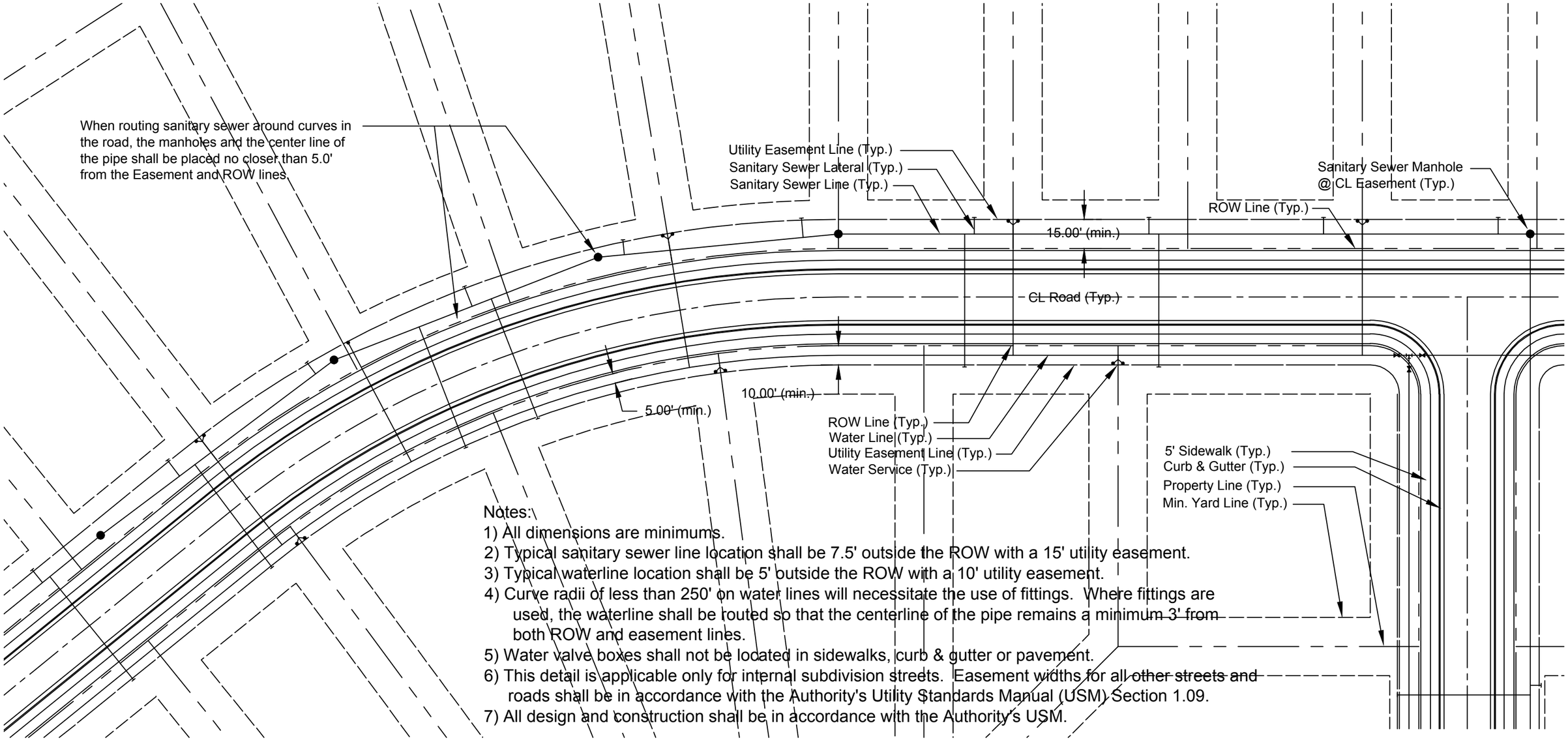
Termination for Dead-End Runs of HDPE Force Main (2" and Smaller)

Not to Scale

Adopted: 04/29/09

FCWSA Utility Location & Easement Layout Detail (UL-01)

Showing Typical Water & Sewer Utility Locations and Minimum Easement Widths along Internal Subdivision Streets
in R-2 Conventional Subdivisions & other Subdivisions with lots sized 20,000 SF or greater



Notes:
1) All dimensions are minimums.
2) Typical sanitary sewer line location shall be 7.5' outside the ROW with a 15' utility easement.
3) Typical waterline location shall be 5' outside the ROW with a 10' utility easement.
4) Curve radii of less than 250' on water lines will necessitate the use of fittings. Where fittings are used, the waterline shall be routed so that the centerline of the pipe remains a minimum 3' from both ROW and easement lines.
5) Water valve boxes shall not be located in sidewalks, curb & gutter or pavement.
6) This detail is applicable only for internal subdivision streets. Easement widths for all other streets and roads shall be in accordance with the Authority's Utility Standards Manual (USM) Section 1.09.
7) All design and construction shall be in accordance with the Authority's USM.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UL-01

Fauquier County
Water and Sanitation Authority

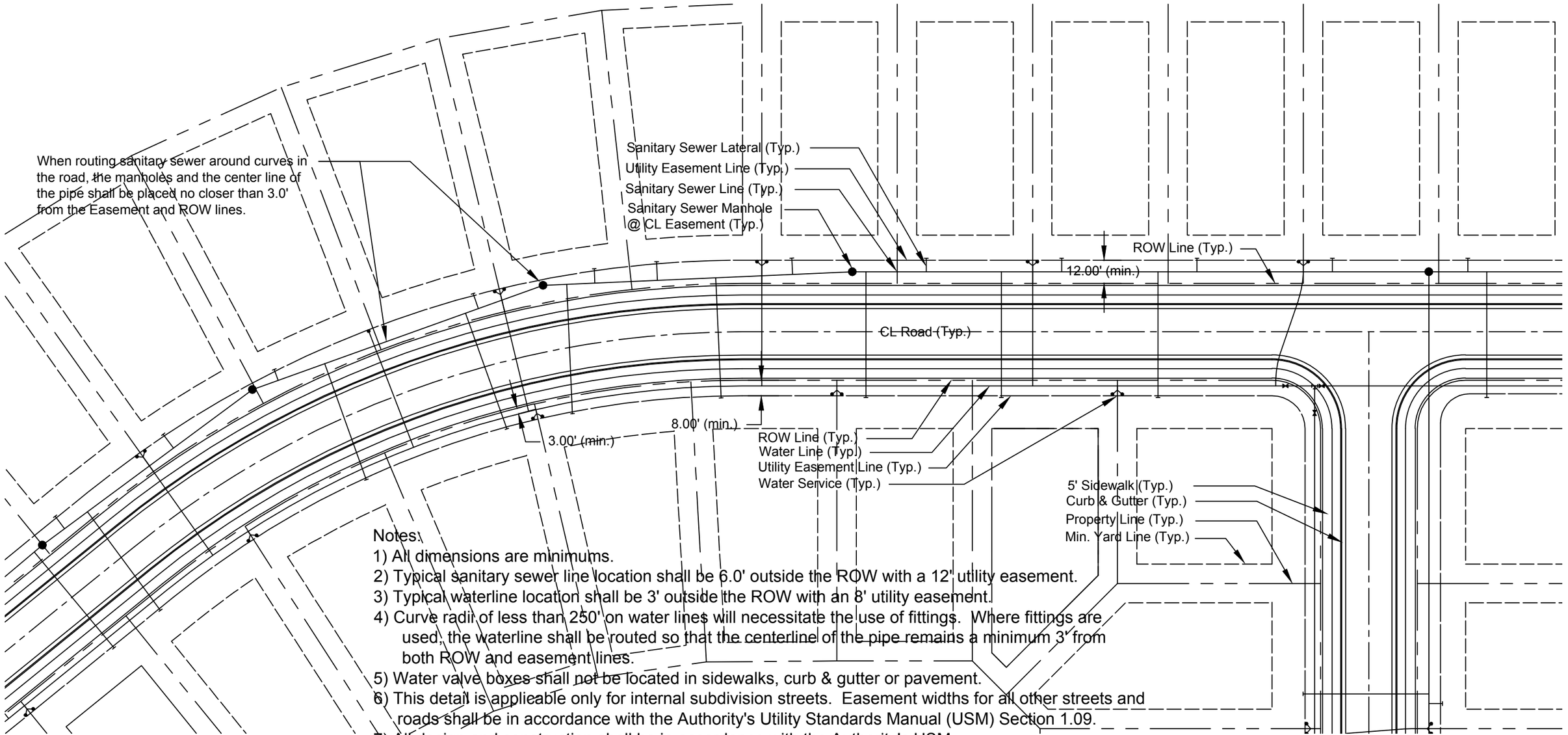
Utility Location & Easement Layout
R-2 Conventional & Larger Lot Subdivisions

Scale: 1" = 50'

03/05/07

FCWSA Utility Location & Easement Layout Detail (UL-02)

Showing Typical Water & Sewer Utility Locations and Minimum Easement Widths along Internal Subdivision Streets
in R-3 Conventional, R-4 Conventional and R-2 Cluster Subdivisions with Single Family Dwellings



Notes:

1) All dimensions are minimums.
2) Typical sanitary sewer line location shall be 6.0' outside the ROW with a 12' utility easement.
3) Typical waterline location shall be 3' outside the ROW with an 8' utility easement.
4) Curve radii of less than 250' on water lines will necessitate the use of fittings. Where fittings are used, the waterline shall be routed so that the centerline of the pipe remains a minimum 3' from both ROW and easement lines.
5) Water valve boxes shall not be located in sidewalks, curb & gutter or pavement.
6) This detail is applicable only for internal subdivision streets. Easement widths for all other streets and roads shall be in accordance with the Authority's Utility Standards Manual (USM) Section 1.09.
7) All design and construction shall be in accordance with the Authority's USM.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UL-02

Fauquier County
Water and Sanitation Authority

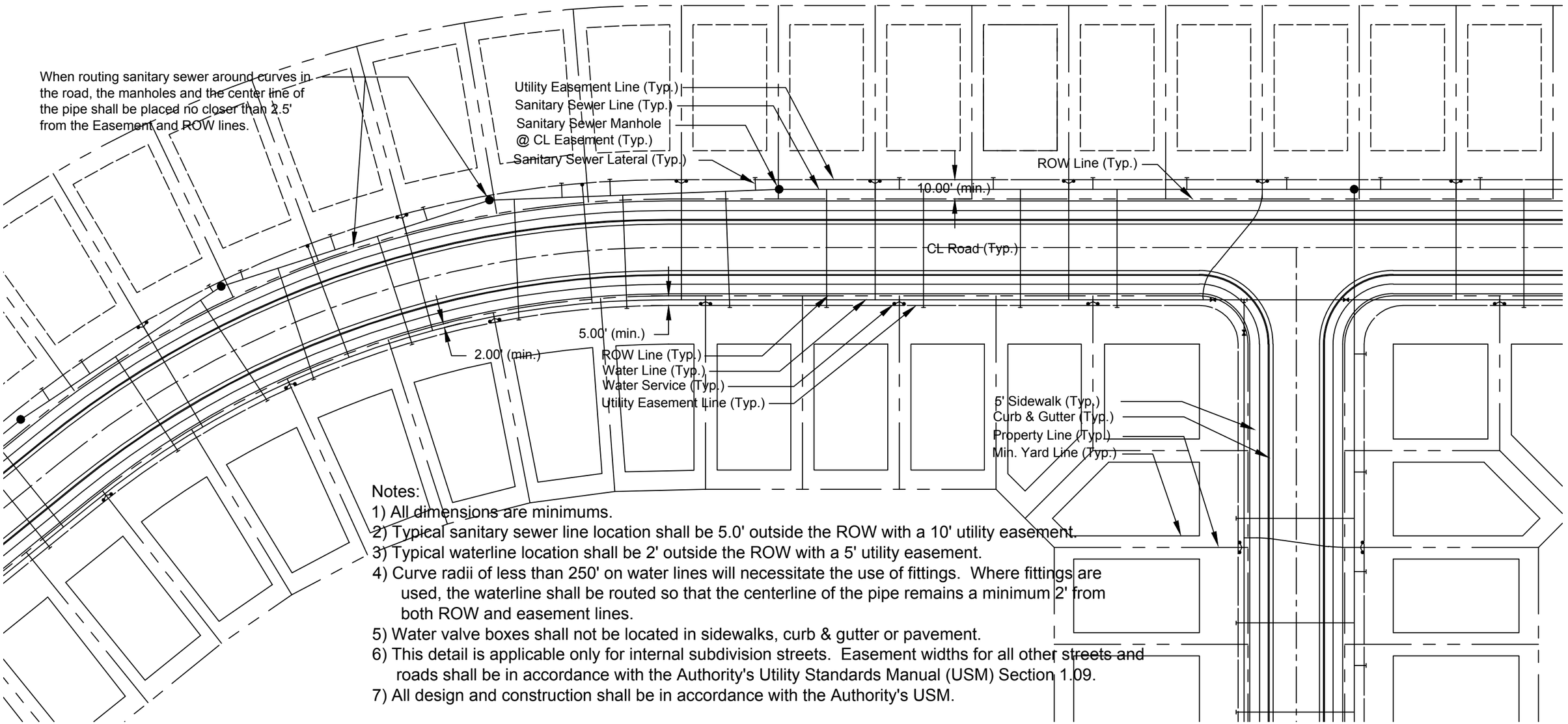
Utility Location & Easement Layout
R-3 & R-4 Conventional and R-2 Cluster Subdivisions

Scale: 1" = 50'

03/05/07

FCWSA Utility Location & Easement Layout Detail (UL-03)

Showing Typical Water & Sewer Utility Locations and Minimum Easement Widths along Internal Subdivision Streets
in R-3 Cluster and R-4 Cluster Subdivisions with Single Family Dwellings



Notes:

1) All dimensions are minimums.
2) Typical sanitary sewer line location shall be 5.0' outside the ROW with a 10' utility easement.
3) Typical waterline location shall be 2' outside the ROW with a 5' utility easement.
4) Curve radii of less than 250' on water lines will necessitate the use of fittings. Where fittings are used, the waterline shall be routed so that the centerline of the pipe remains a minimum 2' from both ROW and easement lines.
5) Water valve boxes shall not be located in sidewalks, curb & gutter or pavement.
6) This detail is applicable only for internal subdivision streets. Easement widths for all other streets and roads shall be in accordance with the Authority's Utility Standards Manual (USM) Section 1.09.
7) All design and construction shall be in accordance with the Authority's USM.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UL-03

Fauquier County
Water and Sanitation Authority

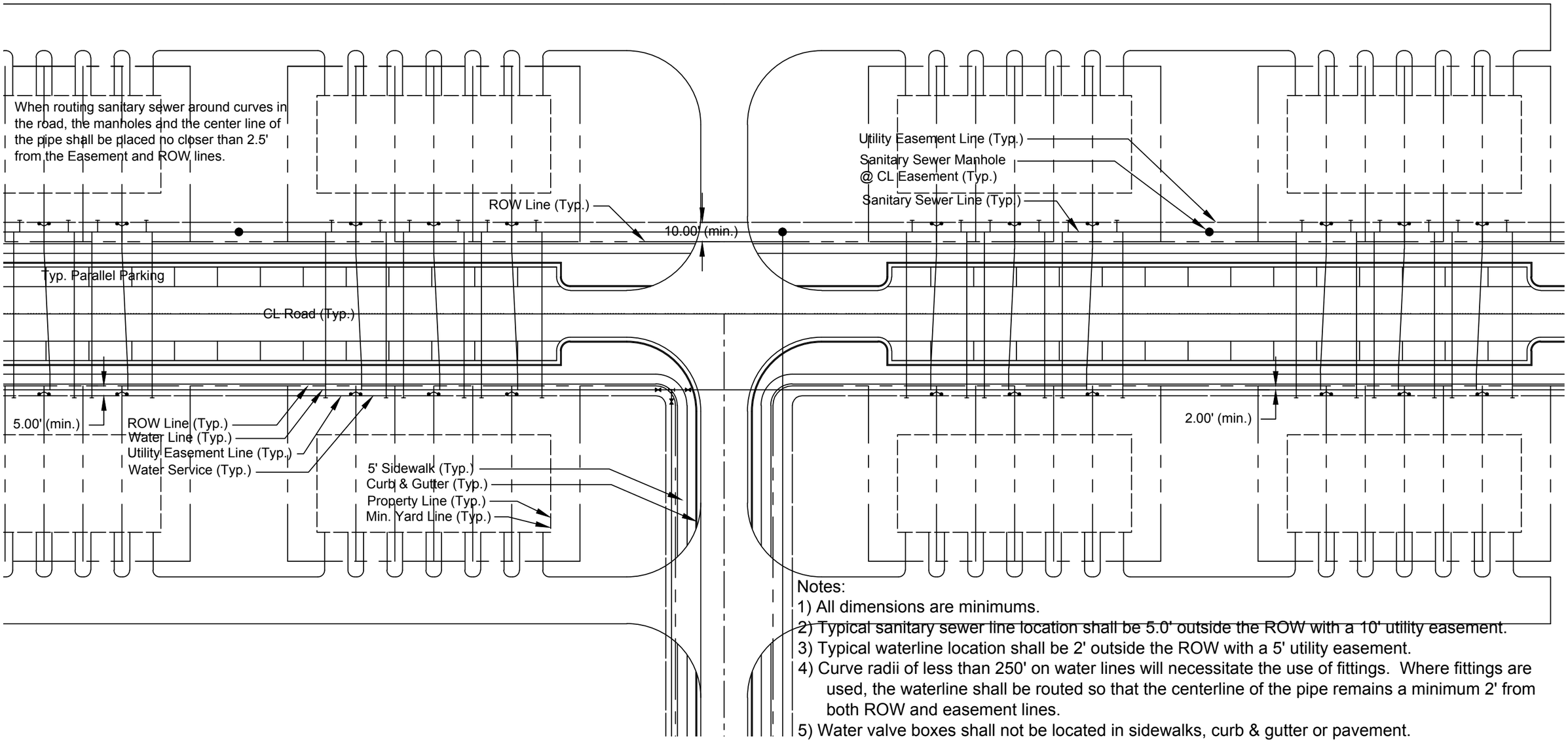
Utility Location & Easement Layout
R-3 & R-4 Cluster Subdivisions

Scale: 1" = 50'

03/05/07

FCWSA Utility Location & Easement Layout Detail (UL-04)

Showing Typical Water & Sewer Utility Locations and Minimum Easement Widths along Internal Streets
in Townhouse Subdivisions with units fronting on Public Roads with parallel parking.



Notes:

1) All dimensions are minimums.
2) Typical sanitary sewer line location shall be 5.0' outside the ROW with a 10' utility easement.
3) Typical waterline location shall be 2' outside the ROW with a 5' utility easement.
4) Curve radii of less than 250' on water lines will necessitate the use of fittings. Where fittings are used, the waterline shall be routed so that the centerline of the pipe remains a minimum 2' from both ROW and easement lines.
5) Water valve boxes shall not be located in sidewalks, curb & gutter or pavement.
6) This detail is applicable only for internal subdivision streets. Easement widths for all other streets and roads shall be in accordance with the Authority's Utility Standards Manual (USM) Section 1.09.
7) All design and construction shall be in accordance with the Authority's USM.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UL-04

Fauquier County
Water and Sanitation Authority

Utility Location & Easement Layout
Townhouse Subdivisions on Public Roads

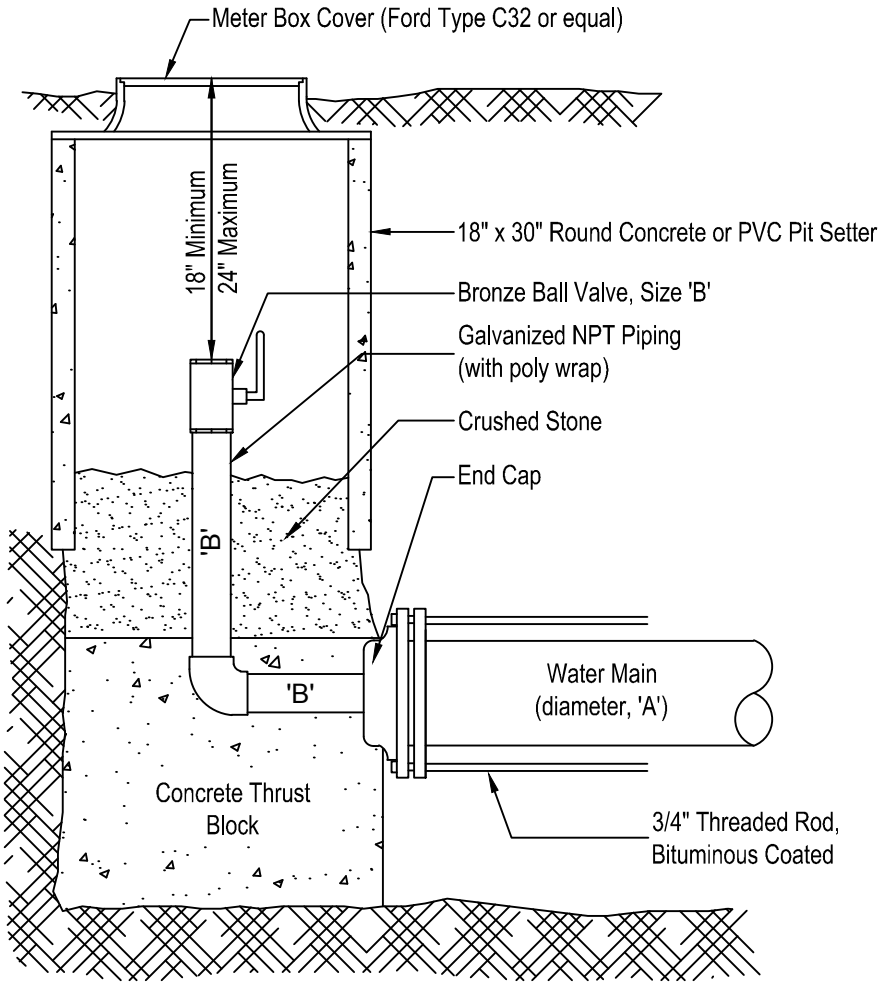
Scale: 1" = 50'

03/05/07

Notes:

1) This blow-off is for use only in areas where the water main is above the seasonal high groundwater level.
2) A customized detail must be designed and submitted to the Authority for use in areas subject to flooding or where the water main is below the seasonal high groundwater level.
3) Table of Sizes:

Water Main Diameter 'A'	Ball Valve & Piping Size 'B'
6" or Less	2"
8" to 15"	4"
Greater than 15"	As Determined by FCWSA Engineer



WD-01

Fauquier County
Water and Sanitation Authority

Water Distribution System
Blow-Off Detail

Not to Scale

Revised: 03/31/05

Fauquier County
Water and Sanitation Authority

Water Distribution System
Flushing Valve Detail

Not to Scale

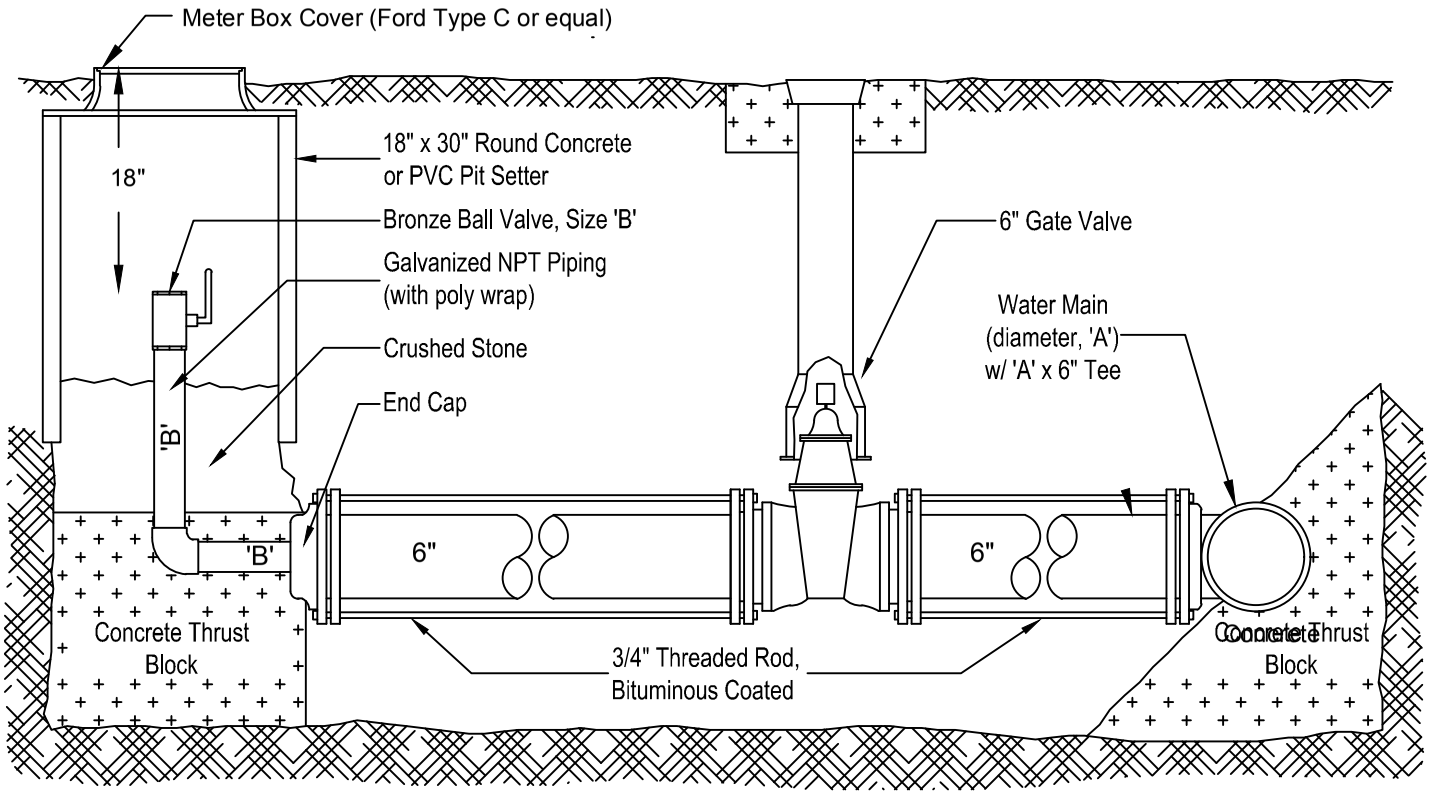
Revised: 03/31/05

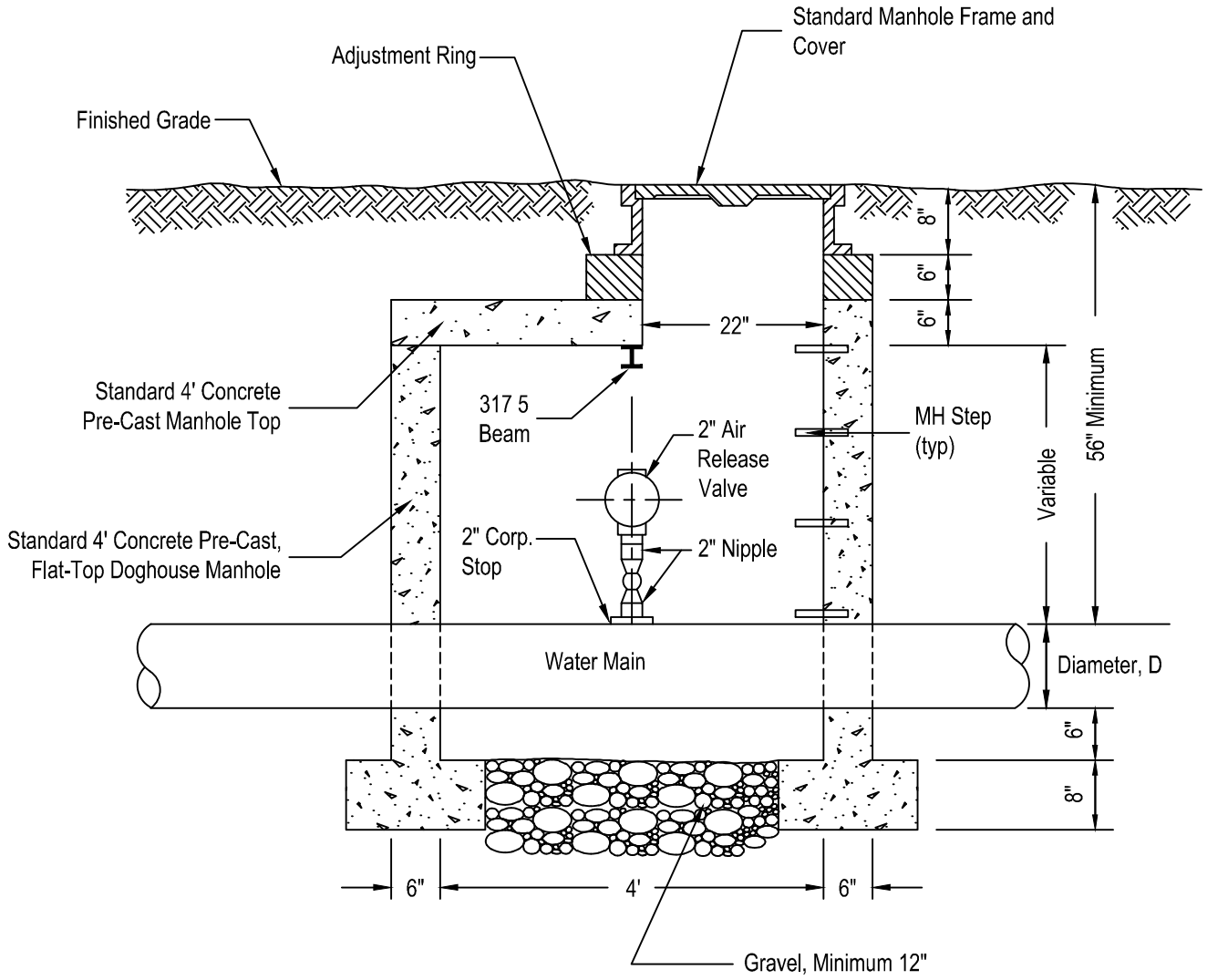
WD-02

Notes:

1) This blow-off is for use only in areas where the water main is above the seasonal high groundwater level.
2) A customized detail must be designed and submitted to the Authority for use in areas subject to flooding or where the water main is below the seasonal high groundwater level.
3) Table of Sizes:

Water Main Diameter 'A'	Ball Valve & Piping Size 'B'
6" or Less	2"
8" to 15"	4"
Greater than 15"	As Determined by FCWSA Engineer





Notes:

1) This blow-off is for use only in areas where the water main is above the seasonal high groundwater level.
2) A customized detail must be designed and submitted to the Authority for use in areas subject to flooding or where the water main is below the seasonal high groundwater level.
3) Air release valve shall be Simplex Type "AV", "Crispin Universal", or approved equal.
4) Air release valve shall have a 2" diamter screwed connection.
5) Air release valve shall operate at working pressures of 150 psi or actual working pressure, whichever is greater.

WD-03

Fauquier County
Water and Sanitation Authority

Water Distribution System
Air Release Valve

Not to Scale

Revised: 03/31/05

Fauquier County
Water and Sanitation Authority

Not to Scale

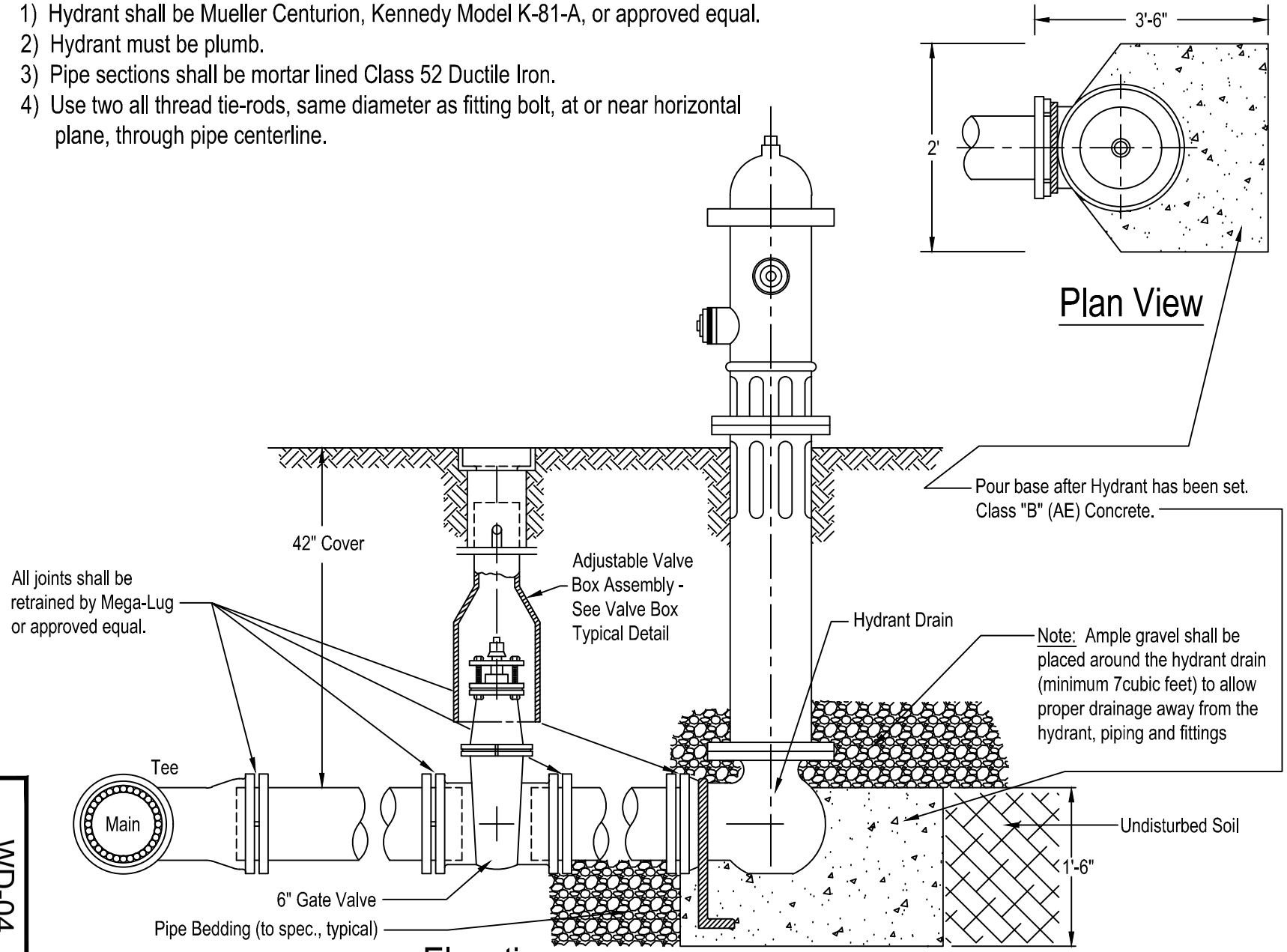
Water Distribution System
Typical Fire Hydrant

Revised: 03/31/05

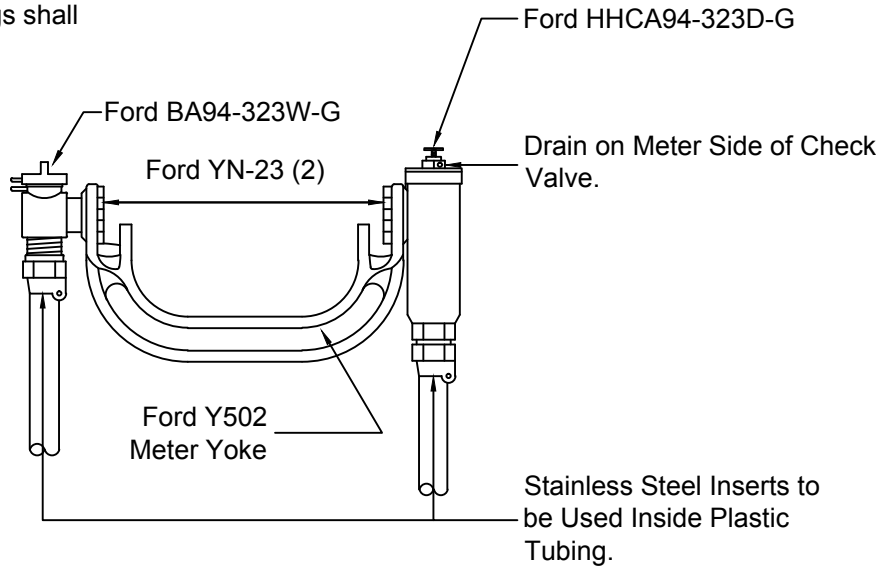
WD-04

Notes:

1) Hydrant shall be Mueller Centurion, Kennedy Model K-81-A, or approved equal.
2) Hydrant must be plumb.
3) Pipe sections shall be mortar lined Class 52 Ductile Iron.
4) Use two all thread tie-rods, same diameter as fitting bolt, at or near horizontal plane, through pipe centerline.

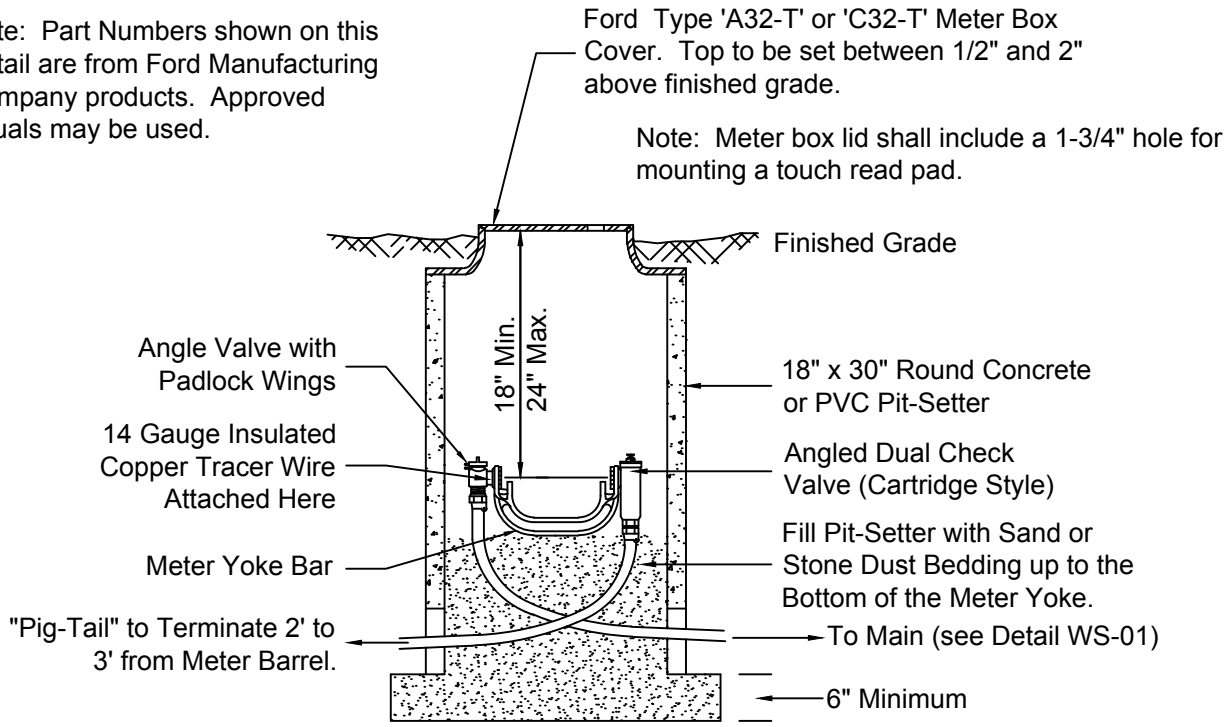


Note: ALL compression fittings shall include grip joints.



Meter Yoke Detail

Note: Part Numbers shown on this Detail are from Ford Manufacturing Company products. Approved equals may be used.



Meter Box Detail

for 5/8" x 3/4" Water Meter

Note: See Standard Detail WS-01 for service connection requirements.

WM-01

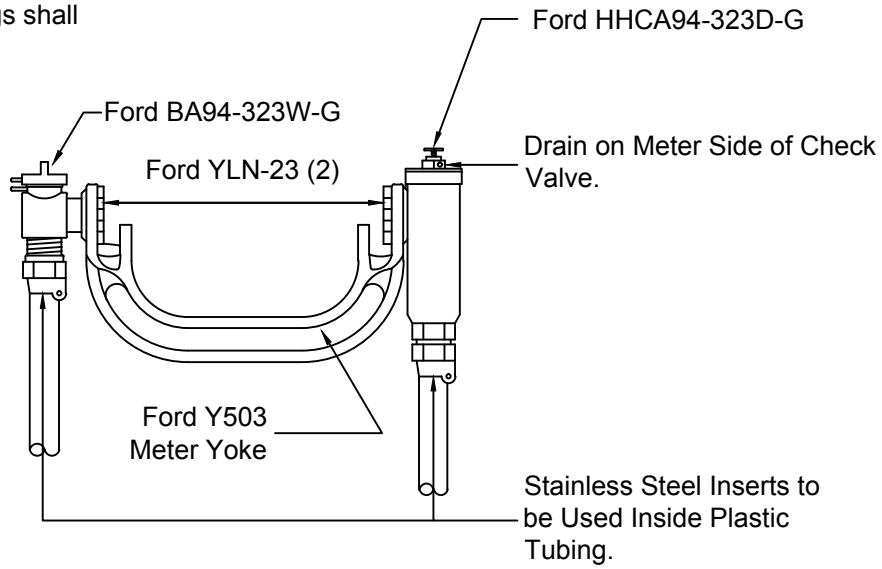
Fauquier County
Water and Sanitation Authority

Standard 5/8" x 3/4" Water Meter Box & Fittings

Not to Scale

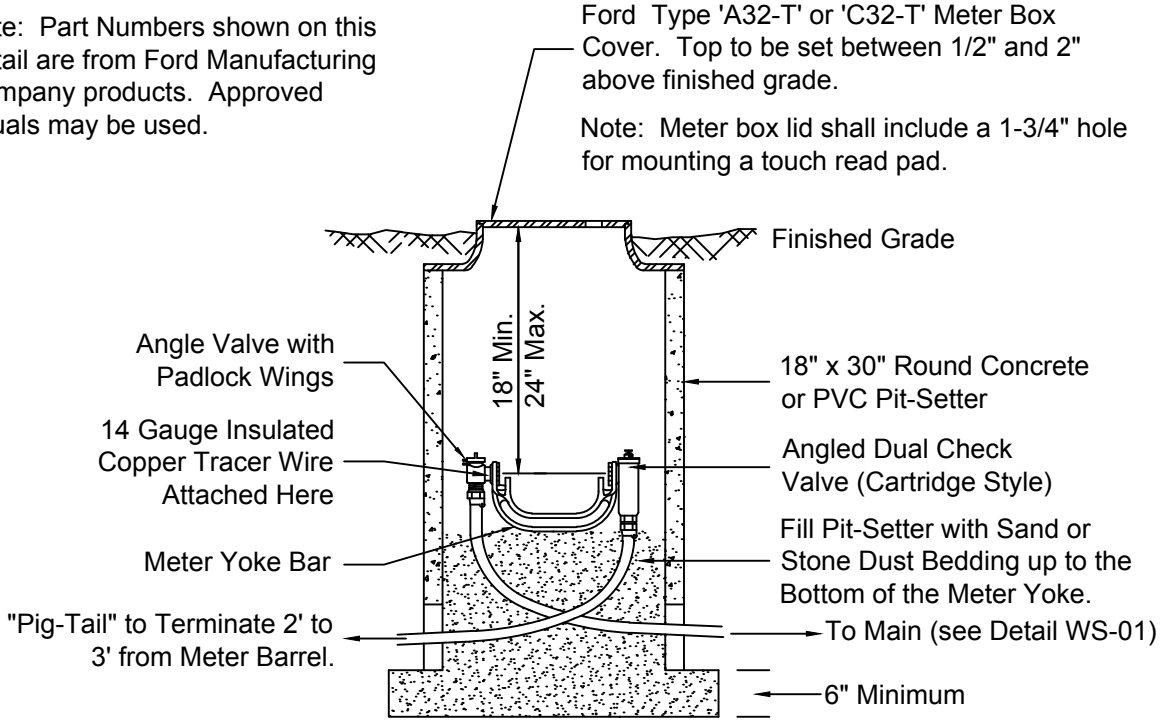
Revised: 06/11/09

Note: ALL compression fittings shall include grip joints.



Meter Yoke Detail

Note: Part Numbers shown on this Detail are from Ford Manufacturing Company products. Approved equals may be used.



Meter Box Detail

for Full 3/4" Water Meter

Note: See Standard Detail WS-01 for service connection requirements.

WM-02

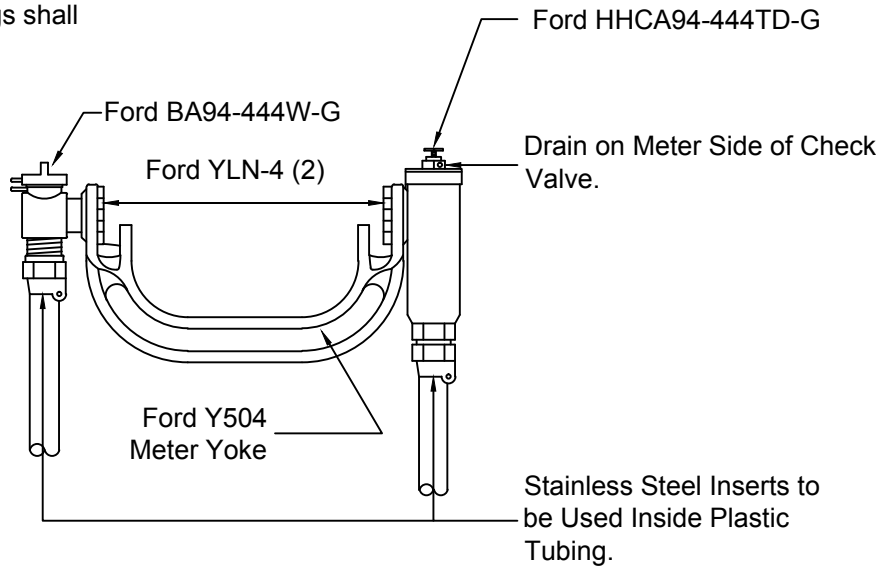
Fauquier County
Water and Sanitation Authority

Standard Full 3/4" Water Meter Box & Fittings

Not to Scale

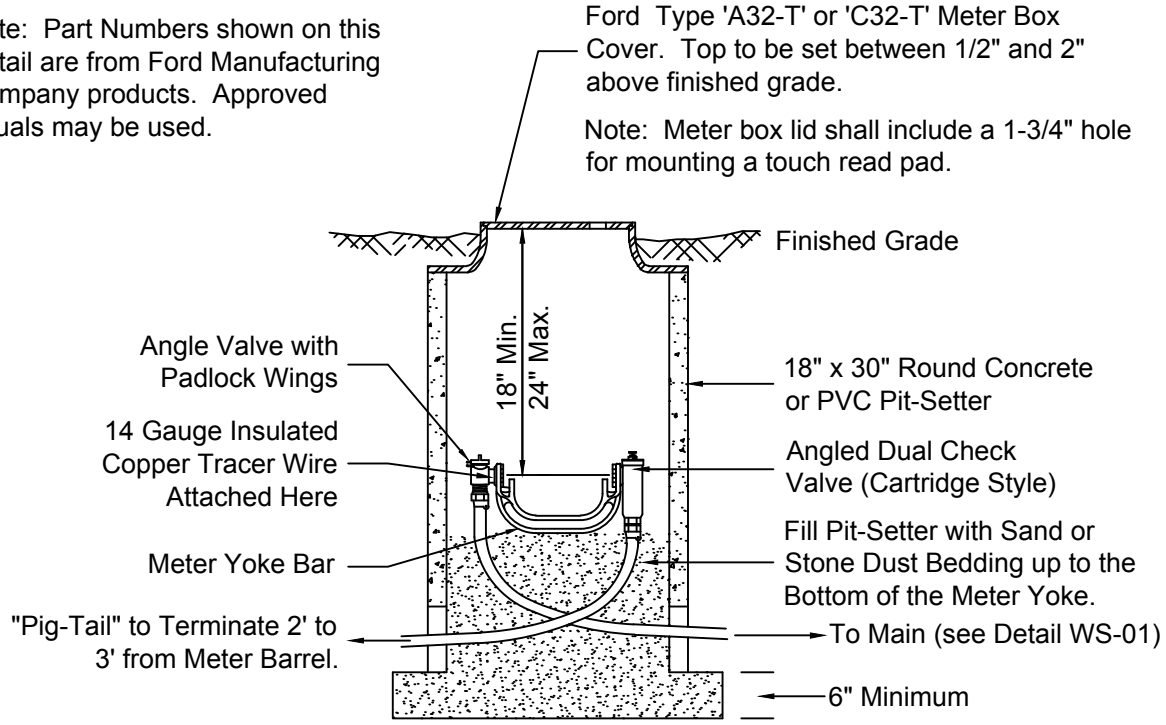
Revised: 06/11/09

Note: ALL compression fittings shall include grip joints.



Meter Yoke Detail

Note: Part Numbers shown on this Detail are from Ford Manufacturing Company products. Approved equals may be used.



Meter Box Detail

for 1" Water Meter

Note: See Standard Detail WS-01 for service connection requirements.

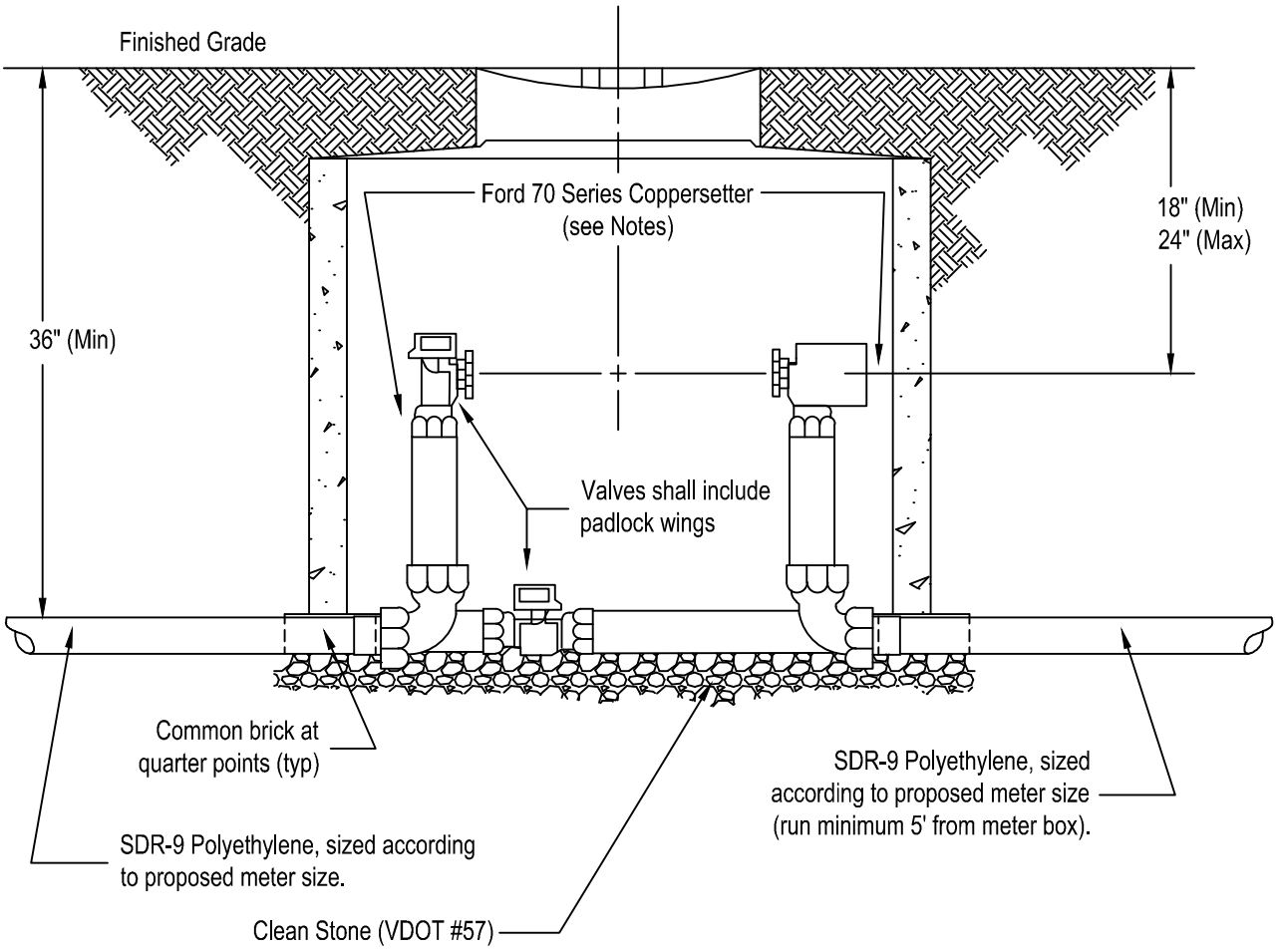
WM-03

Fauquier County
Water and Sanitation Authority

Standard 1" Water Meter Box & Fittings

Not to Scale

Revised: 06/11/09



Notes:

1) Ford 70 Series Coppersetter (or approved equal) shall include flanged connections and an angled check valve:
   1-1/2" = VBHH76-15B-44-66W-G
   2" = VBHH76-15B-44-77W-G
2) Properly sized meter, including touch read pad and wiring, shall be provided by the developer.
3) A 30" diameter one-piece meter box (Ford Monitor or approved equal) shall be used.
4) Material for meter box shall be concrete, PVC or rigid FRP.
5) Meter box lid shall be Ford Monitor or approved equal and shall include a 1-3/4" hole for touch read pad.
6) The service line between the main and the meter shall be one continuous piece of pipe (No joints will be permitted).
7) All compression fittings (including the corporation stop at the main) shall include grip joints.

WM-04

Fauquier County
Water and Sanitation Authority

1-1/2" and 2" Water Meter and Service Connection

Not to Scale

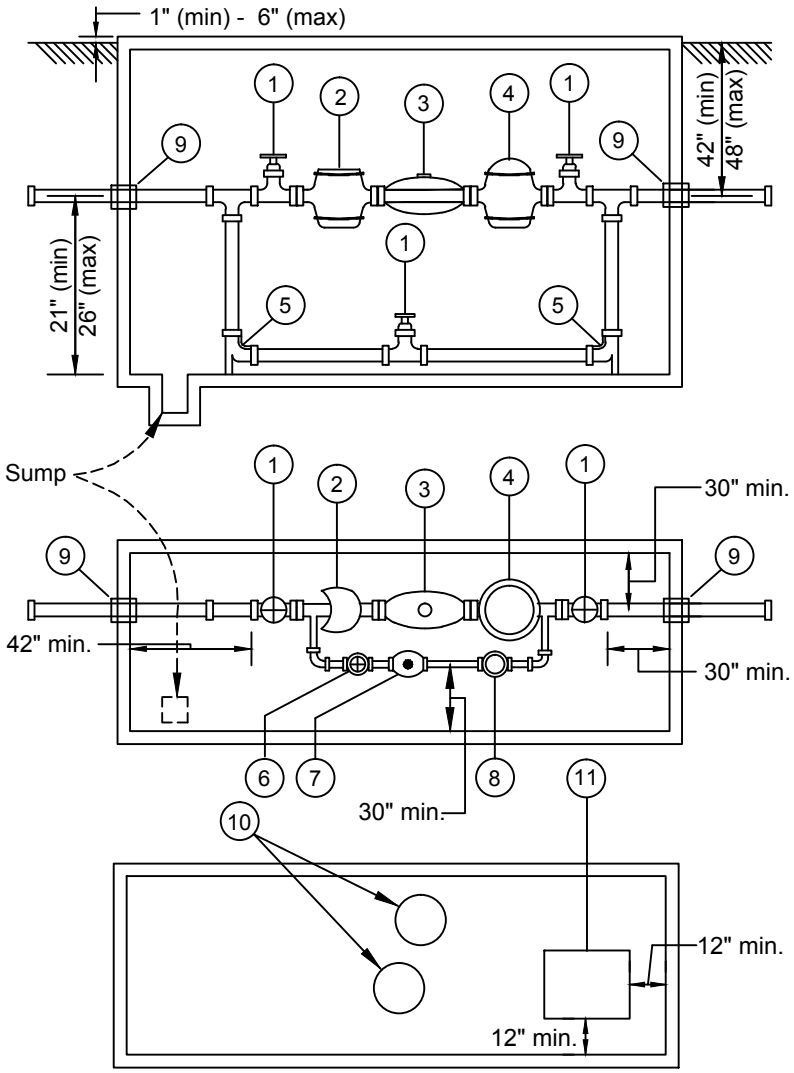
Revised: 03/31/05

Notes:

1) Main meter size shall be determined based on total flow requirements including fire flow needs.
2) Domestic service meter size shall be based on a fixture count for the building to be served.
3) Domestic service line and fittings shall be one size larger than the domestic service meter size.
4) Bypass piping shall be one size larger than the bypass meter size.
5) This equipment does not constitute a back-flow prevention device. Other devices may be required as dictated by the Authority's cross-connection and backflow prevention policy.

Legend:

1. R.W. Gate Strainer
2. Strainer
3. Neptune HP Turbine Meter
4. Detector Check Valve
5. Flanged Base Elbow
6. Ball Valve
7. Neptune T-10
8. Check Valve
9. Link Seal w/ Stainless Steel Hardware
10. Ford A32-T Meter Box Cover w/ Sensor Opening; Unit Centered Over Meter Register
11. Access Door (see General Notes)



General Notes:

A. Access door shall be 30" x 30" Hatch Cover with Locking Hasp (Bilco J4AL or approved equal).

B. Vault and Lid shall be constructed of Reinforced Pre-Cast Concrete.

C. Absolute minimum vault dimensions shall be 10' L x 7' W x 6' D.

D. Bypass piping 3"Ø and larger shall be DIP; Smaller than 3"Ø shall be Brass.

E. Complete shop drawings shall be submitted to the FCWSA for approval.

F. Sump shall be piped by gravity to daylight, or a sump pump provided.

G. Items 2, 3, 4, 6, 7, & 8 shall be provided as an assembly (Neptune Protectus III Fire Service Meter or approved equal), and shall be FMUL approved.

WM-05

Fauquier County
Water and Sanitation Authority

Combined Domestic & Fire Service Meter Vault Detail

Not to Scale

Revised: 05/01/07

Fauquier County
Water and Sanitation Authority

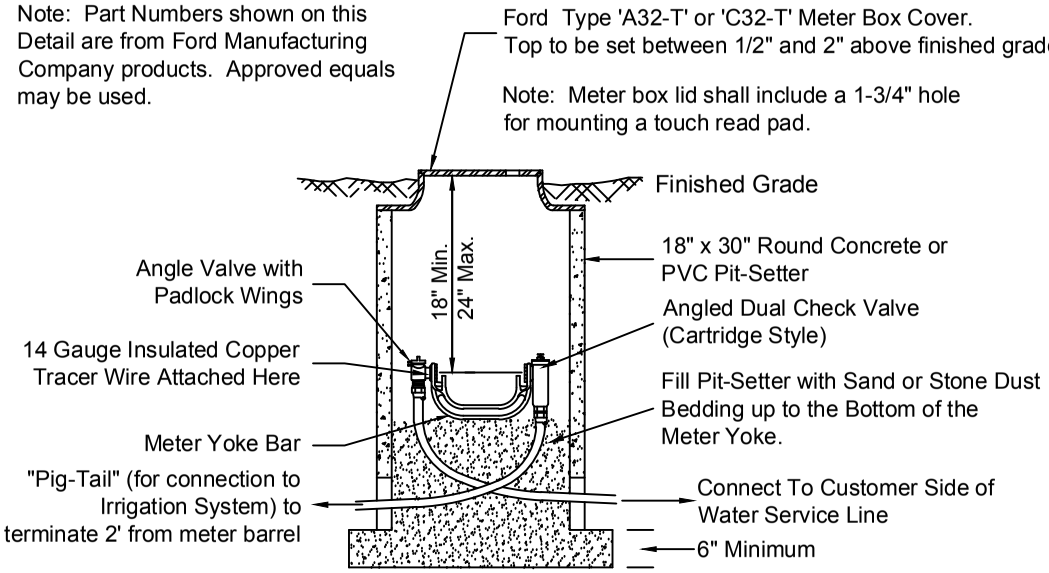
Standard Water Subtraction Meter

Not to Scale

Revised: 03/20/07

WM-06

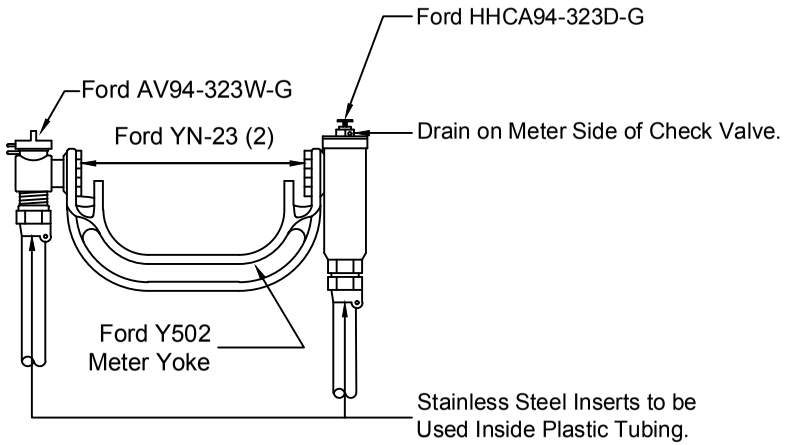
Note: Part Numbers shown on this Detail are from Ford Manufacturing Company products. Approved equals may be used.



Meter Box Detail

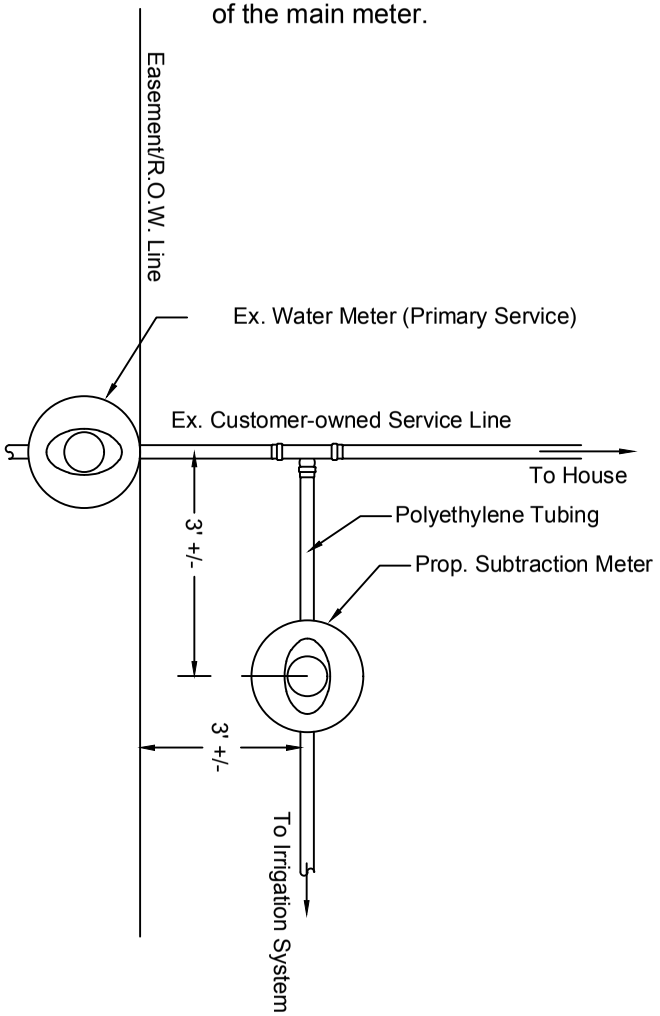
for 5/8" x 3/4" Water Subtraction Meter

Note: ALL compression fittings shall include grip joints.

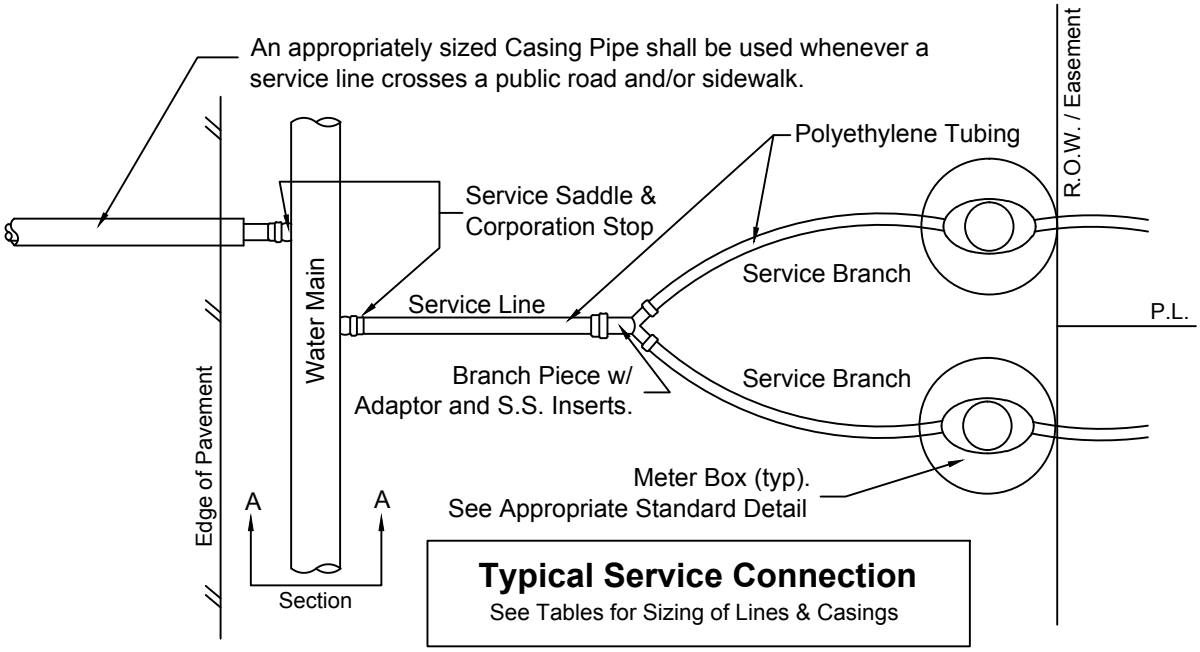


Meter Yoke Detail

NOTE: Irrigation service line shall be connected to the customer's service line on the customer's side of the main meter.

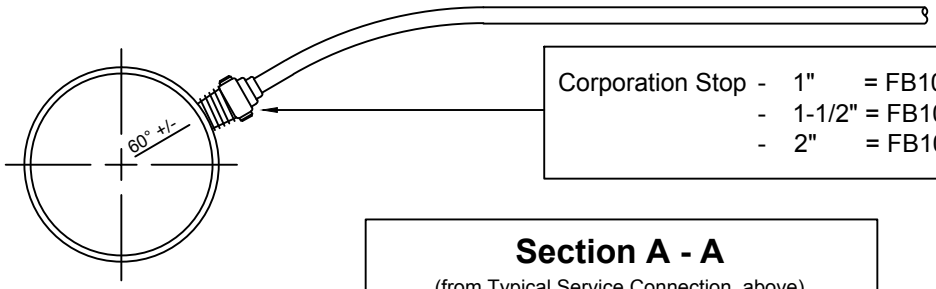


Typical Connection of Subtraction Meter



Typical Service Connection

See Tables for Sizing of Lines & Casings



Corporation Stop - 1" = FB1000-4-G
- 1-1/2" = FB1000-6G
- 2" = FB1000-7G

Section A - A

(from Typical Service Connection, above)

Service & Branch Line Sizing Table		
Meter Size	Service Line (min)	Service Branch (min)
5/8" x 3/4"	1"	3/4"
Full 3/4"	1"	3/4"
1"	1-1/2"	1"

Casing Size Table	
Water Line	Casing Size
up to 1"	2"
1-1/2"	3"
2"	4"

Service Line Casing Pipes to be HDPE or SCH 40 PVC

Notes:

1) This Detail shall be the design standard for all new water connections. Exceptions must be approved by the Authority.
2) All service lines shall be polyethylene tubing, SDR-9, 200 psi, CTS., as manufactured by Orange Burge or approved equal.
3) 14 GA insulated copper tracer wire shall follow service/branch lines to the meter box, and shall be secured to the yoke.
4) A 3M Full Range Water Marker (blue) shall be placed directly over the service connection location during back-fill.
5) Part numbers provided on this Detail are for Ford Manufacturing Company products. Approved equals may be used.
6) It is advisable to increase tubing diameter for unusually long service lines and/or branch lines. This will necessitate the use of appropriate adaptors in the meter box. Consult the FCWSA Engineer or Inspector for details.

WS-01

Fauquier County
Water and Sanitation Authority

Standard Water Service Connection For Water Meter Sizes Up to 1"

Not to Scale

Revised: 05/05/09