



Central Purchasing

T. W. Sawyer, CPPO
Purchasing Agent

February 9, 2016

ADDENDUM NO. 1 - TO ALL OFFERORS
Reference Request for Proposals (RFP) No. 1980

Title QUEENS LAKE SANITARY SEWER PROJECT – CONTRACT #6 VACUUM LINEWORK
WEST

Dated: December, 2015

Due Date: February 17, 2016 at 2:00 pm

See attached thirty-seven (37) pages.

All other terms and conditions remain the same.

Note: A signed acknowledgment of this addendum must be received by this office either prior to the due date or attached to your bid. Signature on this addendum does not constitute your signature on the original document. The original document must be signed also.

Sincerely,

T. W. Sawyer, CPPO, CPPB

Name of Firm

Signature/Title

Date



120 Alexander Hamilton Blvd. • PO Box 532 • Yorktown, Virginia 23690-0532 • (757) 890-3680

TDD (757) 890-3300
A Hampton Roads Community

Email: tsawyer@yorkcounty.gov



Addendum No. 1 – February 9, 2016

Queens Lake Sanitary Sewer Project Contract 6 – Vacuum Linework West

IFB No. 1980

This Addendum modifies the Contract Documents dated December 2015 as listed below, and is hereby incorporated into the Contract Documents. Bidder shall acknowledge receipt of this Addendum in the space provided on page 102-18 of the Bid Form. Failure to do so may subject Bidder to disqualification.

Project Manual Addendum Items

1. Section 102, Bidding Requirements and Conditions, pages 102-1 and 102-3, the project description is MODIFIED to read as follows:

“... and pavement reconstruction involving approximately ~~230,000~~ 51,500 square yards of finished pavement.”

2. Section 110, Special Provisions, page 110-2, Subsection 3.3 Paragraph A: DELETE listing of Supplementary Technical Specifications and REPLACE with the following:

Section 01151	Measurement and Payment
Section 02398	Timber Work
Section 02410	Horizontal Directional Drilling
Section 02700	Vacuum Sewer and Division Valves
Section 02705	Valve Pits
Section 02710	Testing Vacuum Piping Systems
Section 02850	Prefabricated Steel Bridge
Section 03301	Cast-in-Place Concrete
Section 04421	Stone Veneer
Section 31620	Timber Piles
Section 333216	Grinder Pump Stations

3. Section 02850, Prefabricated Steel Bridge, page 02850-1, Subsection 1.2 Paragraph C: ADD

3. Art Thureson, Inc.

- 248-623-8599

4. Big R Bridge

- 800-234-0734

4. Section 02850, Prefabricated Steel Bridge, page 02850-2, Subsection 1.3 Paragraph A: ADD “Documents shall bear the design professional’s name or firm’s name and the design professional’s address or firm’s address in accordance with Virginia law (18VAC10-20-760).”

5. Section 02850, Prefabricated Steel Bridge, page 02850-2, Subsection 1.3: ADD

- E. “Submit information indicating that the design professional’s firm is properly registered as a business entity with the Virginia Department of Professional and Occupational Regulation. If not registered, submit information indicating why such registration is not required.”

- F. "Submit a certificate of insurance evidencing that the design professional maintains professional liability insurance with a minimum policy limit of \$1,000,000 per project. Insurance certificates shall be submitted with drawings. Issue certificates to Owner as Certificate Holder."
6. Section 02850, Prefabricated Steel Bridge, page 02850-4, Subsection 2.2 Paragraph A: ADD "The Engineer shall maintain professional liability insurance with a minimum policy limit of \$1,000,000 per project."
7. Section 31620, Timber Piles, page 31620-4, Subsection 3.1 Paragraph F is REVISED to read: "... project datum (~~NAVD-88~~) (**NGVD29**), ..."
8. Section 31620, Timber Piles, page 31620-5, Subsection 3.8 Paragraph A is REVISED to read: "... driven to tip elevations at ~~25-NAVD -25 NAVD~~ **NGVD** and at 5 foot increments below elevation ~~-25 NAVD~~ **NGVD**."
9. Appendix B: ADD *Aqua Virginia Standard Specifications for Water Main Extensions, Upgrades, and Disinfection of Appurtenances*, dated March 25, 2014. Specifications are issued with this Addendum.

Drawing Addendum Items

10. Sheet G2 – General Note 8 last sentence has been REVISED as follows:
 "... incidental to the contract ***for utilities less than or equal to two inches (2") in equivalent diameter.***"
11. Sheet G3 – Pay Item Quantities table has been REVISED as follows:

Item	Unit	Quantity	
Prime Coat Over Trench	LF	14,310	24,000
Aggregate Base Material	TON	17,159	10,000
Reconstruct Asphalt Pavement	SY	38,405	51,500
Mill and Overlay	SY	1,010	
Concrete Driveway Restoration	LF	105	220
Exp. Aggr. Concrete Driveway Restor.	LF	10	50
Asphalt Driveway Restoration	LF	73	340
Aggregate Driveway Restoration	TONS	579	900

12. Sheet C7 – DELETE lateral stub and end of line marker, and ADD grinder pump and 1-1/2" force main for residence at 111 Saxon Road. Sketch SK-4 is issued with this Addendum.
13. Sheet S9 – REPLACE section for Bents 5 to 34, 36. Sketch SK-1 is issued with this Addendum.
14. Sheet S1.0 – REPLACE Test Pile Program paragraph of Note 28 with the following:

"Test Pile Program: Provide test pile program strictly using procedures anticipated for production piling. Record pile driving data in accordance with Section 31620 during all

driving of test piles, both initial installation and all restrikes. Tie all work to project datum (NGVD 29) elevations rather than depths below existing grade or water surface.

Drive test piles to one (1) foot above the tip elevation specified in the following table. Wait a minimum of 72 hours after installation and restrike all test piles per recommendations of Owner’s geotechnical engineer. Coordinate and cooperate with Owner’s geotechnical engineer for engineer’s performance of dynamic pile testing during all restrikes of test piles. Allow Owner’s geotechnical engineer to install testing equipment prior to performing restrikes, and to remove testing equipment after restrikes and prior to driving test piles to the specified tip elevation.”

Bent	Tip Elev.	Bent	Tip Elev.	Bent	Tip Elev.
1*	-9	13	-45	24	-45
2, 3	-9	14	-48	25	-41
4	-15	15	-51	26*	-41
5	-25	16	-53	27 – 33	-41
6	-30	17	-57	34	-36
7, 8	-38	18*	-57	35	-31
9*	-38	19 – 21	-57	36	-26
10, 11	-38	22	-53	37*	-30
12	-41	23	-49	Abut. B*	-30

*Test Pile Location

15. Sheet S1.0 – ADD Note 29: “Piles shall be timber without exception.”
16. Sheet S12 – REPLACE Section C. Sketch SK-2 is issued with this Addendum.
17. Sheet S12 – REPLACE Details 5 & 6. Sketch SK-3 is issued with this Addendum.

Informational Addendum Items

18. All references in the Contract Documents to the NAVD88 vertical datum shall be changed to NGVD29.
19. The Joint Permit Application (JPA) was submitted by the County to the Virginia Marine Resources Commission on February 5, 2016. The JPA is case #16-0190.
20. The Application for Certificate to Construct (CTC) is expected to be submitted to the Virginia Department of Environmental Quality by the bid opening date.
21. Where “Owner” is referred to on plans, it means County of York Department of Public Works.
22. Contractor purchases complete grinder pump stations. Arrangements are to be made for delivery of the core, the cable, and the disconnect panel to be to York County Public Works.
23. Per Section 01151, Measurement and Payment, page 01151-2, Subsection 1.2, Paragraph C, backfill material shall be per Specification Section 303 2.2.E.3.

24. Minutes from the Pre-Bid Meeting held on February 3, 2016, are included with this Addendum.
25. The active Aqua Virginia 8" HDPE water main does not have tracer wire and has not been located. Plan and profile shown on the left side of Sheet C-1A are therefore approximate based on anecdotes from County staff, field observations, and engineering judgment.
26. Contractors may contact Bob Gashen, president of the Queens Lake Community Association (QLCA), prior to placing their bid to discuss use of association grounds during the project:

757-229-2892

757-880-3485

Addendum Questions Submitted After Pre-Bid Meeting

27. Is there any clearing or tree removal required on the left side of Sheet C-1A? There are some existing large trees that are not shown on this plan that may be in conflict with the new construction.
Clearing and grubbing is required within the project area and is incidental to the earthwork required to achieve the lines and grades shown. See Section 01151, Measurement and Payment, page 01151-15, Subsection 1.2, Paragraph AR.
28. What is the material shown to the left of the 5' CONC WALK on the left side of Sheet C-1A?
ADA detection strip. This feature is also shown on the right side, where the walk meets existing pavement.
29. Are there joints required in the concrete walk shown on the left side of Sheet C-1A? Some are shown in the concrete walk on the plan at the right hand side of the sheet but none are indicated here.
The 5' concrete walk shall conform to the requirements of the Regional Construction Standards and the Contract Drawings. See Note 1 on left side of sheet.
30. Is there any grading required adjacent to the concrete walk shown on the right side of Sheet C-1A? Grading is shown on the plan at the left hand side of the sheet but none is indicated here.
Minor grading may be required to restore the site to pre-construction lines and grades once installation of the western bridge abutment has been completed.
31. On the section for Bent 2 on Sheet S-9, the top rail is shown as being 2" in diameter. The section for Bents 5-35, 36 shows the top rail as being 1-1/4" in diameter. Please clarify the diameter of the top of the rail.
See Sketch SK-1 included with this Addendum.
32. Section 6 on Sheet S-10 shows a metal angle securing the bridge stringer to the timber pile cap. There is no callout as to the size or length of the angle or size and type of fastener that connects it to the timber pile cap. Please provide the size and length of the angle and the size and type of fastener required to attach it to the pile cap.
Provide galvanized angle L 3" x 3" x 1/4" x 1'-11". Fasten angle to pile cap with one 5/8" diameter by 2" long lag screw.

33. Section 4 on Sheet S-10 calls out a “1/4” Bent Plate 6” x 16” Galv”. Is this the L3x3x1/4” that are called out on Sheet S-9, Section of Bent 35?

Yes. Change the note on S-9 to read “Bent Plate (Galv)”.

34. Do you know of a local supplier who can provide precast concrete piles longer than 70 feet?

No. See #15 above.

End of Addendum.

III. BID FORM

Bids to be opened: **February 17, 2016**
 Work to be Completed in: **600 Days**
 Liquidated Damages: **\$500.00** per calendar day after time for Substantial Completion has expired.
\$500.00 per calendar day after time for Final Completion has expired.
 Performance Bond: 100%
 Payment Bond: 100%
 Bid Security: 5%

To: **County of York, Virginia**
120 Alexander Hamilton Drive
Yorktown, Virginia 23690
IFB No. 1980

A. BID PRICE

OPTION A - LUMP SUM BID (Unused)

OPTION B - COMBINATION LUMP SUM AND UNIT PRICE BID (Unused)

OPTION C - UNIT PRICE BID

In compliance with the Bid Documents, titled *Queens Lake Sanitary Sewer Project, Contract 6 – Vacuum Linework West, which incorporates the HRPDC Regional Construction Standards, Fifth Edition* all Addenda issued to date all of which are part of this Bid, the undersigned hereby proposes to furnish all items including materials, supervision, labor, and equipment in strict accordance with, said Contract Documents, for the sum of:

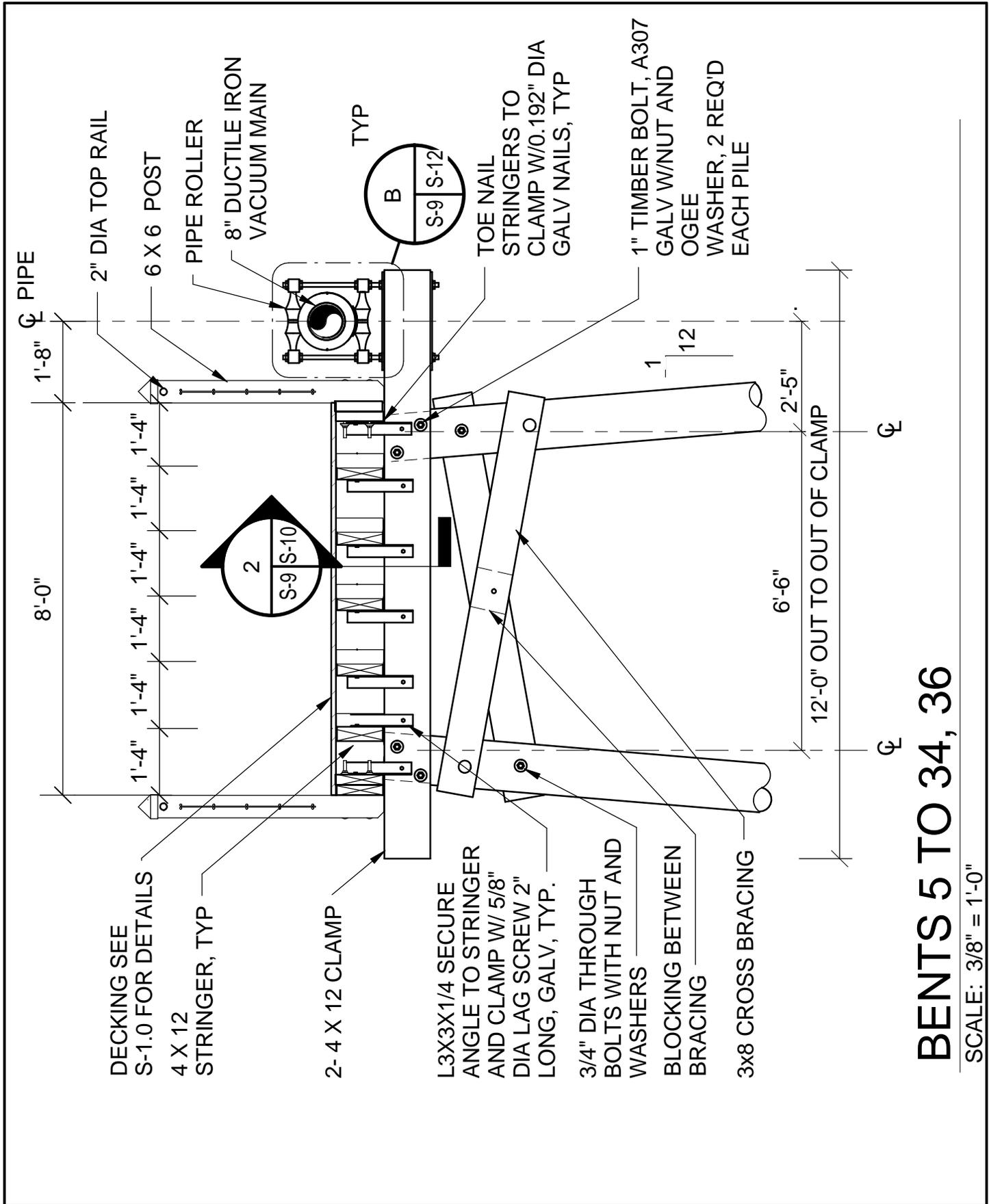
NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization, Complete (up to 5% of total price of all other base bid items)	LS	1		
2	Undercut Excavation with Bedding Backfill as Directed by Owner	CY	1000		
3	Select Material, Type II – Sand as Directed by Owner	Ton	12,000		
4	Select Material, Type II – Stone as Directed by Owner	Ton	12,000		
5	Miscellaneous Unclassified Excavation as Directed by Owner	CY	1000		
6	Silt Fence, Installed Complete-in-Place	LF	20,000		



NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
7	Turbidity Curtain, Installed Complete-in-Place	LF	250		
8	Tree Protection, Installed Complete-in-Place	LF	2000		
9	Rock Check Dam, Installed Complete-in-Place	Each	10		
10	Aggregate Base Material, Complete-in-Place	Ton	10,000		
11	Prime Coat Over Trench Prior to Reconstruction, Complete-in-Place	LF	24,000		
12	Reconstructed Asphalt Pavement, Complete-in-Place	SY	51,500		
13	Concrete Driveway Restoration at Main Line or Lateral Crossing, Complete-in-Place	LF	220		
14	Exposed Aggregate Concrete Driveway Restoration at Main Line or Lateral Crossing, Complete-in-Place	LF	50		
15	Asphalt Driveway Restoration at Main Line or Lateral Crossing, Complete-in-Place	LF	340		
16	Aggregate Driveway Restoration, Complete-in-Place	Ton	900		
17	4" PVC Gravity Sewer Lateral, Installed Complete-in-Place	LF	2700		
18	4" PVC Gravity Sewer Lateral Cleanout Assembly, Installed Complete-in-Place	Each	212		
19	4" Gravity Sewer Lateral Backflow Preventer	Each	13		
20	1-1/2" PVC Force Main, Installed Complete-in-Place	LF	10,000		
21	2" PVC Force Main, Installed Complete-in-Place	LF	5200		
22	Horizontal Directional Drilling for Grinder Force Main	LF	800		
23	1-1/2" Grinder Force Main Cleanout and Valve Vault, Installed Complete in Place	Each	84		
24	2" Grinder Force Main Cleanout and Valve Vault, Installed Complete in Place	Each	1		
25	Low Pressure Force Main Cleanout/Air Relief Valve, Installed Complete-in-Place	Each	12		

NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
26	2" Valve and Box Assembly, Installed Complete-in-Place	Each	8		
27	Grinder Pump Assembly, Model DH071-93, Installed Complete-in-Place	Each	62		
28	3" PVC Vacuum Sewer Lateral, Installed Complete-in-Place	LF	4500		
29	4" PVC Vacuum Sewer Lateral, Installed Complete-in-Place	LF	32		
30	4" PVC Vacuum Sewer Main, Installed Complete-in-Place	LF	3900		
31	6" PVC Vacuum Sewer Main, Installed Complete-in-Place	LF	2300		
32	8" PVC Vacuum Sewer Main, Installed Complete-in-Place	LF	7700		
33	8" DIP Vacuum Sewer Main, Installed Complete-in-Place	LF	770		
34	8" Expansion Flex-Tend Fitting, 40.4" Laying Length, Provided by Owner, Installed Complete-in-Place	Each	1		
35	8" Expansion Flex-Tend Fitting, 57.5" Laying Length, Provided by Owner, Installed Complete-in-Place	Each	1		
36	Stainless Steel Pipe Saddle, Installed Complete-in-Place	Each	45		
37	4" Vacuum Sewer Division Valve and Gauge Tap Assembly, Installed Complete-in-Place	Each	8		
38	6" Vacuum Sewer Division Valve and Gauge Tap Assembly, Installed Complete-in-Place	Each	4		
39	8" Vacuum Sewer Division Valve and Gauge Tap Assembly, Installed Complete-in-Place	Each	9		
40	End of Line Marker, Installed Complete-in-Place	Each	17		
41	STD 6 FT Vacuum Valve Pit, Installed Complete-in-Place	Each	35		
42	DEEP 8 FT Vacuum Valve Pit, Installed Complete-in-Place	Each	23		
43	XDP 9 FT Vacuum Valve Pit, Installed Complete-in-Place	Each	20		

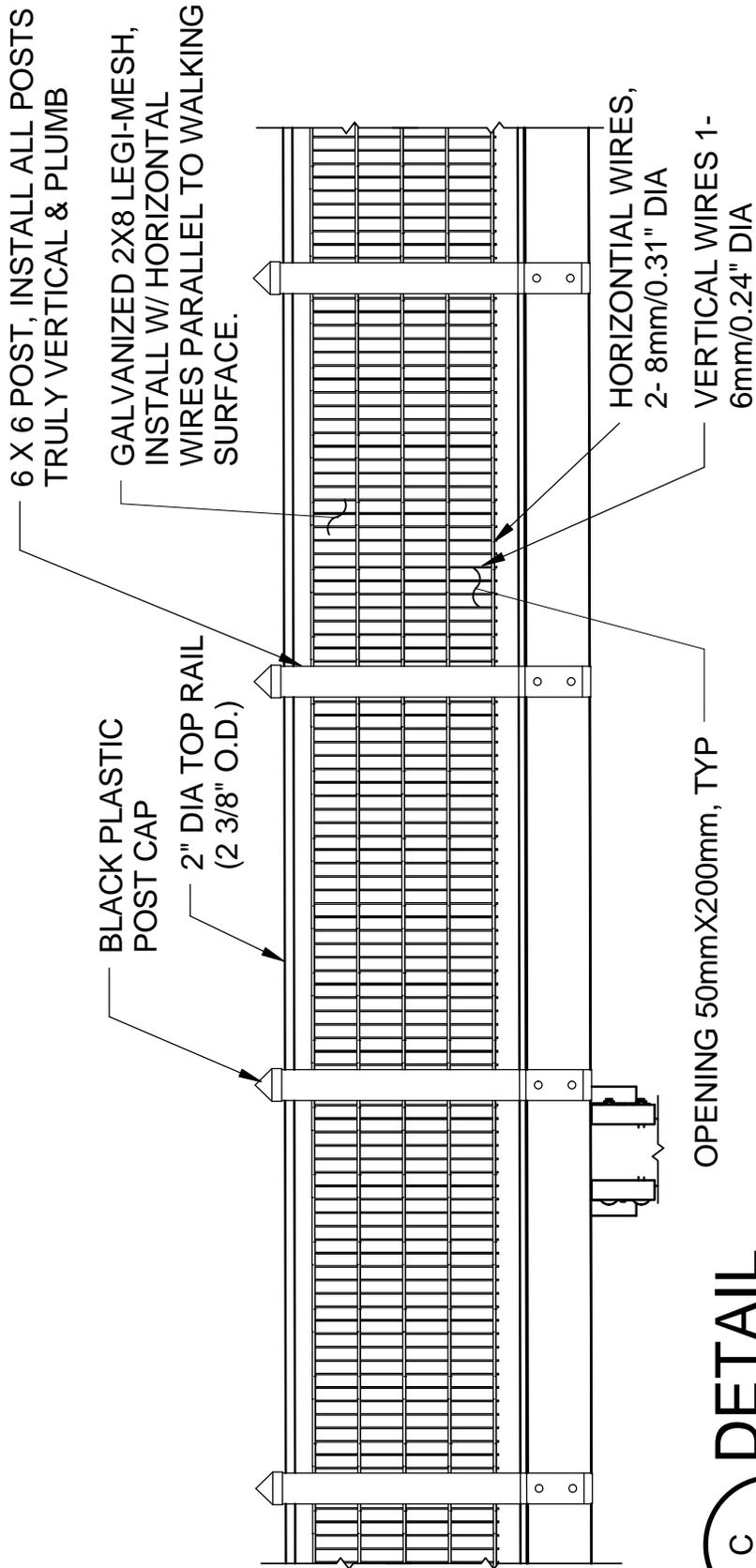
NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
44	Vacuum Buffer Tank, Installed Complete-in-Place	Each	3		
45	Appurtenances for Valve Pit with EAAC, Installed Complete-in-Place	Each	3		
46	PVC Air Intake for Grinder Force Main Connection to Valve Pit, Installed Complete-in-Place	Each	8		
47	Tracer Wire Box, Installed Complete-in-Place	Each	10		
48	6" DI Casing Pipe, Installed Complete-in-Place	LF	200		
49	8" DI Casing Pipe, Installed Complete-in-Place	LF	100		
50	12" DI Casing Pipe, Installed Complete-in-Place	LF	100		
51	Vacuum Sewer Line Flushing and Testing	LS	1		
52	Heat Tracing System, Installed Complete-in-Place	LS	1		
53	1" PVC Electrical Conduit, Installed Complete-in-Place	LS	1		
54	Heat Trace Power Cable, Installed Complete-in-Place	LS	1		
55	Pipe/Pedestrian Bridge, Installed Complete-in-Place	LS	1		
56	Retaining Walls, Installed Complete-in-Place	LS	1		
57	5' Concrete Walk with 4" Aggregate Base Course, Installed Complete-in-Place	SY	50		
58	Concrete Walk at Western Bridge Abutment, Installed Complete-in-Place	LS	1		
59	Stainless Steel Bollard, Installed Complete-in-Place	Each	2		
60	Test Piles	LF	330		
61	Production Piles, Installed Complete-in-Place	LF	3800		
62	Site Grading from Bridge to Pump Station, Complete	LS	1		



BENTS 5 TO 34, 36

SCALE: 3/8" = 1'-0"

LIBERTY ENGINEERING, P. C. <small>4521 E Honeygrove Rd #108 Virginia Beach, VA 23455</small> <small>Phone: (757) 499-2791 Www: LibertyEng.Net</small> STRUCTURAL ENGINEERING	DRAWN BY: CMR	YORK COUNTY VIRGINIA, DEPARTMENT OF PUBLIC WORKS QUEENS LAKE SANITARY SEWER PROJECT CONTRACT #6 - VACUUM LINEWORK WEST	COMM# 2338
	DESIGN BY: JMH		SK-1
DATE: 02/4/16	BENT SECTION		



C
S-12
SCALE: 3/8" = 1'-0"

DETAIL

OPENING 50mmX200mm, TYP

HORIZONTAL WIRES,
 2- 8mm/0.31" DIA
 VERTICAL WIRES 1-
 6mm/0.24" DIA

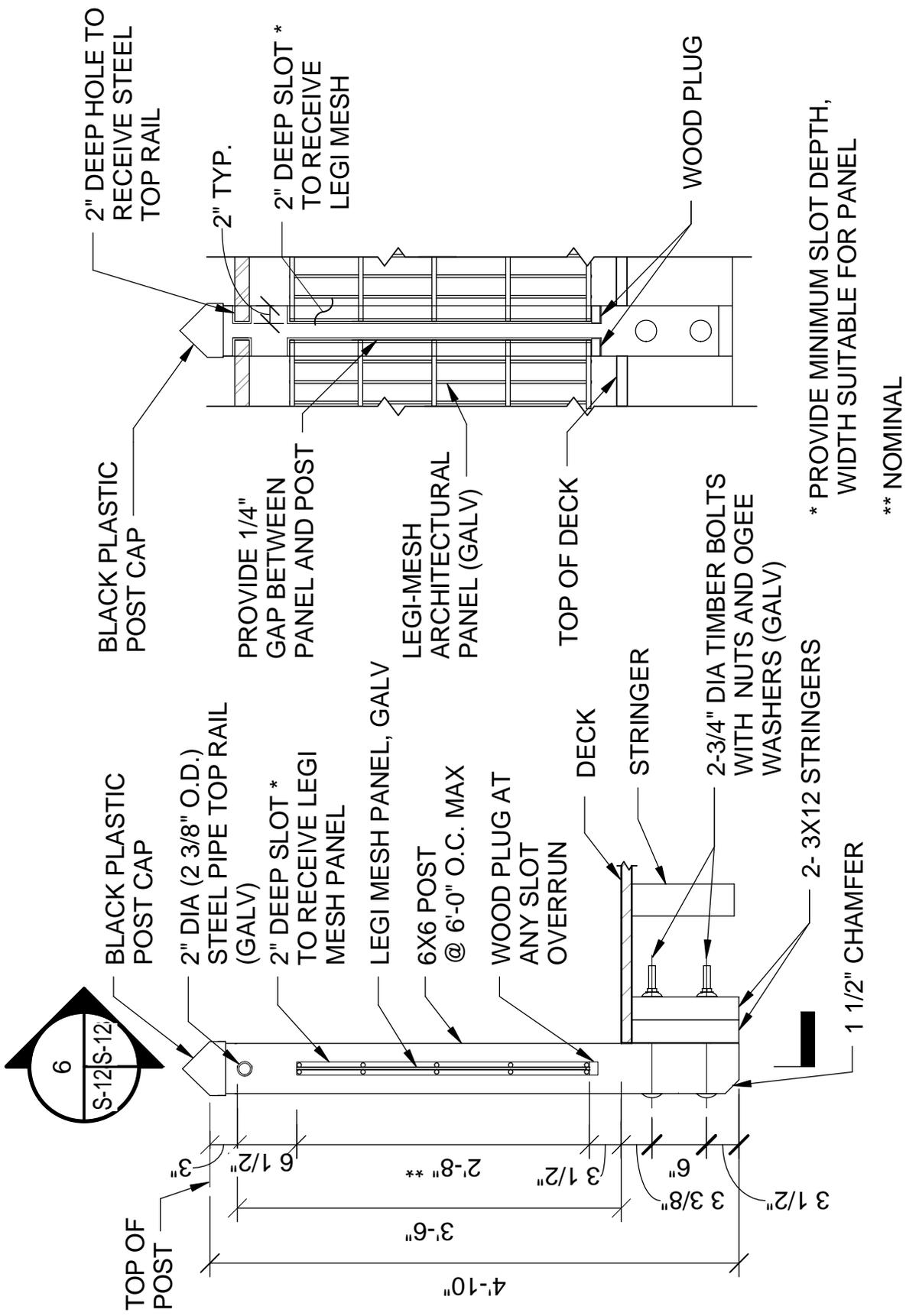
6 X 6 POST, INSTALL ALL POSTS
 TRULY VERTICAL & PLUMB

GALVANIZED 2X8 LEGI-MESH,
 INSTALL W/ HORIZONTAL
 WIRES PARALLEL TO WALKING
 SURFACE.

BLACK PLASTIC
 POST CAP

2" DIA TOP RAIL
 (2 3/8" O.D.)

LIBERTY ENGINEERING, P. C. <small>4521 E Honeygrove Rd #108 Virginia Beach, VA 23455</small> STRUCTURAL ENGINEERING	DRAWN BY: CMR	YORK COUNTY VIRGINIA, DEPARTMENT OF PUBLIC WORKS QUEENS LAKE SANITARY SEWER PROJECT CONTRACT #6 - VACUUM LINEWORK WEST	COMM# 2338
	DESIGN BY: JMH		SK-2
DATE: 02/4/16	RAILING DETAIL		



* PROVIDE MINIMUM SLOT DEPTH, WIDTH SUITABLE FOR PANEL
 ** NOMINAL

SECTION 5
 S-12|S-12| SCALE: 3/4" = 1'-0"

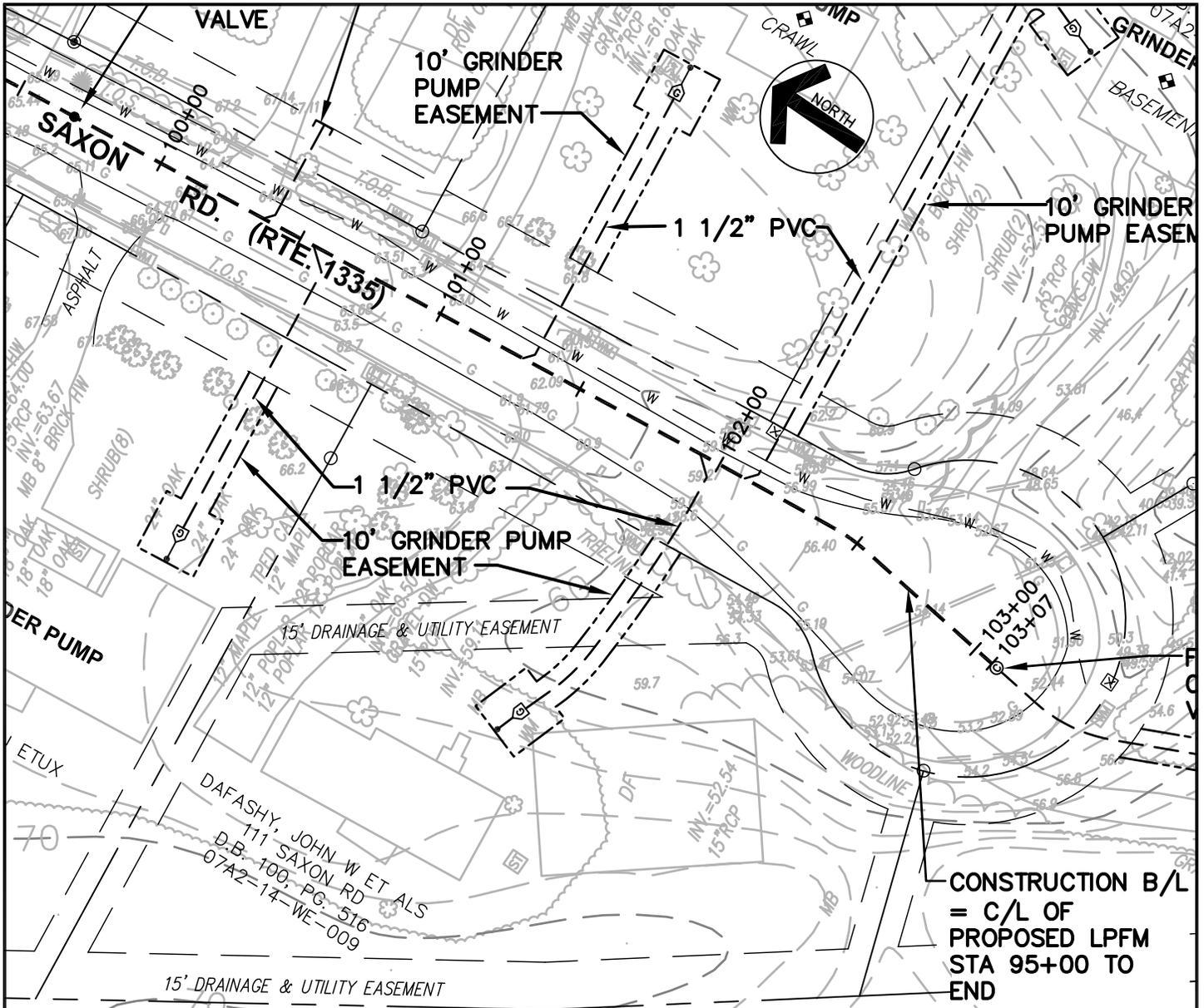
SECTION 6
 S-12|S-12| SCALE: 3/4" = 1'-0"

LIBERTY ENGINEERING, P. C.
 4521 E Honeygrove Rd #108
 Virginia Beach, VA 23455
 Phone: (757) 499-2791
 Www: LibertyEng.Net
STRUCTURAL ENGINEERING

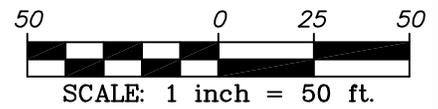
DRAWN BY: JDH
 DESIGN BY: JMH
 DATE: 02/4/16

YORK COUNTY VIRGINIA, DEPARTMENT OF PUBLIC WORKS
 QUEENS LAKE SANITARY SEWER PROJECT
 CONTRACT #6 - VACUUM LINWORK WEST
POST DETAILS

COMM# 2338
 SK-3



HOUSE NO.	MAX. INV. @ C/O	E1 GRINDER PUMP MODEL	PIPE LENGTH	PIPE DIAMETER	AS-BUILT	
					NORTHING	EASTING
110	61.74	DH071-93	101'	1 1/2"		
111	60.42	DH071-93	106'	1 1/2"		
112	49.37	DH071-93	201'	1 1/2"		



 11832 ROCK LANDING DRIVE SUITE 306 NEWPORT NEWS, VIRGINIA (757) 873-0559 WWW.URSCORP.COM	DRAWN BY: AJW	YORK COUNTY VIRGINIA, DEPARTMENT OF PUBLIC WORKS QUEEN LAKE SANITARY SEWER PROJECT CONTRACT #6 - VACUUM LINework WEST	URS PROJECT # 60387585
	DESIGN BY: WKW		GRINDER PUMP AT 111 SAXON ROAD
	DATE: 02/08/16		



SPECIFICATIONS

AQUA VIRGINIA, INC. PUBLIC WATER SYSTEMS
STANDARD SPECIFICATIONS FOR WATER MAIN EXTENSIONS, UPGRADES,
AND
DISINFECTION OF APPURTENANCES
ALL LOCALITIES, VIRGINIA

OWNER/ENGINEER:

AQUA VIRGINIA, INC.
2414 GRANITE RIDGE RD.
ROCKVILLE, VA 24019
PH: (804) 749-8868 FAX: (804) 749-8002

REVISION	RECORD OF ISSUE	DATE	BY
6	Revised	March 25, 2014	Aqua

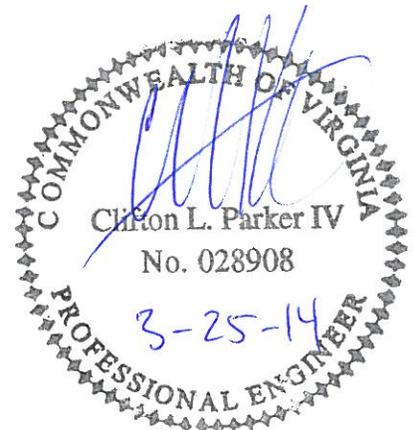


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1 INTRODUCTION

This standard specification outlines minimum standards for water main upgrades, line extensions, and new connections. It shall be given that all line replacements shall include abandonment of the old line where possible or as further directed by Aqua Virginia. It is also given that the intent of such projects is to improve the water works, improve system hydraulics, improve customer service, and eliminate re-occurring leaks on aging mains by their elimination from the system. Existing connections shall be re-connected to the new main after the new line has been constructed in accordance with these specifications. In certain cases, new service lines to existing meter boxes must also be installed and shall be determined on a project by project basis. New lines installed with this specification shall be installed parallel and adjacent to the existing line to be abandoned or a plan sheet prepared showing the new line's location. In any case, an updated plan sheet must be submitted to the VDH showing the location of the new main, diameter, and material and reference this standard specification. This standard specification may be referenced and submitted with a plan sheet to the Virginia Department of Health when:

- * Lines are replaced with larger diameter mains and more than one connection is effected.
- * New lines are installed or extended.
- * As allowed by the Virginia Department of Health and the *Water Works Regulations*.
- * When tanks or pump station appurtenances are replaced or pump house piping is replaced and must be disinfected in accordance with this standard during normal system maintenance (upgrade replacements).

New lines shall be equipped with appropriate blow offs at each end. For main extensions serving more than one connection or for emergency demand flows, these submissions may require a hydraulic calculation or model of the new line(s), and in some cases, the entire water works as determined by Aqua Virginia, Inc., and the Virginia Department of Health.

2 DISTRIBUTION SYSTEM PIPING

2.1 System Design

- 2.1.1 Dead-ends should be minimized by looping of mains.
- 2.1.2 Where dead-end lines occur, they shall be provided with a fire hydrant, flushing hydrant, or blow-off for flushing purposes.
- 2.1.3 No flushing device shall be directly connected to any sewer.
- 2.1.4 Sizing will be as shown on design drawings.
 - 2.1.4.1 The minimum size pipe for water distribution systems shall be four inches in diameter. Pipes of lesser diameter may be used in the following instances:
 - 2.1.4.1.1 When the run is less than 300 feet, two-inch pipe may be used.
 - 2.1.4.1.2 When the run is less than 600 feet, but more than 300 feet, three-inch pipe may be used.

- 2.1.4.2 The minimum pipe size where fire protection is required shall be 6 inches in diameter.
- 2.1.5 System shall be designed such that a minimum of 20 PSI is maintained at all points on the system during peak flows (fire + domestic, commercial, industrial, etc.). Where the pressure at the service tap exceeds 80 PSI, the provisions of the Uniform Statewide Building Code shall apply.
- 2.1.6 All services shall be metered according to the standard meter detail (Drawing No.A0449).

2.2 Materials

- 2.2.1 Piping shall be AWWA C-900 PVC ring tite pipe, ASTM D2241 PVC, SDR-21, or HDPE pipe, unless another material is specified and approved by Aqua. All materials shall be NSF approved for potable water. Pipe fittings shall be slip-on PVC (ASTM D-2466) or mechanical joint ductile iron (ANSI/AWWA C-110). All joints shall be elastomeric gasket joints conforming to ASTM standard F-477. HDPE piping shall be installed in accordance with AWWA C-906-07. HDPE pipe shall be jointed by fusion butt welds. Fusion butt welds must be performed per the pipe manufacturer's recommendation. Sizing and material will be as shown on the drawing. Distribution line shall generally be pipe classes which exceed 160 PSI, normally C-900 PVC. Pipe and all water appurtenances shall bear the National Sanitation Foundation Seal of Approval (NSF) for potable water, the manufacture's name, and class of pipe.
- 2.2.2 Gate valves shall be iron body, bronze mounted, double disc parallel seat, non-rising stem gate valves conforming to AWWA C-500 or as shown on the drawings. Valves shall have mechanical joint ends conforming to AWWA C111 (ANSI A21.111). Valves shall be rated for a minimum working pressure as indicated by AWWA C-500. Valves shall open left (counterclockwise). (Kennedy 15TIX or equivalent). Valve boxes, should be cast iron adjustable screw type and level with pavement, or on shoulder, should extend 2" above ground with a 24"x24"x4" thick precast concrete pad installed around them and level with the box. In lieu of a concrete pad, a Brooks 24" valve box collar or other equivalent structure may be used.

2.3 Pipe Installation

- 2.3.1 All piping shall be installed according to the plans and applicable codes. PVC pipe installations shall conform to AWWA Section C-605 standard. HDPE pipe shall be installed in accordance with AWWA Section C-906-07 standard. Pipe bedding shall be per standard pipe bedding detail (Drawing No.A0444).

- 2.3.2 Pipe runs shall be true, direct, and consistent with space utilization.
- 2.3.3 Proper allowances shall be made for expansion, and all lines shall be adequately supported and anchored as necessary to prevent undue stress on pipes or equipment to which it may be attached.
- 2.3.4 Blocking shall be adequate to prevent noise or vibration when flows are turned on or off.
- 2.3.5 Bedding shall be Class "C-1" unless otherwise noted on the design drawings.
- 2.3.6 Stones and rocks found in the trench shall be removed for a depth of at least six inches below the bottom of the pipe and select fill bedding provided if necessary. Continuous and uniform bedding is required for all pipe.
- 2.3.7 The minimum depth of installation shall be 36 inches.
- 2.3.8 A means of locating the conduit while it is underground shall be provided. A locating wire, #16 THHN or larger, shall be run with the pipe, the ends terminating at the ground surface at the top of the valve box, meter, hydrant, flush off, or other surfacing structure as appropriate.
- 2.3.9 Any exposed piping will be insulated to prevent freezing.

2.4 Mechanical Restrained Joints and Blocking

- 2.4.1 Mechanical joint type restraints must be installed in accordance with the manufacturer's recommendations.
- 2.4.2 Blocking may be installed according to the standard detail sheet (Drawing No.A0439) for thrust blocking if approved by Aqua Virginia. Note that fittings smaller than 8 inch shall use minimum 3/4 CY of concrete for blocking. Ten to twelve inch fitting shall have 1.5 CY concrete. Sixteen to 24" shall have 2 CY concrete. Mechanical type joint restraints should be used over concrete.

2.5 Separation of Water and Sewer Lines

Follow Virginia Department of Health Waterworks Regulations for separation of water mains and sewer lines.

2.5.1 Parallel Installations

Normal Conditions - Water lines shall be constructed at least 10 feet horizontally from a sewer or sewer manhole whenever possible. The distance shall be measured edge-to-edge.

Unusual Conditions - When local conditions prevent a horizontal separation of at least 10 feet, the water line may be laid closer to a sewer or sewer manhole provided that:

- 2.5.1.1 The bottom (invert) of the water line is at least 18 inches above the top (crown) of the sewer.
- 2.5.1.2 Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved water pipe pressure-tested in place to 50 PSI without leakage prior to backfilling. The sewer manhole shall be of watertight construction and tested in place.

2.5.2 Crossing Installations

Normal Conditions - Water lines crossing over sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible.

Unusual Conditions - When local conditions prevent a normal vertical separation described above, then the following construction shall be used:

- 2.5.2.1 In closer than normal conditions, the sewer pipe shall be AWWA approved water pipe pressure-tested in place to 50 PSI without leakage prior to backfilling. The sewer manhole shall be of watertight construction and tested in place.
- 2.5.2.2 Water lines passing under sewers shall, in addition, be protected by providing:
 - 2.5.2.2.1 A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water lines.
 - 2.5.2.2.2 Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the water line.
 - 2.5.2.2.3 That the length of the water line shall be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sewer.
- 2.5.2.3 Sanitary and/or Combined Sewers or Sewer Manholes - No water pipes shall pass through or come in contact with any part of sewer or sewer manhole.

2.6 Air Release Valves

- 2.6.1 Air release valves shall be compound lever type which conforms to ANSI/AWWA C512-92.
- 2.6.2 Valves shall be sized in accordance with the following table:

Pipe Size	Orifice Size
6" or Below	1/16"

8" - 10"	3/32"
12" - 16"	1/8"
16" - 48"	3/16"

2.6.3 Valves shall be Val-Matic Valve and Manufacturing Corp. valves or an approved equal.

2.6.4 Valves shall be provided with a downward facing, screened air release pipe extending a minimum of 12 inches above grade. However, a manual air release valve may be substituted in certain cases where they may be necessary. The manual air releases should have the vent extending to the top of the box with threaded end and a cap.

2.7 Valve, Air Relief, Meter, and Blowoff Chambers

2.7.1 Chambers shall be drained to the surface of the ground or to absorption pits located above the seasonal ground water table elevation.

2.7.2 Chambers or pits containing valves, blowoffs, meters, or other such appurtenances shall not be connected directly to any storm drain or sanitary sewer, nor shall blowoffs or air relief valves be connected directly to any sewer.

2.8 Stream Crossings

2.8.1 Crossings below the bottom of the stream bed shall be constructed in accordance with these specifications and plan details.

2.8.2 Crossings above the water (aerial) or in the water (submerged) shall be designed on a case-by-case basis, with provisions for adequate pipe support, freeze protection, and accessibility for repair/replacement, and above 100 year flood level. Where practical, the main may be designed on a bridge with VDOT approval. Where practical, the main may be directionally drilled with HDPE pipe under the obstruction.

2.8.3 Casings for crossings shall be Schedule 40 steel pipe.

2.8.4 Valves shall be installed on each end of crossings and dams so that the sections can be isolated for tests or repairs. Sample taps will be located on each end of the crossing for pressure testing and be constructed such that they will not be subject to flooding.

2.8.5 A permanent tap shall be made for testing of the isolated section for leaks.

2.8.6 Piping for crossings shall be of special construction, having flexible watertight joints, as shown on the plans.

2.9 New Hydrants

- 2.9.1 Where hydrant drains are not plugged, they shall be drained to the ground surface or to dry wells provided exclusively for this purpose. When installed in areas subject to high groundwater, flooding, surface water ponding, or spills, hydrants shall be plugged or hard piped to drain to grade.
- 2.9.2 Hydrant drains shall not be connected to sanitary sewers or storm drains.
- 2.9.3 Hydrant shall be connected only to 6" mains and larger with a valve.
- 2.9.4 Hydrant shall only be connected to water systems adequately designed for fire flows in addition to domestic flow.

3 CONCRETE

- 3.1 Portland cement shall conform to ASTM Specification C150, Type I and II.
- 3.2 All course and fine aggregate shall conform to ASTM Specification C33.
- 3.3 Concrete pads, such as door steps and well head aprons, shall be poured with a mix which provides a compressive strength of 2000 PSI.
- 3.4 Concrete for thrust blocks (if approved for use) as shown in Drawing No.A0439 shall provide a compressive strength of 3000 PSI and meet detail requirements as shown Drawing No.A0455.

4 PRESSURE TESTING

- 4.1 Upon completion of the installation of all items, the water distribution system shall be leakage tested in accordance with AWWA Standard C-605 by running pump pressures above normal operating pressure, manipulating valves and observing gauges and exposed joints for any apparent leakage; and pressure tested at 150 PSI for two hours.
- 4.2 A leakage test shall be conducted concurrently with the pressure test in accordance with AWWA C-600, except as modified herein. Leakage is defined as the quantity of water required to maintain a pressure within 5 PSI of the specified test pressure, after air has been expelled and the pipe filled with water. Leakage shall not exceed 3.25 GPD/mi/in. of nominal diameter at a pressure of 150 PSI. If leakage exceeds that specified, find and repair the leaks and repeat the test until successful. All visible leaks shall be repaired regardless of the amount of leakage.

5 STANDARD DISINFECTION METHODS FOR TANKS AND PIPING

Upon completion of construction, all pumps, tanks, and piping will be cleaned or flushed as necessary and then disinfected as follows:

5.1 Pressure Tanks

Potable water containing a free chlorine residual of 50 mg/L shall be placed in the tank to such a depth that when the tank is filled, the resulting chlorine concentration in the water will be at least 2 mg/L after 24 hours. The water containing 50 mg/L of chlorine shall stand in the tank for 24 hours. The tank shall then be filled with potable water to overflow and allowed to stand for 24 additional hours. At the end of the second 24 hour period, the chlorine residual shall be at least 2 mg/L. After analyzes of the water for satisfactory bacteriological quality, the tank may be placed in service without draining the water to disinfect it. Two water samples for bacteriological analysis must be collected at least 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no contamination before the tank can be utilized as part of the waterworks. If contamination is indicated, the procedure will be repeated.

5.2 Atmospheric Storage Tanks

All interior surfaces of the tank shall have applied a chlorine solution containing at least 200 mg/l of free available chlorine. The chlorine solution shall be applied with either spray equipment or brushes. Any equipment used to apply the chlorine solution shall either be new or previously used only for disinfection purposes. The chlorine solution shall remain in contact with the tank surfaces for at least 30 minutes. The tank shall then be filled with potable water to the overflow level and two water samples for bacteriological analysis must be collected at least 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no contamination before the tank can be utilized as part of the waterworks. If contamination is indicated, the procedure will be repeated.

5.3 Pumps and Pump House Piping

5.3.1 The pumps and piping shall be filled slowly with potable water to which enough chlorine has been added to produce a free residual of 100 ppm. After the pumps and piping have been filled, they shall stand full for 6 hours. After the holding period, the chlorinated water in the pumps and piping shall be pumped off to waste by the pump and the piping shall be refilled. After refilling the piping, samples of water shall be taken from the station at not less than 24 hour intervals for bacteriological analysis by a certified laboratory until two (2) or more consecutive satisfactory samples are obtained.

5.3.2 Pump house piping shall be disinfected in accordance with distribution system piping and shall not be placed in service until disinfected.

5.4 Distribution System Piping

5.4.1 System Flushing

Prior to disinfection all water lines shall be flushed unless the tablet method disinfection is used. All valves and hydrants shall be operated while chlorinated water is in the pipe. After the required retention period, the chlorinated water shall be flushed from the pipelines using potable water.

5.4.2 Chlorine Application

5.4.2.1 Continuous Feed Method

Potable water shall be introduced into the pipeline at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 mg/l. The chlorinated water shall remain in the pipeline at least 24 hours, after which, the chlorine concentration in the water shall be at least 10 mg/l.

5.4.2.2 Slug Method

Potable water shall be introduced into the pipeline at a constant flow rate. This water shall receive a chlorine dosage which will result in a chlorine concentration of 100 mg/l in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the pipe are exposed to the 100 mg/l chlorine solution for at least 3 hours. The chlorine residual shall be checked at regular intervals not to exceed 2000 feet to insure that adequate disinfection is occurring.

5.4.2.3 Tablet Method

This method shall not be used if nonpotable water or foreign materials have entered the lines or if the water temperature is below 5^o C (41^oF). The tablets shall be placed in each pipe section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25 mg/l is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be acceptable to the State Health Department. The filling velocity of the potable water in the pipeline shall be less than 1 ft./sec. The water chlorine solution shall remain in contact with the pipe for 24 hours.

5.4.3 Bacteriological Sampling

After the lines have been flushed, two water samples for bacteriological analysis must be collected at least 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no contamination before the pipe can be utilized as part of the waterworks. If contamination is indicated, then the disinfection and the bacteriological sampling procedure must be repeated. Samples should be marked "Construction Samples" to prevent confusion with regular distribution samples. Samples shall be collected at regular intervals, not exceeding 1200 feet throughout the length of the pipeline. Disinfect and test water mains and accessories in accordance with the procedures outlined in AWWA Standard C-651. All lines shall be disinfected prior to being placed in operation. Interior pump house piping connected hydraulically to new distribution system piping will be disinfected simultaneously with that piping as outlined herein.

5.5 Repairs

Cleaning, disinfecting, flushing, testing, or similar operational actions shall be in accordance with the current standard issued by AWWA (AWWA C-601).

6 QUALITY OF WORK

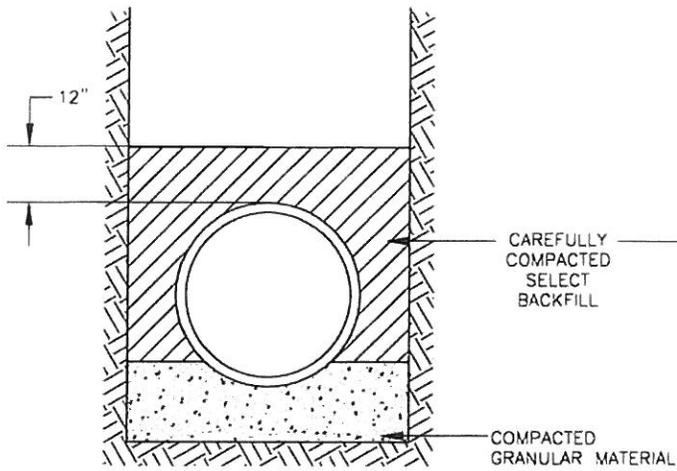
All materials and workmanship included in this project shall be first class as judged by the standards of the trades involved.

Contractor shall contact Aqua Virginia, Inc. prior to the filling of mains and flushing, and as needed so as to prevent unauthorized service interruptions to other customers.

7 LISTING OF STANDARD DETAILS

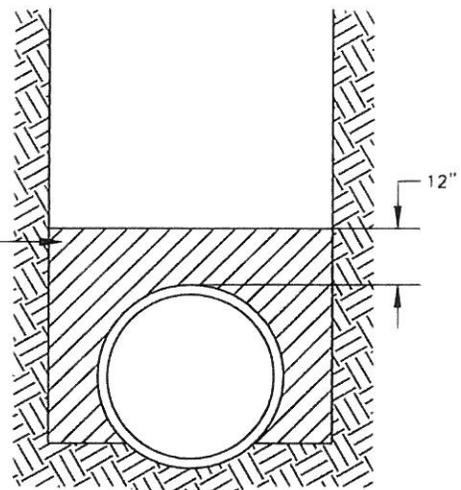
DRAWING NO.	TITLE
A0444	Standard Pipe Bedding
A0449	Standard Meter Box
A0439	Typical Thrust Block Detail
A0455	Standard Thrust Blocking Details
A0441	Standard Valve Construction
A0477	Standard Blow-Off
A0448	Manual Air Release Valve
A0440	Standard Fire Hydrant

NOTE: CLASS "C-1" BEDDING TO BE USED ONLY FOR PRESSURE LINES



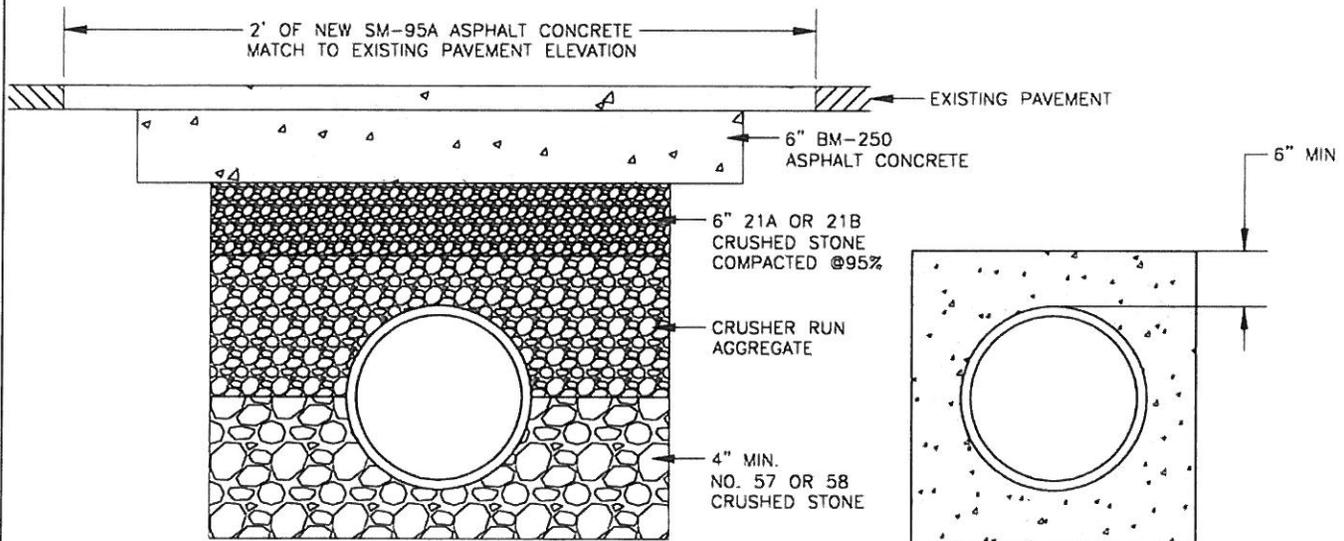
CLASS "C" BEDDING
LOAD FACTOR = 1.5

NON-PAVED TRENCH DETAIL



CLASS "C-1" BEDDING
LOAD FACTOR = 1.5

NON-PAVED TRENCH DETAIL



PAVED TRENCH DETAIL

CONCRETE ENCASEMENT
LOAD FACTOR = 4.5

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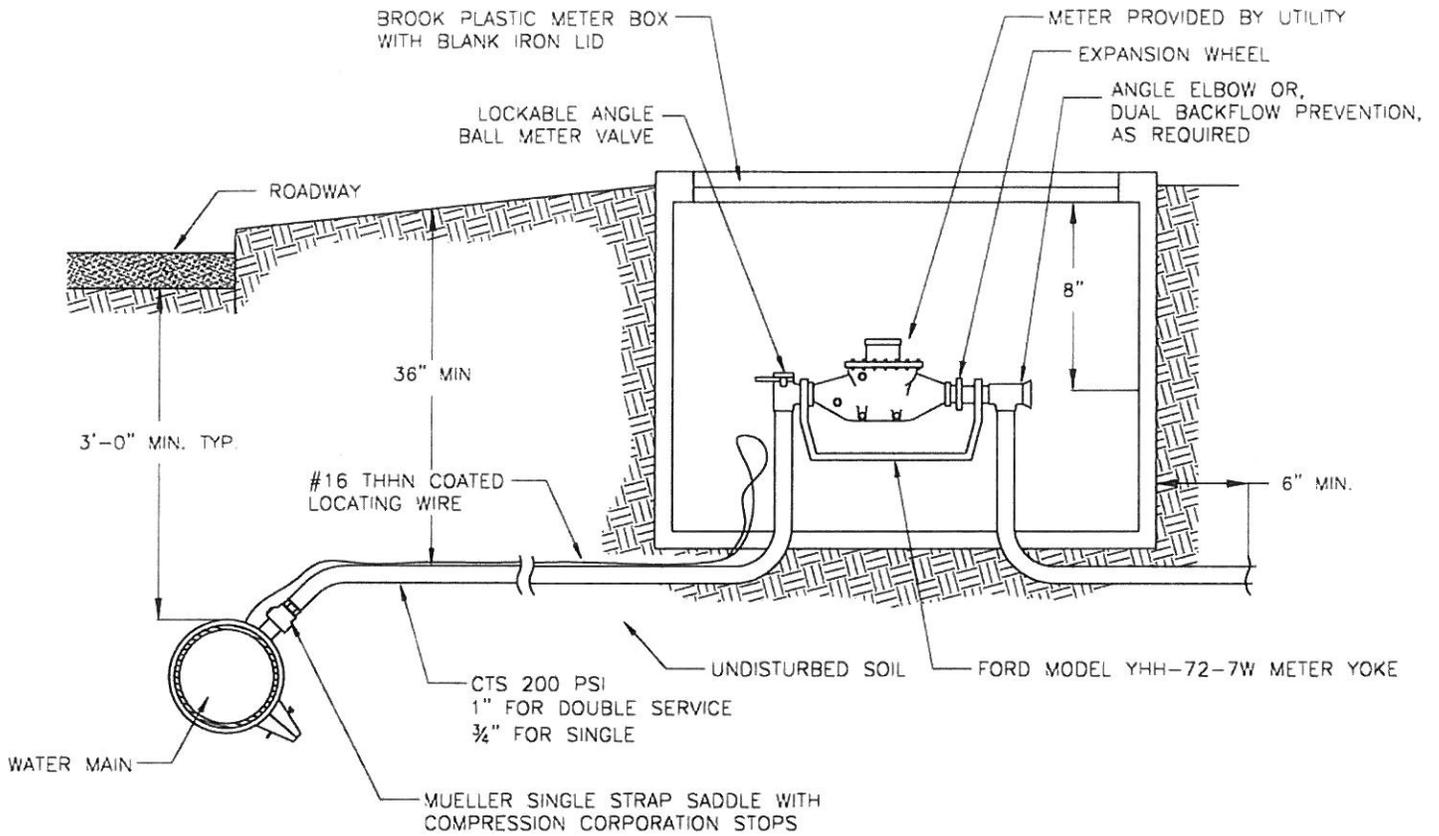
PO BOX 6905 RICHMOND, VA 23230 PH 804.204.1611 FAX 804.278.9899

STANDARD PIPE BEDDING

COMPANY: AQUA VIRGINIA INC.

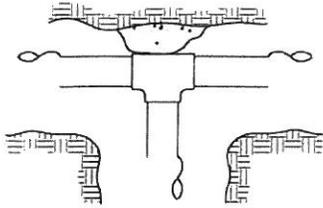
LOCATION:

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STANDARD	-	1.11.07	NO SCALE	BAH	-	A0444

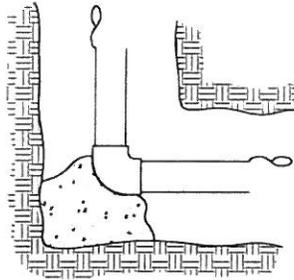


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		COMPANY: AQUA VIRGINIA INC.			
		LOCATION:			
FILE NAME	SHEET	DATE	SCALE	DRN BY	MASTER NO
STANDARD	-	1.11.07	NO SCALE	BAH	-
					DRAWING NO
					AQ449

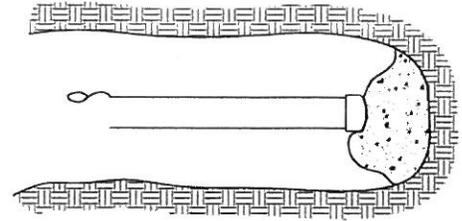
NOTE: MEGA-LUG RESTRAINTS MAY
BE SUBSTITUTED FOR BLOCKING
(See Concrete Specifications,
ASTM C150 & C33)



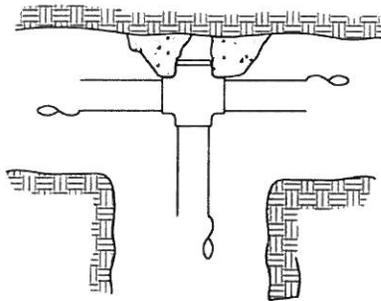
TEE



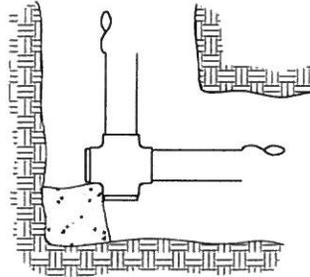
90° EL



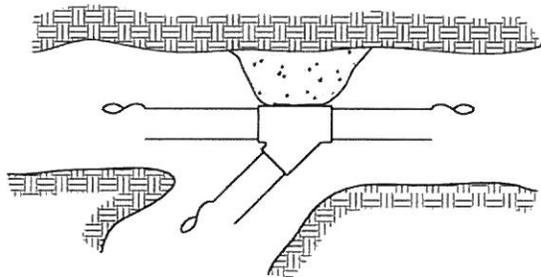
PLUG OR CAP



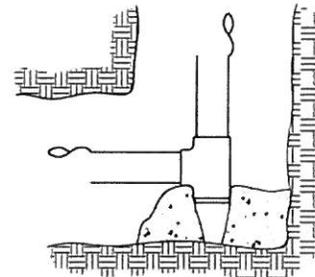
PLUGGED CROSS



PLUGGED CROSS



WYE



PLUGGED TEE

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AQUA VIRGINIA INC

PO BOX 5906 RICHMOND, VA 23230 PH 804.204.1611 FAX 804.278.9899

TYPICAL THRUST BLOCK DETAIL

COMPANY: AQUA VIRGINIA INC.

LOCATION:

FILE NAME	SHEET	DATE	SCALE	DEN BY	MASTER NO	DRAWING NO
STANDARD	-	1.11.07	NO SCALE	BAH	-	A0439

NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. KEEP CONCRETE CLEAR OF JOINT AND ACCESORIES.
3. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN ON THIS STANDARD DETAIL.

BEARING AREA OF THRUST BLOCKS-FT ²							
FITTING SIZE	TEE,WYE PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22½° BEND	11½° BEND
			A1	A2			
6	2.1	3.0	4.3	3.0	2.0	2.0	
8	3.8	5.3	7.6	5.4	2.9	2.0	2.0
10	5.9	8.4	11.8	8.4	4.6	2.4	2.0
12	8.5	12.0	17.0	12.0	6.6	3.4	2.0
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

NOTES:

ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 200 P.S.I. AND ON ALLOWABLE SOIL BEARING STRESS OF 3500 lbs/ft² TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:

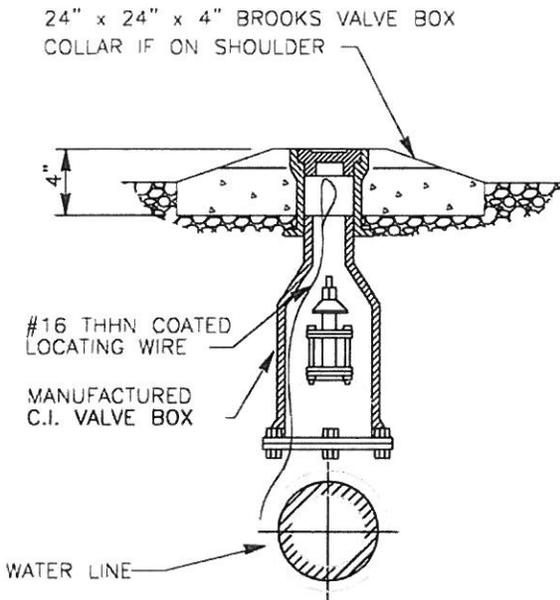
BEARING AREA=
 (TEST PRESS/200) X (3500/SOIL BEARING STRESS) X (TABLE VALUE)

SIZE OF FITTING (IN)	MINIMUM CY-CONC. FOR BLOCKING
< 8	¾
10-12	1 ½
16-24	2

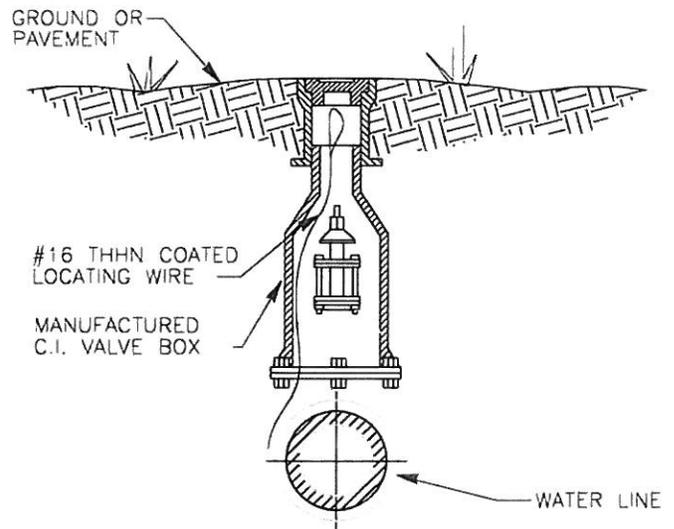
CONCRETE SHALL BE A-3 CONCRETE 25% MEETING REQUIREMENTS OF ASTM C94.

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		STANDARD THRUST BLOCKING DETAILS					
		COMPANY: AQUA VIRGINIA INC.					
		LOCATION:					
FILE NAME	SHEET	DATE	SCALE	DEN BY	MASTER NO	DRAWING NO	
STANDARD	-	1.11.07	NO SCALE	BAH	-	A0455	

ROAD SHOULDER/GRAVEL:



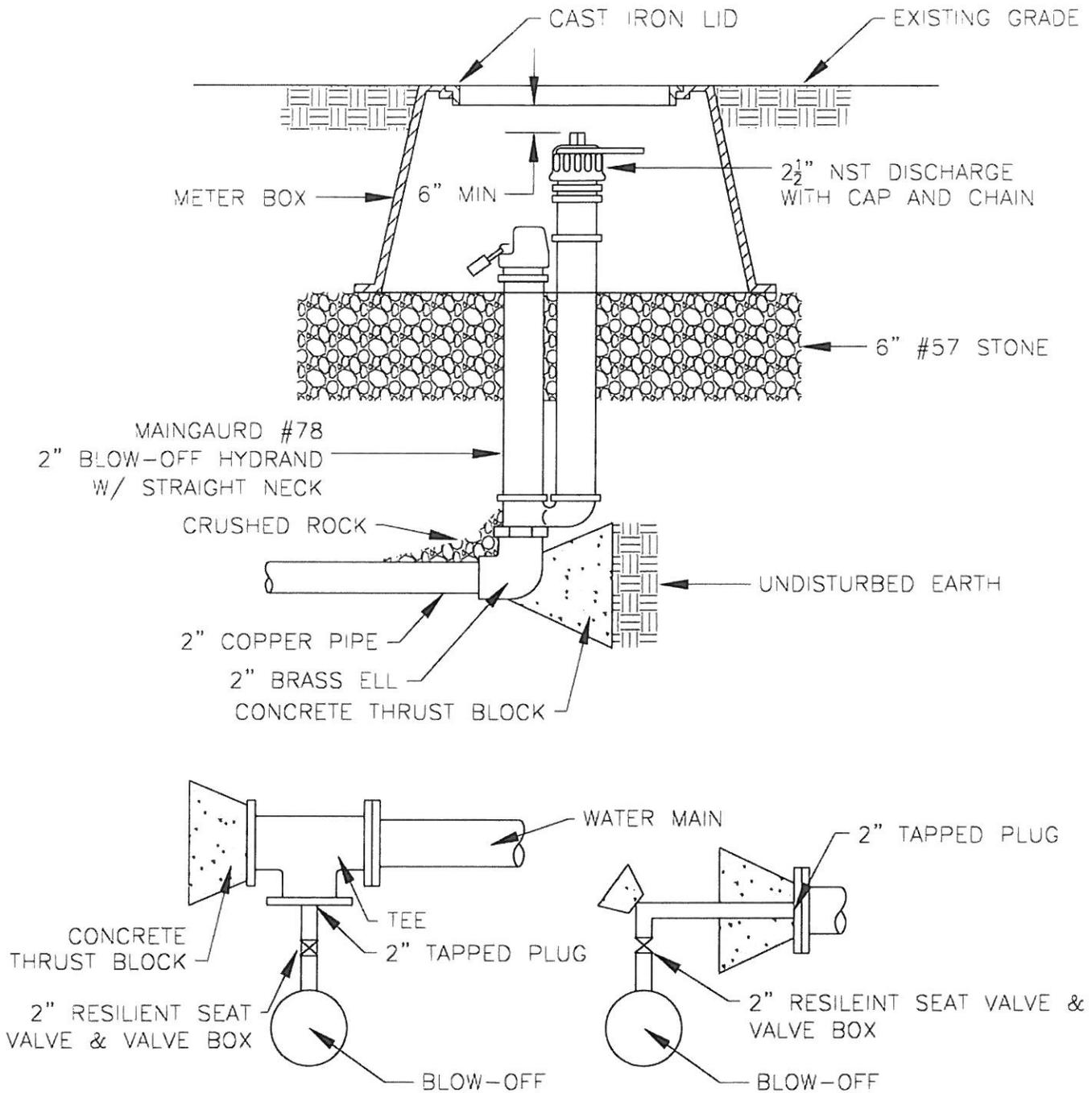
ASPHALT OR GRASS:



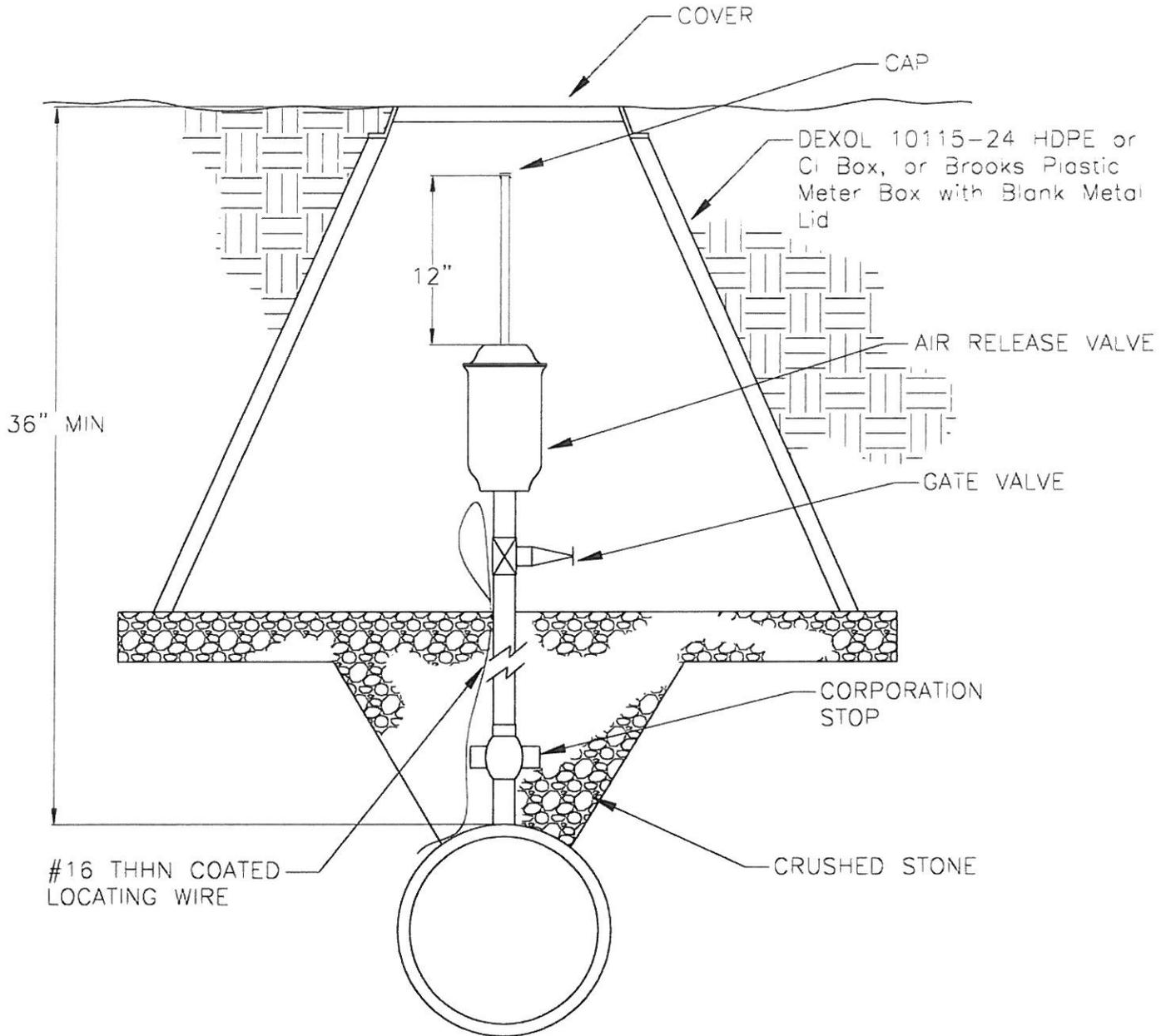
NOTES:

1. VALVE BOXES: ADJUSTABLE SCREW TYPE TYPE AND LEVEL WITH PAVEMENT OR GROUND.
2. IF ON SHOULDER, EXTEND 2" ABOVE GROUND WITH A 24"x24"x4" THICK PRECAST CONCRETE PAD LEVEL WITH VALVE BOX.
3. BROOKS 24" VALVE BOX COLLAR MAY BE USED

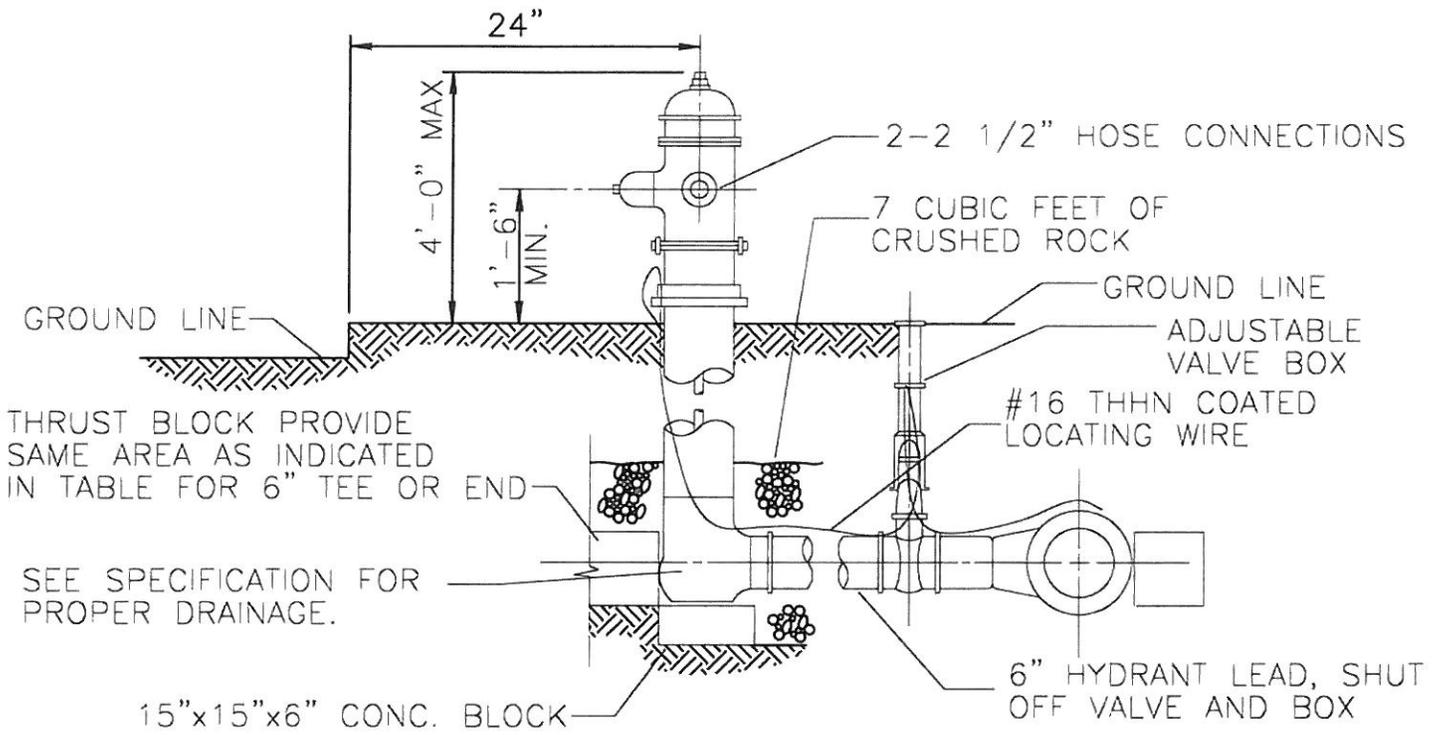
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		STANDARD VALVE CONSTRUCTION					
		COMPANY: AQUA VIRGINIA INC.					
		LOCATION:					
FILE NAME	SHEET	DATE	SCALE	DES. BY	MASTER NO.	DRAWING NO.	
STANDARD	-	1,11.07	NO SCALE	BAH	-	A0441	



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		STANDARD BLOW OFF			
		COMPANY AQUA VIRGINIA INC.			
		LOCATION:			
FILE NAME	SHEET	DATE	SCALE	DES. BY	MASTER NO
STANDARD	-	1.11.07	NO SCALE	BAH	-
					DRAWING NO
					A0477



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COMPANY: AQUA VIRGINIA INC.		LOCATION:			
FILE NAME	SHEET	DATE	SCALE	DES. BY	MASTER NO.
STANDARD	-	1.11.07	NO SCALE	BAH	-
					DRAWING NO.
					A0448



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COMPANY: AQUA VIRGINIA INC.		LOCATION:			
FILE NAME	SHEET	DATE	SCALE	DWN BY	MASTER NO
STANDARD	-	1.11.07	NO SCALE	BAH	-
					DRAWING NO
					A0440

Queens Lake Sanitary Sewer – Contract 6

Vacuum Linework West

Minutes for 2/3/16 Pre-Bid Meeting

Victor Robinson opened the meeting by verifying that everyone was in attendance for the above-named project, asking everyone in attendance to register on the sign-in sheet, and asking everyone to provide business cards for direct follow-up communication during the bid process.

Kevin Campbell gave a summary of the project.

Bill Walker spoke to the following topics regarding the plans and specifications:

- An addendum will be issued next week to address meeting questions/answers, as well as the following:
 - Two bridge manufacturers will be added to the pre-qualified list:
 - Art Thureson (Michigan)
 - Big R (Colorado, also has mfg. facility in western Virginia)
 - Additional information regarding bridge engineer/company registrations
 - Revised details for attaching railing posts to bridge stringers
 - Horizontal and vertical verification of active water main at 233 E. Queens
 - Aqua Virginia specifications
 - Change DI pipe from Class 51 to Class 53
 - Specify requirements for heat trace Thermocable
 - Revise quantity of LF for horizontal directional drilling (HDD)
 - Correct quantity of paving in long and short form project descriptions
- Lake access for bridge construction is anticipated to be from the easement at 233 E. Queens, after rough grading has been completed.
- Anticipate closing Queens Drive to through traffic at the dam
 - There is a weight limit for the dam
- Coordinate use of HOA grounds for laydown/staging with the Queens Lake Community Association (QLCA) and County
- Existing roadway is narrow for two-way traffic
- County intends to monitor dam movement during pile installation

Q&A

1. Will there be an allowance for down time if Contractor needs to change pile installation means and method due to dam movement?
No. There is plenty of sewer installation work that needs to be done.
2. Is use of community association grounds for laydown/storage a yes, no, or maybe?

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The Contractor will need to approach the QLCA directly to discuss use of grounds for the project. The QLCA has cooperated with Contractors on recent projects. The County also allows contractors to use its laydown yard in New Quarter Park, which is nearby (see Location Map on cover sheet).

3. Will someone be on site at all times to inspect grinder pump assemblies prior to and during installation?
Yes. A County inspector will be assigned full-time to the project.
4. For the HDD, some of the bends shown in the easement are fairly tight. Must the drilling alignment stay within the easement shown?
Extensive drilling is required in some locations based on property constraints. Grinder easements will be acquired once the pipe has been installed. Field changes to the easement locations shown are expected.
5. Are all easements in hand?
No. Several vacuum easements are still outstanding but are expected to be in place by the time notice to proceed is issued or the end of March, whichever is later.
6. On Sheet G-2, General Note 8, the contract should include a change order if relocating a utility.
Wording will be revised in the addendum to specify that the Contractor is responsible for relocating utilities up to two inches (2") in diameter at no additional cost to the project.
7. Is Bid Item #4 (Select Material, Type II – Stone) intended to be #57 stone for trench backfill?
No. This item, along with Bid Item #3, is for trench backfill if excavated material is unsuitable for fill.
8. Is Bid Item #10 (Aggregate Base Material) intended to be base course for paving?
No. Aggregate for paving is included in a separate pay item (see paving details on Sheet G-3). This bid item is intended to be replacement stone for aggregate driveways, and for other aggregate placement as directed by Owner.
9. Is the Owner going to provide power for the heat trace system?
No. Contractor is to furnish and install conduit from stub at E. Queens Drive to division valve at Sta. 12+35, furnish and install power cable in said conduit, leaving allowance of excess power cable coiled inside pump station as noted on the plans, and furnish and install power cable from division valve to thermostat controller on the bridge. Owner will make final connections to power panel.
10. How thick is the existing pavement?
Thickness varies across the project area, from e.g. ½" to e.g. 2".

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11. Will stone to tie shoulders into new pavement be a separate pay item?
No. Shoulder restoration is incidental to pavement reconstruction (Sheet G-3, Note 9).
12. What is the last day for submitting questions?
Questions should be submitted no later than close of business (5 p.m. local time) on Wednesday, February 10th.
13. Are vibratory hammers not allowed for pile installation?
No vibratory hammers are allowed. See Note 28 on Sheet S-1.0, and Paragraph 3.1. C of Section 31620.
14. Is the Contractor to provide pile testing?
The Owner's geotechnical engineer will conduct pile driving analysis. The Contractor is responsible for maintaining pile installation records and shall cooperate with Owner's geotechnical engineer to perform the necessary tests. The County's geotechnical engineer will install approximately three (3) inclinometers on the dam to monitor dam movement during pile installation.
15. Is the Contractor to provide concrete testing?
The County's geotechnical engineer will conduct concrete testing for bridge abutments only. Contractor shall conduct concrete testing for retaining walls and any other concrete work that requires it.
16. Is trench backfill three feet (3') of stone, and then sand?
No. Trench backfill quantities vary based on depth and location. Refer to trench details on Sheet G-6 and pavement/driveway details on Sheet G-3.
17. What about the VDOT bond?
The County will obtain the VDOT bond.
18. Is a building permit needed for the bridge?
The County will secure a building permit, if necessary.

Other items discussed:

19. The Contractor is encouraged to use E. Queens Drive for bridge materials delivery. Trucks can turn around at the pump station and in the marina parking lot, and then back down E. Queens Drive to get closer to the bridge site.
20. Note heat trace system testing requirements: immediately after cables/wires are installed, and again after insulation kits are installed.
21. Urecon applies urethane insulation to the DI pipe and inside an HDPE jacket for UV/physical protection. Channels for running cables/wires are installed on the DI

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outer pipe wall prior to installing insulation. Contact Rob Underwood for more information: r.underwood@urecon.com, 321-638-2364 ofc, 321-505-0514 cell

22. Flex joints are manufactured by EBAA. Owner will furnish, Contractor will install and insulate.
23. Reclaimed Asphalt Pavement (RAP) may be used in lieu of aggregate in trenches.