

CONTRACT DOCUMENTS
for
PUMP STATION 87
FORCE MAIN REPLACEMENT

BID OPENING

TUESDAY, DECEMBER 20, 2016 AT 3:00 P.M.

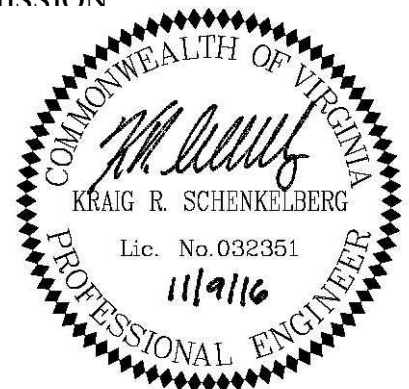


City of
Norfolk
Department of Utilities

* * * PLEASE NOTE * * *

These BID DOCUMENTS refer to the Hampton Roads Planning District Commission's Regional Standards, Fifth Edition, December 2010, as amended, which may be obtained from:

HAMPTON ROADS PLANNING DISTRICT COMMISSION
723 WOODLAKE DRIVE
CHESAPEAKE, VA 23320
PHONE (757) 420-8300



REGIONAL CONSTRUCTION STANDARDS

Fifth Edition

TABLE OF CONTENTS

	<u>Pages</u>
<i>PREFACE</i>	
The Regional Construction Standards	i
Administrative Structure	ii-iii
Want to Get Involved?	iii
Important Notices	iv
Use of Professional Engineer's Seal	iv
 <i>DIVISION 1 - GENERAL PROVISIONS</i>	
 <u>Section 101 - Definitions of Terms</u>	
I General Definitions	101-1 to 101-4
 <u>Section 102 - Bidding Requirements and Conditions</u>	
I Invitation for Bids	102-1 to 102-3
II Instructions to Bidders	102-4 to 102-14
III Bid Form	102-15 to 102-23
IV Bid Bond	102-24
V Questionnaire	102-25 to 102-29
VI Certification Regarding Debarment	102-30
 <u>Section 103 - Award and Execution of Agreement</u>	
I Award and Execution of Agreement	103-1 to 103-3
II Notice of Award	103-4 to 103-5
III Agreement	103-6 to 103-11
IV Performance Bond	103-12 to 103-13
V Payment Bond	103-14 to 103-15
VI Irrevocable Letter of Credit	103-16 to 103-18
VII Escrow Agreement	103-19 to 103-22
VIII Notice to Proceed	103-23
 <u>Section 104 - Scope of Work</u>	
I Intent of Agreement	104-1
II Amending and Supplementing Contract Documents	104-1
III Explorations and Reports	104-1
IV Underground Facilities	104-1 to 104-2
V Subsurface Conditions	104-2 to 104-3

VI	Site Security	104-3
VII	Clean-up, Disposal and Restoration	104-3 to 104-4

Section 105 - Control of Work

I	Reuse of Contract Documents	105-1
II	Copies of Contract Documents	105-1
III	Contract Documents	105-1
IV	Shop Drawings and Submittals	105-1 to 105-4
V	Record Drawings	105-4 to 105-6
VI	Access to Project	105-6
VII	Surveys and Reference Points	105-6
VIII	Working Hours	105-6 to 105-7
IX	Project Coordination	105-7 to 105-9
X	Supervision	105-9
XI	Uncovering Work	105-9 to 105-10
XII	Removal of Unacceptable Work	105-10
XIII	Substantial Completion	105-11
XIV	Use of Completed Portions	105-11
XV	Final Inspection	105-11
XVI	Claims	105-11 to 105-13
XVII	Engineer's Status	105-13 to 105-14
XVIII	Notice to Comply Order	105-15
XIX	Stop Work Order	105-15

Section 106 - Control of Material

I	Tests and Inspections	106-1
II	Labor, Materials and Equipment	106-1 to 105-2
III	Work by Owner	106-2

Section 107 - Legal Relations and Responsibility to the Public

I	Permits and Regulations	107-1
II	Land, Easements, and Rights-of-Way	107-1 to 107-2
III	Protection of Work, Property & Persons	107-2 to 107-5
IV	Environmental Stipulations	107-5 to 107-8
V	Temporary Facilities	107-8 to 107-9
VI	Emergencies	107-9
VII	Warranty and Guarantee	107-9 to 107-10
VIII.	Opening Sections of Projects to Traffic	107-10
IX	No Waiver of Legal Rights	107-10

Section 108 - Prosecution and Progress of Work

I	Patent Fees and Royalties	108-1
II	Taxes	108-1
III	Notice to Proceed	108-1
IV	Pre-Construction Conference	108-1
V	Construction Progress Schedule	108-1 to 108-2
VI	Subcontracts	108-2 to 108-3

VII	Commencement and Prosecution of Work	108-3 to 108-4
VIII	Suspension of Work	108-4
IX	Termination of Agreement	108-4 to 108-7
X	Liquidated Damages	108-7 to 108-9
XI	Separate Contracts by Owner	108-9
XII	Indemnification	108-9 to 108-10

Section 109 - Measurement and Payment

I	Measurement and Payment Procedures	109-1 to 109-8
II	Change Orders and Field Orders	109-8 to 109-9
III	Change Order Form	109-10
IV	Application for Payment	109-11
V	Escrow Agreement	109-12 to 109-14
VI	Affidavit of Payment of Claims	109-15
VII	Certificate of Substantial Completion	109-16
VIII	Statement of Surety Company	109-17
IX	Contractor's Release	109-18
X	Manhole/Structure Protective Coating Post Installation Certification	109-19 to 109-20
XI	Standard Bid Items and Units	109-21 to 102-27

Section 110 – Special Provisions

I.	Construction Drawings	110-1
II.	Hampton Roads Planning District Commission Regional Construction Standards	110-1
III.	Sequence of Construction	110-1
IV.	Appendices – Index	110-1

Appendices

APPENDIX A:	Substance Abuse and Drug-Free Workplace Ordinance
APPENDIX B:	Procurement Information Form
APPENDIX C:	Norfolk Modifications
APPENDIX D:	Measurement and Payment Items
APPENDIX E:	Norfolk Details
APPENDIX F:	Soil Borings
APPENDIX G:	Tree Protection Notes
APPENDIX H:	Contractor's Use of Temporary Facilities and Staging Areas
APPENDIX I:	Test Hole Data Sheets
APPENDIX J:	USACE Concurrence Letter
APPENDIX K:	Project Sign Details

DIVISION 2 - PRODUCTS AND MATERIALS (BY REFERENCE)

Section

200A	Division Table of Contents	200A-1 to 200A-2
200	Products and Materials	200-1 to 200-134

DIVISION 3 - ROADWAY CONSTRUCTION (BY REFERENCE)

Section

300	Division Table of Contents	300-1 to 300-4
301.	Clearing and Grubbing	301-1 to 301-5
302.	Drainage Structures	302-1 to 302-17
303.	Earthwork	303-1 to 303-18
305.	Subgrade and Shoulders	305-1 to 305-5
309.	Aggregate Base Course	309-1 to 309-3
310.	Tack and Prime Coat	310-1 to 310-4
313.	Asphalt Surface Treatment	313-1 to 313-5
315.	Asphalt Concrete Pavement (NON SUPERPAVE)	315-1 to 315-14
315A.	Asphalt Concrete Pavement (SUPERPAVE)	315A-1 to 315A-14
317	Pavement Patching	317-1 to 317-3

DIVISION 4 – MISCELLANEOUS (BY REFERENCE)

Section

400	Division Table of Contents	400-1
406	Reinforcing Steel	406-1 to 406-4
414.	Riprap	414-1 to 414-6

DIVISION 5 - INCIDENTAL CONSTRUCTION (BY REFERENCE)

Section

500	Division Table of Contents	500-1 to 500-3
501.	Underdrains	501-1 to 501-2
502.	Concrete Items	502-1 to 502-14
505	Guardrail and Steel Median Barriers	505-1 to 505-4
507	Fences	507-1 to 507-3
510.	Relocating or Modifying Existing Miscellaneous Items	510-1 to 510-3
511.	Allaying Dust	511-1 to 511-2
512.	Maintaining Traffic	512-1 to 512-18
513.	Mobilization	513-1 to 513-1
515.	Milling Pavement	515-1 to 515-2
521	Pavers	521-1 to 521-13
530.	Abandonment of Existing Pipelines and Structures	530-1 to 530-6

DIVISION 6 – LANDSCAPING (BY REFERENCE)

Section

600	Division Table of Contents	600-1 to 600-2
602.	Topsoil	602-1 to 602-2
603.	Seeding	603-1 to 603-3
604.	Sodding	604-1 to 604-2
605.	Planting	605-1 to 605-5
608.	Mowing	608-1 to 608-2

DIVISION 7 - TRAFFIC CONTROL DEVICES (BY REFERENCE)

Section

700A	Division Table of Contents	700A-1
700.	Traffic Control Devices	700-1 to 700-15
704.	Pavement Markings and Markers	704-1 to 704-7

DIVISION 8 - WATER AND WASTEWATER UTILITIES (BY REFERENCE)

Section

800	Division Table of Contents	800-1 to 6
801.	Water Distribution Systems	801-1 to 801-19
802.	Sanitary Gravity Sewer Systems	802-1 to 802-18
803.	Sanitary Force Main Systems	803-1 to 803-12
804.	Boring and Jacking	804-1 to 804-4
805.	Separation of Water Mains and Sewers	805-1 to 805-2
806.	Horizontal Directional Drilling	806-1 to 806-10

Sanitary Sewer Rehabilitation (Sections 810-822)

810.	Sewer Line Cleaning	810-1 to 810-6
811.	Television Inspection	811-1 to 811-5
812.	Bypass Pumping	812-1 to 812-4
813.	Pipe Rehabilitation by Cured-in-Place Method	813-1 to 813-11
814.	Pipe Rehabilitation by Fold-and-Form Method	814-1 to 814-10
815.	Pipe Bursting	815-1 to 815-7
816.	Sewer Pipe Joint Testing	816-1 to 816-3
817.	Chemical Grouting	817-1 to 817-4
818.	Point Repair by Excavation	818-1 to 818-4
819.	Insitu Structural Point Repair	819-1 to 819-4
820.	Insitu Point Repair by Sectional Lining	820-1 to 820-3
821.	Sanitary Sewer Service Reconnections	821-1 to 821-6
822.	Manhole Rehabilitation	822-1 to 822-8

STANDARD DETAILS (BY REFERENCE)

Standard Details Table of Contents	SD-1 to SD-2
------------------------------------	--------------

THIS PAGE WAS INTENTIONALLY LEFT BLANK

SECTION 101

DEFINITIONS OF TERMS

I. GENERAL DEFINITIONS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated and shall be applicable to both the singular and plural thereof:

- 1.1 *Addenda* - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bid Documents or the Contract Documents.
- 1.2 *Agreement* - The written agreement between the Owner and the Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- 1.3 *Application for Payment* - The form provided in the Contract Documents which is to be used by the Contractor in requesting progress and final payments and which is to include such supporting documentation as is required by the Contract Documents.
- 1.4 *Bid* - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- 1.5 *Bid Documents* - Documentation issued prior to the bid date, including documentation accompanying the Bid (Drawings, Project Specifications, HRPDC *Regional Construction Standards*, Addenda, and Special Provisions) and any post-Bid documentation submitted prior to the Notice of Award.
- 1.6 *Bidder* - Any person, firm or corporation submitting a Bid for the Work.
- 1.7 *Bonds* - Performance and Payment Bonds furnished by the Contractor and the Contractor's surety in accordance with the Contract Documents.
- 1.8 *Bid Security* - Bid Bonds and other instruments of surety, furnished by the Contractor or the Contractor's surety in accordance with the Contract Documents.
- 1.9 *Change Order* - A written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents that authorizes an adjustment in the Contract Price and/or Contract Time; issued on or after the Effective Date of the Agreement.
- 1.10 *Completion Date* - The date specified in the Notice to Proceed for final completion of the Work.
- 1.11 *Contract Documents* - The Agreement, including the Bid Documents, Notice of Award, Notice to Proceed, Field Orders, Change Orders, and modifications.
- 1.12 *Contract Price* - The total monies payable to the Contractor under the terms and conditions of the Agreement.

- 1.13 *Contract Time* - The number of calendar days stated in the Agreement for the completion of the Work. Calendar days shall be understood to be consecutive.
- 1.14 *Contractor* - The person, firm or corporation with whom the Owner has executed the Agreement.
- 1.15 *Day* - A calendar day of twenty-four hours measured from midnight to the next midnight. Calendar days shall be understood to be consecutive.
- 1.16 *Defective* - An adjective, which when modifying the word Work, refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to the Owner's acceptance.
- 1.17 *Drawings* - The plans that show the character and scope of the Work to be performed.
- 1.18 *Effective Date of the Agreement* - The date indicated in the introductory paragraph of the Agreement.
- 1.19 *Engineer* - The person, firm or corporation named as such in the Agreement. In the event the Owner should not require the services of the Engineer, then the powers, duties, and responsibilities conferred in the Contract Documents to the Engineer shall be construed to be those of the Owner.
- 1.20 *Field Order* - A verbal or written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer or Owner to the Contractor during construction.
- 1.21 *Final Completion* - All work, including punch list items noted at the final inspection, is complete to the satisfaction of the Owner.
- 1.22 *Laws and Regulations* - Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.
- 1.23 *Liens* - Liens, charges, security interests or encumbrances upon real or personal property.
- 1.24 *May* - The term "may" is permissive.
- 1.25 *Notice* - All written notices, demands, instructions, claims, approvals, and disapprovals required to obtain compliance with the Contract Documents. Any written notice by either party to the Agreement shall be sufficiently given if delivered to or at the last known business address of the person, firm or corporation constituting the party to the Agreement, or to his, their, or its authorized agent, representative or officer, or when enclosed in a postage envelope addressed to such last known business address and deposited in a United States mailbox. Notice shall be deemed received within 3 business days of U.S. Mail Service postmark date.
- 1.26 *Notice of Award* - A written notice by the Owner to the apparent Successful Bidder stating that upon compliance by the apparent Successful Bidder with the conditions precedent enumerated therein, within the time specified, the Owner will sign and deliver the Agreement.
- 1.27 *Notice to Proceed* - A written notice given by the Owner to the Contractor (with a copy to the Engineer, if appropriate) fixing the date on which the Contract Time will commence to run and on

- which the Contractor shall start to perform its obligations under the Agreement.
- 1.28 *Owner* - The public body or authority, corporation, association, firm or person with whom the Contractor has entered into the Agreement and for whom the Work is to be provided.
- 1.29 *Owner's Representative* - The person, firm or corporation named by the Owner to act as the Owner's agent.
- 1.30 *Partial Utilization* - Use by the Owner of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.
- 1.31 *Project* - The entire Work as described in the Contract Documents, including Work that is necessary and incidental to the furnishing of all materials, services, equipment, labor and supplies required to install, perform, and complete all items of Work in accordance with Contract Documents
- 1.32 *Reference Standards* - Those bulletins, standards, rules, methods of analysis or test, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents. These refer to the latest edition, including amendments in effect and published at the time the Project was advertised, unless specifically referred to by edition, volume, or date.
- 1.33 *Regional Construction Standards* - The construction standards, published by the Hampton Roads Planning District Commission (HRPDC) as amended from time to time.
- 1.34 *Responsible Bidder* - A person or firm who, in the sole opinion of the Owner, has the capability in all respects, to fully perform the contractual requirements as well as the moral and business integrity and reliability to assure good faith performance.
- 1.35 *Responsive Bidder* - A person or firm who has submitted a bid that conforms in all material respects to the Bid Documents.
- 1.36 *Resident Project Representative* - The authorized representative of the Engineer or Owner who is assigned to the Project or any part thereof.
- 1.37 *Roadway Prism* - All of the land or area within the right of way that needs to be cut, filled, graded, or otherwise disturbed to produce the design cross section, including, but not limited to, areas for curbs, ditches, sidewalks, paths, and slopes to match existing grade.
- 1.38 *Rock* - Any indurated material with a minimum compressive strength of 200psi that requires drilling, wedging, blasting, or other methods of brute force for excavation.
- 1.39 *Shall* - The term "shall" is mandatory.
- 1.40 *Shop Drawings* - All drawings, diagrams, illustrations, schedules, specified design related submittals, and other data or information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the Work.
- 1.41 *Special Provisions* - Requirements in addition to or modification of the HRPDC *Regional Construction Standards*.
- 1.42 *Specifications* - Those portions of the Contract Documents or HRPDC *Regional Construction Standards* consisting of written technical descriptions of materials, equipment, construction systems,

standards and workmanship as applied to the Work and certain administrative details applicable thereto.

- 1.43 *Standard Details* - Those portions of the HRPDC *Regional Construction Standards* consisting of drawings, explanatory of another drawing, indicating in detail and at a larger scale, the design, location, composition and correlation of elements and materials.
- 1.44 *Subcontractor* - A person, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.
- 1.45 *Substantial Completion* - That date certified by the Owner when the construction of the Project or a specified part thereof is sufficiently completed in accordance with the Contract Documents, including completion of all tests, so that the Project or specified part can be utilized for the purpose for which it is intended.
- 1.46 *Successful Bidder* - The lowest, responsible and responsive Bidder to whom the Owner (on the basis of the Owner's evaluation as hereinafter provided) makes an award.
- 1.47 *Supplier* - Any person or organization that supplies materials or equipment for the Work, including that fabricated to a special design.
- 1.48 *Underground Facilities* - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.
- 1.49 *Work* - All labor, materials, equipment, transportation, supervision, or other facilities, duties or incidentals necessary for execution and completion of the Project in compliance with the Contract Documents.

End of Section

SECTION 102

BIDDING REQUIREMENTS AND CONDITIONS

I. INVITATION FOR BIDS

Long Form

PROJECT: **Pump Station 87 Force Main Replacement**

LOCATION: **Norfolk, Virginia**

CONTACT NAME AND NUMBER: Richard Dempsey
Phone No.: (757) 664-6719
Email: richard.dempsey@norfolk.gov

The City of Norfolk will receive sealed Bids for the above titled Project at the office of the Department of Utilities located at 401 Monticello Avenue, 2nd Floor, Norfolk, VA 23510 until **3:00p.m.** local time on **Wednesday, December 20, 2016**, at which time the Bids will be publicly opened and read aloud. Any Bids received after the specified time and date will not be considered.

The Work under this Project includes but is not limited to: Furnish all labor, equipment, material, supplies, permits and fees for horizontal directional drilling 1,500 LF of 10-inch HDPE sanitary sewer force main. The work also includes the open cut installation of force main at tie-in locations, re-connecting to the existing force main at the pump station, the installation of a new precast polymer mortar concrete discharge manhole, installation of 90 LF of 6-inch gravity sewer and mainline cleanout, and abandonment of existing 8-inch cast-iron force main and discharge manhole.

The full Invitation for Bids is available at the Department of Utilities (757-664-6701), on the City of Norfolk's web site, <http://www.norfolk.gov/Bids.aspx>, on the DemandStar web site, <http://www.demandstar.com>, and in the local office of Builders and Contractors Exchange, Inc. (757-858-0680) and the Virginia Minority Supplier Development Council (757-823-4587). Electronic copies of the Bid Documents are available at no cost online at the City's web site under the "Utilities" heading. All prospective bidders and anyone wishing to receive addenda to the Bid Documents must be on the Plan Holders List. The procedure for registration on the Plan Holders List follows: go to <http://www.norfolk.gov/Bids.aspx> under the "Utilities" heading, click on this project's title in the first screen, click on the Plan Holders List on the second screen and complete the registration form. Contact the Project Manager if you have any questions regarding downloading the Bid Documents or Plan Holders registration.

It is the policy of the City of Norfolk to facilitate the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in the City's procurement activities. Toward that end, the City encourages these firms to compete and encourages non-minority firms to provide for the participation of small businesses and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, and other contractual opportunities. Bidders (offerors) are asked, as part of their submission, to describe any planned use of such businesses in fulfilling this contract.

"Bidders must comply with the following: the President's Executive Order #11246 prohibiting discrimination in employment regarding race, color, creed, sex, or national origin; the President's Executive Order #12138 and 11625 regarding utilization of MBE/WBE firms; the Civil Rights Act of 1964. Bidders must certify that they do not or will not maintain or provide for their employees any

facilities that are segregated on the basis of race, color, creed, or national origin.” By execution of the Bid Form and Contract Documents the contractor certifies to the afore mentioned requirements.

The Hampton Roads Planning District Commission’s *Regional Construction Standards, Fifth Edition, December 2010*, are hereby referenced and are part of the Bid Documents, except as may be modified by the Special Provisions of this Project or as may be shown by bold type for additions and strike-throughs for deletions. Copies of the *Regional Construction Standards* may be purchased at the offices of the HRPDC, 723 Woodlake Drive, Chesapeake, VA 23320 (Telephone 757-420-8300) or Executive Tower, Suite 1-C, 2101 Executive Drive, Hampton, VA 23666 (Telephone 757-262-0094). The latest edition of the *Regional Construction Standards* and Publication Updates may be downloaded at the HRPDC website http://www.hrpdcva.gov/Regional_Construction_Stnds/REGCONST_Home.asp

Bid Security in the amount of five percent (5%) of the Bid shall be submitted with each Bid.

A MANDATORY PRE-BID CONFERENCE will be held on **Tuesday, December 6, 2016**, at 10:00 a.m. Local Time at the Department of Utilities, 401 Monticello Avenue, 2nd Floor, Norfolk, Virginia 23510. **Late arrivals will be disqualified from the bid opening.**

Contractor registration in accordance with Title 2.2 Chapter 43, Code of Virginia is required. The Bidder shall include in its Bid the following notation: "Licensed Virginia Contractor No. _____." **Evidence of a Class A Certificate of Registration must be shown before the bid may be received and considered under a general or sub-contract of \$40,000.00 or more or when the volume of work is \$300,000.00 or more within any given twelve (12) month period. For jobs of at least \$1,500.00 but less than \$40,000.00, bidders are required to show evidence of a Class B Certificate of Registration. Under the aforesaid law, it is a Class I misdemeanor to bid or engage in any work without appropriate Class A or Class B license. The State Registration number must appear on the envelope containing the bid whenever the bid amounts to \$1,500.00 or more.**

Bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 to include in its bid or proposal the identification number issued to it by the State Corporation Commission.

Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business or entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

Withdrawal of Bids due to error shall be subject to and in accordance with Section 2.2-4330 of the Code of Virginia and the Contract Documents. **Procedures for submitting, withdrawing and evaluating Bids and other pertinent information are contained in the Instructions to Bidders. All bids will be evaluated in accordance with the City of Norfolk Procurement Procedures and the City reserves the right to waive informalities and to reject bids. The decision to award will be posed in a designated public area in accordance with Virginia Code 11-66(A).**

All construction contracts must comply with Section 33, 1-58 of the Code of the City of Norfolk, VA 1979, as amended, regarding Substance Abuse and Drug-Free Work Place policy for City Construction Contracts. (See Appendix A)

The Owner reserves the right to waive minor non-substantive informalities in the Bid, to reject any/or all Bids, to award any Bid in whole or in part and award the Bid considered to be in the best interest of the Owner. The

Owner also reserves the right to negotiate with the lowest responsive, responsible Bidder should Bid exceed available funds.

The **City of Norfolk** does not discriminate in the solicitation or awarding of contracts on the basis of race, religion, faith-based organizations, color, national origin, age, disability or any other basis prohibited by state or federal law.

By: **Cherryl F. Barnett, P.E.**
Engineering Manager – Department of Utilities

THIS PAGE WAS INTENTIONALLY LEFT BLANK

II. INSTRUCTIONS TO BIDDERS

1. Bid Documents

- 1.1. Complete sets of Bid Documents shall be used in preparing Bids. Neither the Owner nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.
- 1.2. The Owner, in making copies of the Bid Documents available on the above terms does so only for the purpose of obtaining Bids on the Work and does not confer or license or grant permission for any other use.
- 1.3. The Special Provisions for this Project as set forth in Section 110 were prepared by **Hazen & Sawyer** and are dated **November 2016**. Additional Special Provisions for this Project appear as modifications to the HRPDC *Regional Construction Standards* by strike-through's for deletions and bold type for additions in Sections 100 through 109.
- 1.4. The Drawings for this Project, prepared by **Hazen & Sawyer** and dated **November 2016**, are defined as follows:

DRAWING LIST	
DWG No.	DRAWING TITLE
G0	Title Sheet
G1	Abbreviations, Legend, Index of Drawings and Notes
G2	City of Norfolk General Notes
G3	Erosion & Sediment Control Notes and Details
G4	Traffic Control Plan and Details
C1	Horizontal Directional Drill
C2	Force Main and Sanitary Sewer Connections
C3	City of Norfolk Standard Details
C4	City of Norfolk Standard Details & Miscellaneous Details

2. Examination of Contract Documents and Project Site.

- 2.1. It is the responsibility of each Bidder before submitting a Bid:
 - A. to examine thoroughly the Bid Documents;
 - B. to visit the site to become familiar with and satisfy the Bidder as to the general, local and site conditions that may affect cost, progress, performance, or furnishing of the Work;
 - C. to study and carefully correlate the Bidder's knowledge and observations with the Bid Documents and such other related data; and,

- D. to promptly notify the Owner of all conflicts, errors, ambiguities or discrepancies which the Bidder has discovered in or between the Bid Documents and such other related documents or field/site conditions.
- 2.2 Reference is made to Sections 104 III and 104 IV, for information relating to reports, explorations, underground facilities, and easements. On request, at the discretion of the Owner, the Owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. The Bidder shall fill all holes and clean up and restore the site to its former condition, including reseeding and/or resodding any disturbed areas upon completion of such explorations, investigations, tests and studies, and hold the Owner harmless from any damage to property or injury to persons resulting from or arising out of such exploration, investigation, tests, and studies. The Bidder shall obtain and comply with all local and state permitting requirements.
- 3. Interpretations and Addenda.**
- 3.1. No oral explanation in regard to the meaning of the Contract Documents will be made, and no oral instructions will be given before the award of the Work. Discrepancies, omissions or doubts as to the meaning of the Contract Documents shall be communicated in writing to the Owner for interpretation. Bidders should act promptly and allow sufficient time for a reply to reach them before the submission of their Bids. Any interpretation made will be in the form of an addendum to the Contract Documents, which will be forwarded to all known Bidders, and its receipt shall be acknowledged on the Bid Form. All questions shall be received no later than 7 days prior to the date for opening of Bids.
- 3.2. Addenda may also be issued to modify the Contract Documents.
- 4. Bid Security.**
- 4.1. Each bid shall be accompanied by a Bidder's bond issued by a company authorized and licensed to transact business as surety in the Commonwealth of Virginia, a certified check, or cash escrow, in an amount equal to not less than five (5) percent of the total amount of the bid. Upon approval of the Owner's attorney, in accordance with Section 2.2-4338, Code of Virginia, 1950, as amended, a Bidder may furnish a personal bond, property bond, or bank or savings and loan association's letter of credit on certain designated funds for the amount required for the Bid Security. The Bid Security shall be accompanied by a certified copy of the power of attorney for the surety attorney-in-fact. Said bid security shall be left with the Owner, subject to the conditions specified herein, as a guarantee of good faith on the part of the Bidder that if the bid is accepted, the Bidder shall execute the contract. **If a certified check is offered as guarantee, it shall be made payable to the 'City Treasurer of Norfolk, VA.'**
- 4.2. The Bid Security shall be returned to all except the three (3) lowest Bidders within ten (10) days after the date of Bid opening. The Bid Security will be returned to the three (3) lowest Bidders within five (5) days after the execution of an Agreement and Performance and Payment Bonds and Certificates of Insurance have been approved by the Owner. None of the three (3) lowest Bids shall be deemed rejected, notwithstanding acceptance of one of the Bids, until the Agreement has been executed by both the Owner and the Successful Bidder.
- 5. Liquidated Damages.**
- 5.1. Provisions for liquidated damages are set forth in Section 108-X and in Section 102 III (Bid Form).

6. Preparation of Bid.

- 6.1. All blanks on the Bid Form shall **legibly and carefully** be completed in ink.
- 6.2. Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 6.3. Bids by unincorporated organizations shall be executed in the organization's name and signed by an individual having authority to enter into a contract on behalf of such organization, whose title shall appear under the signature and the official address of the organization shall be shown below the signature. For example, if such organization is a Limited Liability Company, the Bid shall be signed by its manager, or if such organization is a Limited Partnership, the Bid shall be signed by a general partner.
- 6.4. All names shall be typed or printed in ink below the signature. All names shall be the legal name of the corporation, unincorporated organization and/or individual.
- 6.5. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).
- 6.6. The address, telephone number, e-mail address and fax number for communications regarding the Bid shall be provided.
- 6.7. It is understood and agreed that, in the event an Agreement is executed for the supplies, equipment or services included in the Bid, no indication of such sales or services to the Owner shall be used in any way in product literature or advertising without the written consent of the Owner.

7. Quantities and Unit Prices.

- 7.1. The Owner reserves the right to increase or decrease the amount of any class or portion of the Work. No such change in the Work shall be considered as a waiver of any condition of the Agreement nor shall such change invalidate any of the provisions thereof. Payment will be made at the unit or lump sum prices under the Agreement only for the work actually performed or materials furnished and accepted.
- 7.2. Bidders shall include in their Bid prices the entire cost of each item set forth in the Bid, and it is understood and agreed that there is included in each lump sum or unit price bid item the entire cost necessary or incidental to the completion of that portion of the work, unless such incidental work is expressly included in other lump sum or unit price bid items.

8. General Equipment or Material Specification.

- 8.1. When the Bid Documents specify one or more manufacturer's brand names or makes of materials, devices or equipment as indicating a quality, style, appearance or performance, with the statement "or equal," the Bidder shall base the Bid on either one of the specified brands or an alternate brand which the Bidder intends to substitute. Use of an alternate shall not be permitted unless it has been found to be equal or better by the Owner and at no additional cost to the Owner.

- 8.2. The burden of proof as to the comparative quality and suitability of alternative equipment, articles or materials shall be upon the Bidder. The Bidder shall furnish at its own expense, such information relating thereto as may be required by the Owner. The Owner shall be the sole judge as to the comparative quality and suitability of alternative equipment, articles or materials and the Owner's decisions shall be final. Any other brand, make or material, device or equipment which, in the opinion of the Owner is recognized to be the equal of that specified, considering quality, workmanship and economy of operation and is suitable for the purpose intended, shall be accepted. In the event of any adverse decision by the Owner, no claim of any sort shall be made or allowed against the Engineer or Owner. Samples, if requested by the Bidder, may be returned at the Bidder's expense.
- 8.3. If in the sole discretion of the Owner an item proposed by the Contractor does not qualify as an "or equal" item it may be considered as a proposed substitute item. The Contractor shall furnish the Owner any such information as the Owner may request to evaluate the substitute item to include estimates of costs or credits, redesign, claims or schedule impacts, warranty or maintenance issues or payment of any license or royalty that could directly or indirectly result from acceptance of the substitute. Any cost or time impacts to the project schedule caused by the Contractor's submission of a substitute shall be borne by the Contractor. Any costs incurred by the Owner or by the Owner's Engineer in reviewing the suitability of the substitute item shall be borne by the Contractor. The Owner may refuse to accept a substitute unless an acceptable adjustment in the contract price is offered by the contractor.

9. Proprietary Material and Equipment Specification.

- 9.1 Where any item of equipment or material is specified by proprietary name, trade name, catalog reference, or name of one or more manufacturers, without the addition of such expressions as "or equal," it is to be understood that those items are so specified for reasons of standardization in maintenance and operation, or for reasons of obtaining desirable features best suited to the requirements of the Specifications. This specific equipment shall form the basis of the Bid and be furnished under the Agreement. Where two or more items of equipment or material are named, the Contractor has the option to use either.

Additive/Alternate Bids

10.1. Additive Bids

Additive bid items are those in addition to the base Bid items. Bidders shall submit additive Bids on all items as shown on the Bid form. Award shall be based on the lowest responsive and responsible Bid for base Bid plus all additive bid items listed and in accordance with any criteria in the Special Provisions.

10.2. Alternate Bids

Alternate bid items are those where more than one type of improvement may be considered for a portion or all of the Work due to the character of the improvement and uncertainties which may be encountered during construction. If alternate Bids are requested for a portion of or all of the Work, Bidders shall submit alternate Bids for all alternate(s) the Bidder or its Subcontractor is qualified to perform. Award shall be based on the lowest responsive and responsible Bid for the base Bid plus the amount added or deleted for the alternate bid items selected by the Owner and in accordance with any criteria in the Special Provisions. The alternates selected shall be at the sole discretion and in the best interests of the Owner.

11. Submission of Bids.

- 11.1. Bids shall be submitted at the time and place indicated in the Invitation for Bids and shall be sealed, marked with the Project title and name and address of the Bidder, and accompanied by the bid guarantee and other required documents. The Bid may not be changed by markings on the envelope. Only the amounts indicated on the Bid Form will be considered in determining the final Bid amount.
- 11.2. When a license is required, the Bidder shall include in its Bid over the Bidder's signature the following notation: "VIRGINIA LICENSED CONTRACTOR NO. _____" (Ref. Title 2.2, Chapter 43, and Title 54.1, Chapter 11, Code of Virginia).
- 11.3. When a license is not so required and a person who is not the holder of a License enters a Bid, such person shall include in its Bid over the Bidder's signature the following notation: "LICENSING NOT REQUIRED UNDER VIRGINIA STATE CODE."
- 11.4. The Contractor shall complete and submit the Debarment Certification form. A copy of the form is included in Section 102, VI at the end of this Section.
- 11.5. The Contractor shall complete and submit the Non Collusion Affidavit form. A copy of the form is included in Section 102, III.K in this section.

12. Receipt and Opening of Bids.

- 12.1. Bids will be opened publicly at the time and place and under the conditions stated in the Invitation for Bids. The Owner's Representative whose duty it is to open Bids will decide when the specified time has arrived. No responsibility will be attached to any such person for the premature opening of a Bid not properly addressed and identified. It is the responsibility of the Bidder to assure that the Bid is delivered to the designated place of receipt prior to the time set for the receipt of Bids. No Bid received after the time designated for receipt will be considered.
- 12.2. Bids will be opened and read aloud publicly.

13. Bids to Remain Subject to Acceptance.

- 13.1. All Bids shall remain subject to acceptance for 90 Days after the day of the Bid opening, but the Owner may, in its sole discretion, release any Bid and return the Bid Security prior to that date, or extend the acceptance period an additional 90 days with the consent of the apparent low bidder and surety.

14. Withdrawal of Bids.

- 14.1. Withdrawal of Bids filed with the Owner may be made only by a representative of the firm submitting the Bid, who shall appear in person prior to the deadline designated in the advertisement for receipt of Bids. Such representative shall furnish satisfactory identification and proof that they are authorized to withdraw the Bid. Telephone, e-mail, or facsimile notices will not be considered. Additions and/or deletions marked on the outside of the Bid envelope will not be considered.
- 14.2. In accordance with Section 2.2-4330(A)(i) of the Code of Virginia, as amended, If the Bid price was substantially lower than the other Bids solely to a mistake therein, provided the Bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually

due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents, and materials used in the preparation of the Bid sought to be withdrawn and provided further the Bidder shall give notice in writing of his claim of right to withdraw within two (2) business days after the Bid opening, then the Bid may be withdrawn. The Bidder shall, within the following two (2) business days provide the subjective data required in this section to satisfy the Owner's representative that the grounds for such withdrawal do exist.

- 14.3 Should the Bidder refuse to enter into the Agreement after notification of award, the Bid Security shall be forfeited.
- 14.4 No Bid may be withdrawn under this section when the result would be the awarding of the Agreement on another Bid to the same Bidder or to another Bidder in which the ownership of the withdrawing Bidder is more than five percent.
- 14.5 If a Bid is withdrawn under the authority of this section, the remaining Bids shall be evaluated to determine the lowest responsive and responsible Bidder.
- 14.6 No Bidder who is permitted to withdraw a Bid shall, for compensation, supply any material or labor to or perform any subcontract or other work agreement for the person or firm to whom awarded, or otherwise benefit, directly or indirectly, from the performance of the Project for which the withdrawn Bid was submitted.
- 14.7 If withdrawal of any Bid is denied, the Bidder shall be notified in writing stating the reasons for this decision. Any Bidder who desires to appeal a decision denying withdrawal of Bid shall, as sole remedy, institute legal action provided by Section 2.2-4358 and Section 2.2-4364(B), Code of Virginia, 1950, as amended.

15. Evaluation of Bids.

- 15.1. In evaluating Bids, the Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, unit and lump sum prices, and additive/alternate bid items if requested in the Bid Form.
- 15.2. The Owner may consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work for which the identity of Subcontractors and other persons and organizations shall be submitted as specified in the Bid Documents.
- 15.3. The Owner may conduct such investigations as deemed necessary to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the Work in accordance with the Bid Documents to the Owner's satisfaction within the prescribed time.
- 15.4. Bids will be based upon the estimated quantities shown in the Bid Form. Bids will be compared on the basis of a total computed price; arrived at by taking the sum of the estimated quantities of each Bid Item, multiplied by the corresponding unit price bid, and any lump sum Bids on the individual items. Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of

the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of words. The right to reject any or all Bids or to accept any Bid considered of advantage to the Owner is reserved.

- 15.5. Unless all Bids are canceled or rejected, the Owner reserves the right granted by Section 2.2-4318 of the Code of Virginia, as amended, to negotiate with the lowest responsible, responsive Bidder to obtain a Contract Price within the funds budgeted for the construction project. Negotiations with the lowest Bidder may include both modification of the Contract Price and the Scope of Work/Specifications to be performed. The Owner shall initiate such negotiations by Written Notice to the lowest responsible, responsive Bidder that its Bid exceeds the available funds and that the Owner wishes to negotiate a lower Contract Price. The Owner and the lowest responsible, responsive Bidder shall agree to the times, places, and manner of negotiations.
- 15.6. The acceptance of a Bid will be a notice in writing, signed by the Owner, and no other act shall constitute the acceptance of a Bid.
- 15.7. The Owner reserves the right to waive minor informalities in the Bid, to reject any/or all Bids, to award any Bid in whole or in part, and to award the Bid considered to be in the best interest of the Owner.

16. Qualifications of Bidders and Subcontractors.

- 16.1. The Contractor's Questionnaire is included in the Bid Documents and shall be submitted with the signed bid form. ~~upon request within 72 hours.~~ This information will assist the Owner in investigations and determination of the Contractor's qualifications to perform the Work.
- 16.2. To demonstrate their qualification to perform the Work, each Bidder shall ~~be prepared to submit further written satisfactory evidence that the Bidder has sufficient experience, necessary capital, materials, machinery and skilled workers to complete the Work.~~ **Failure to submit written evidence with the bid will result in bid disqualification.** If financial statements are required they shall be of such date as the Owner shall determine and shall be prepared on forms acceptable to the Owner. The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the Work. The Owner's decision or judgment on these matters shall be final, conclusive and binding.
- 16.3. **Experience of Bidder (TO BE SUBMITTED WITH BID):**
 - A. **The Contractor shall thoroughly familiarize itself with all specific manufacturing and installation requirements included in the bid.**
 - B. **The Contractor shall employ and provide the fulltime on-site services of a competent superintendent. The superintendent shall have been in full charge of installing similar sized water pipeline and/or sewer force main.**
 - C. **The Contractor shall submit written evidence of having satisfactorily completed at least three (3) horizontal directional drill sanitary sewer force main (or water main) installation contracts within the past 5 years, of similar size and complexity, including superintendent's experience in installing the pipe material and joint types to be used. Written evidence shall include project titles, pipe diameters, locations, reference contacts, addresses, and telephone numbers.**
- 16.4. The apparent low Bidder shall, within seven consecutive days after the day of the bid opening, submit to the Owner a list of all Subcontractors who will be performing work on the Agreement. Such list

shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of experience and qualification for each such Subcontractor, person and organization. If the Owner, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, the Owner may, before giving the Notice of Award, request the apparent low Bidder to submit an acceptable substitute without an increase in Bid price. If the apparent low Bidder declines to make any such substitution, the contract shall not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. For any Subcontractors, other person or organization so listed and to whom Owner does not make written objection prior to the giving of the Notice of Award, it will be deemed the Owner has no objection.

- 16.5. By submitting their Bid, Bidders certify that they are not now debarred by the Federal Government or by the Commonwealth of Virginia or by any other state, or by any town, city, or county, from submitting Bids on contracts for construction covered by this solicitation, nor are they an agent of any person or entity that is now so debarred.
- 16.6. If the Bidder is organized as a stock or nonstock corporation, a limited liability company, a business trust, or a limited partnership, or is registered as a registered limited liability partnership, the Bidder must be authorized to transact business in the Commonwealth as a domestic or foreign entity if so required by Title 13.1 or Title 50 of the Code of Virginia, or as otherwise required by law. The Bidder shall include the identification number issued by the State Corporation Commission on the Bid form or describe why the Bidder is not required to be so authorized. Any Bidder failing to do so shall not be awarded the Contract unless the Owner issues a waiver of this requirement and administrative policies and procedures are established by the locality. If the Bidder allows its existence to lapse, or its certificate of authority or registration to transact business in the Commonwealth of Virginia to expire, or be revoked or cancelled, such will be deemed as an act of default enabling the Owner to all remedies for default, including but not limited to revocation of this Agreement.

17. Sham or Collusive Bids.

- 17.1. The Bids of any Bidder or Bidders who engage in collusive bidding shall be rejected. Any Bidder who submits more than one Bid in such a manner as to make it appear that the Bids submitted are on a competitive basis from different parties shall be considered a collusive Bidder.
- 17.2. The provisions contained in Sections 2.2-4367 through 2.2-4377, Code of Virginia, as amended, ~~and~~ ~~Section(s)~~ _____ of the Code of the City/County of _____ Virginia, as amended, shall be applicable to all contracts solicited or entered into by Owner. By submitting their Bids, all Bidders certify that their Bids are made without collusion or fraud, and that they have not offered or received any kickbacks or inducements from any other Bidder, Supplier, manufacturer or subcontractor in connection with their Bid, and they have not conferred with any public employee having official responsibility for this procurement transaction, any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

18. Time of Essence

- 18.1 As the provisions hereof relating to the time for performance and completion of the Work are for the purpose of enabling the Owner to proceed with the construction of public improvements in accordance with pre-planned programs, such provisions are of the essence.

19. Contract Documents

- 19.1** The Hampton Roads Planning District Commission *Regional Construction Standards* Fifth Edition are hereby defined as the City of Norfolk, Department of Utilities Standard Specifications. Department of Public Works Standards, latest edition and the accompanying Contract Documents are intended to supplement each other, so that anything shown on the accompanying Contract Documents but not mentioned in the specifications, or vice versa, shall be required as if both specified and shown. In the event of a conflict between the standards and specifications referenced herein, the order of precedence shall be as follows: Section 110 Special Provisions, City of Norfolk Department of Utilities *Standard Design Criteria Manual*, City of Norfolk Department of Public Works Standards, Contract Documents including Supplemental Specifications, Hampton Roads Planning District Commission *Regional Construction Standards*.

THIS PAGE WAS INTENTIONALLY LEFT BLANK

III. BID FORM

Bids to be opened:

Time **3:00 p.m.**,

Wednesday, December 20, 2016

Work to be Completed in:

Substantial Completion: **90 Calendar Days**

Final Completion: **120 Calendar Days**

Liquidated Damages:

One Thousand Dollars and No Cents (\$1000.00) per calendar day after time for Substantial Completion has expired.

Five Hundred Dollars and No Cents (\$500.00) per calendar day after time for Final Completion has expired.

Performance Bond:

100%

Payment Bond:

100%

Bid Security:

5%

Contractor and owner recognize that time is of the essence of this agreement and that the owner will suffer financial loss if the work is not completed within the times specified, plus any extensions thereof allowed in accordance with the contract documents. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by the owner if the work is not completed on time. Accordingly, instead of requiring any such proof, owner and contractor agree that as liquidated damages for delay (but not as penalty), contractor shall pay owner One Thousand Dollars and No Cents (\$1,000.00) for each calendar day that expires after the time specified for substantial completion until the work is substantially complete. After substantial completion, if contractor shall neglect, refuse, or fail to complete the remaining work within the contract time or any proper extension thereof granted by owner, contractor shall pay owner Five Hundred Dollars and No Cents (\$500.00) for each calendar day that expires after the time specified for final completion and readiness for final payment until the work is completed and ready for final payment. If substantial completion is not achieved by the time of final completion then liquidated damages for both substantial and final completion shall run concurrently until substantial completion is achieved.

To: Director of Utilities
City of Norfolk, Virginia

A. BID PRICE

OPTION A - LUMP SUM BID

Not Used

OPTION B - COMBINATION LUMP SUM AND UNIT PRICE BID

In compliance with the Bid Documents, titled **Pump Station 87 Force Main Replacement**, 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:

Item No.	Item Description	Unit	Quantity	Unit Price	Total Price
PUMP STATION 87 FORCE MAIN REPLACEMENT					
1	Horizontal Directional Drill	LS	1	\$	\$
2	HDPE Force Main (10-inch DIPS, DR9)	LF	95	\$	\$
3	Connect to Existing 8-inch Force Main	LS	1	\$	\$
4	Air Vent / Blow Off Valve	EA	1	\$	\$
5	Precast Polymer Mortar Concrete Manhole	EA	1	\$	\$
6	PVC Main (6-inch)	LF	90	\$	\$
7	PVC Service Lateral (Public)	LF	15	\$	\$
8	PVC Service Lateral (Private)	LF	25	\$	\$
9	Main Line Cleanout:	EA	1	\$	\$
10	Property Line Cleanout	EA	1	\$	\$
11	Private Property Cleanout	EA	1	\$	\$
12	Plumbing Permit Allowance	EA	1	\$ 46.92	\$ 46.92
13	Manhole Abandonment	EA	1	\$	\$
14	Flowable Fill	CY	20	\$	\$
15	Pavement Demolition	SY-IN	1,250	\$	\$
16	Aggregate Base	CY	12	\$	\$
17	Asphalt Surface Course (SM-9.5)	TON	65	\$	\$
18	Concrete Driveway Replacement	EA	1	\$	\$
19	Select Bedding, No. 57 Stone	CY	20	\$	\$
20	Select Backfill	CY	240	\$	\$
TOTAL OF ALL PRICES					
In Words:					

OPTION C - UNIT PRICE BID

Not Used

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents. The prices quoted shall include without exception all materials, supervision, labor, equipment, appliances, clean-up, incidental items, applicable sales, use and other taxes, insurance, building permit or fees, and the Contractor's labor, overhead, profit, mobilization and other mark-ups, and in full accordance with the Contract Documents. Include allowance for waste where appropriate. The unit prices shall be maintained throughout the Contract Time. Unit prices shall be used in determining additions or deductions from the total Contract Price in the event of changes due to unforeseen conditions in the Work.

MBE/WBE Compliance Checklist

Name of Recipient/Prime Contractor: _____

Project Name: _____ Project Number: _____

Check Procurement Type: (Check applicable boxes)

- ☐ Service – Engineering
- ☐ Services – Legal
- ☐ Construction Contractor (Prime)
- ☐ Construction Contractor (Subcontract)
- ☐ Supplies
- ☐ Equipment

In order to be in compliance with the federal procurement requirements, funding recipients and contractors are obligated to make reasonable efforts, otherwise known as “good faith efforts,” to solicit Minority-Owned Business Enterprises (MBE) and Women-Owned Business Enterprises (WBE) in their procurement methods. The goal of this good faith effort is to increase contracting opportunities for MBE/WBE firms. It is not sufficient to just have a competitive bidding process that is open to MBE/WBE firms. Funding recipients and contractors must seek out qualified MBE/WBE firms.

Recipients are required to include provisions in their bid documents and take affirmative steps to solicit MBE/WBE firm participation in procuring services, supplies, equipment and in awarding construction contract. The successful prime contractor must also seek MBE/WBE firm participation in obtaining subcontracts for construction work, equipment, services and supplies **prior to bid submittal**.

Demonstration of good faith efforts must be documented. This checklist is designed to facilitate and document compliance with “good faith efforts.” Failure to comply with MBE/WBE procurement requirements will result in the recipient incurring costs that are ineligible for reimbursement from our program.

Please check boxes where activities are completed and provide documentation; explain unchecked boxes in comments below and use additional pages if necessary:

- ☐ Certified Affidavit of Publication of Newspaper advertisement soliciting MBE/WBE participation. (Suggested advertisement language: Minority Owned Businesses (MBEs) and Women Owned Businesses (WBEs) are encouraged to respond.)

- ☐ Your advertisements from publications that target MBE/WBE firms. (Only consider when it is believed that this advertisement may increase MBE/WBE participation.)

Obtain current lists of MBE/WBE firms. (Documentation must be on file and available for examination. A possible resources is: <http://dmbe.virginia.gov/>)

- ☐ List sources used to identify MBE/WBE firms:

- ☐ Identify potential MBE/WBE firms for direct solicitation (you may attach your list).

- ☐ Directly solicit MBE/WBE firms. Provide list of MBE/WBE firms solicited and solicitation letters sent to all MBE/WBE firms. (Solicit those MBE/WBE firms that you would reasonably expect to respond and submit a quote.)

- ☐ Description of contacts (i.e. telephone calls) and dates of contacts with MBE/WBE firms.

- ☐ Description how you identified portions of work that could be divided or subcontracted and performed by qualified MBE/WBE firms. (Reduced contract size/quantities when economically feasible to permit participation of MBE/WBE firms.)

- ☐ Copies of MBE/WBE firm certification information for all proposed prime and subcontractor MBE/WBE firms.

Successful bidders/offerors should take reasonable affirmative steps to subcontract with MBE and WBE firms whenever additional subcontracting opportunities arise during the performance of the contract.

Comments:

Recipient/Contractor's Signature

Date

B. ADDENDA

The undersigned acknowledges receipt of the following addenda:

Addendum No. _____ Dated: _____.

Addendum No. _____ Dated: _____.

Addendum No. _____ Dated: _____.

- C. We agree to enter into an Agreement with the City of Norfolk, Virginia within ten (10) days of the award of same to us for the price named in our Bid.
- D. It is expressly agreed by us that the City of Norfolk, Virginia shall have the right to reject any and all Bids and to waive any minor non-substantive errors in the Bid and accept the Bid in the (Locality's) best interests.
- E. In default of the performance on our part of the conditions of Bid, our failure to enter into an Agreement with the City of Norfolk, Virginia, within the time above set, we herewith furnish a Bid Security in the amount of \$_____, which shall be absolutely forfeited to the City of Norfolk, Virginia, but otherwise the said Bid Security shall be returned.
- F. We agree to begin Work at any time we may be notified by the Owner, and complete all of the Work embraced in the Agreement within _____ Days;
- G. *[This applies to projects over \$200,000 unless otherwise indicated]*. I/We elect to utilize the Escrow Account Procedure described in the provision of this bid if determined to be the successful low Bidder.
_____ (write "Yes" or "No").
_____ Bid total does not qualify for escrow account option
- H. The undersigned has read all sections under "Instructions to Bidders."
- I. By signing the attached, the bidder certifies that a copy of the City of Norfolk Department of Utilities Standard Specifications is in the Bidder's possession, and that all work called for in the contract documents will be done in accordance with these specifications as prioritized in Section II.19.1.
- J. By signing, each signatory acknowledges any strike-throughs contained herein, unless hand-written.

L. CONTRACTOR'S REGISTRATION, SCC NUMBER AND SIGNATURE

Registered Virginia Contractor Class and No. _____

Registration Expires _____

State Corporation Commission (SCC) Number _____

(NOTE: FAILURE TO INCLUDE CONTRACTOR'S REGISTRATION and SCC NUMBER ARE GROUNDS FOR REJECTION OF THE BID.)

Contractor _____ Signed _____

Date _____ Title _____

NOTE: If Bidder is a corporation, write state of incorporation under signature.

MAILING ADDRESS AND TELEPHONE/E-Mail/FAX NUMBER OF BIDDER:

() [Telephone] E-mail _____; FAX _____

IF CORPORATION, PROVIDE NAME AND MAILING ADDRESS AS REQUIRED BELOW.

PRESIDENT

SECRETARY

TREASURER

IF PARTNERSHIP, PROPRIETORSHIP, LIMITED LIABILITY COMPANY OR OTHER FIRM,
PROVIDE NAME AND MAILING ADDRESS OF EACH PARTNER, PROPRIETOR, OR MEMBER OF
FIRM.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

K. NON COLLUSION AFFIDAVIT

City of Norfolk, Virginia project: **Pump Station 87 Force Main Replacement**

Bid Date: _____

COMMONWEALTH OF VIRGINIA
CITY OF NORFOLK

This day personally appeared before the undersigned, a Notary Public in and for the City/County and State aforesaid,

_____ who having been first duly sworn according to law, did depose and aver as follows:

- (a) That he/she is _____
(Owner, Partner, President, etc.)
of _____
(insert name of Bidder)
- (b) That he/she is personally familiar with the Bid of _____
(Insert Company Name)
submitted in connection with the above captioned Owner's project.
- (c) That said Bid was formulated and submitted in good faith as the true bid of said Bidder.
1. In preparation and submission of this Bid, the Bidder did not either directly or indirectly, enter into any combination or agreement with any person, firm or corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free, competitive bidding in violation of the Sherman act (15 U.S.C. Section 1) or sections 59.1-9.1 through 59.1-9.17 or sections 59.1-68.6 through 59.1-68.8 of the Code of Virginia.
 2. The undersigned Bidder hereby certifies that neither this Bid nor any claim resulting therefrom, is the result of, or affected by, any act of collusion with, or any act of another person or persons, firm or corporation engaged in the same line of business or commerce; and that no person acting for or employed by the Owner has any personal interest in this Bid.
 3. The undersigned hereby further agrees that upon request of the Owner, the records and books pertaining to this Bid will be voluntarily supplied, furnished, and released to the Owner.
 4. The undersigned hereby further certifies that the Bidder has not knowingly falsified, concealed, misled, or covered up by any trick, scheme, or device a material fact in connection with this bid. The undersigned also certifies that the Bidder has not made any false, fictitious or fraudulent statements or representations or made or used any false writing or documents knowing the same to contain any false, fictitious or fraudulent statement or entry in connection with this Bid.

5. The undersigned further agrees that the Bidder will comply with section 2.2-4374 of the Code of Virginia, 1950, as amended, and has not bought or purchased any equipment from any person employed by the Owner as an independent contractor to furnish architectural or engineering services for this Project, nor from any partnership, association or corporation in which such architect or engineer has a pecuniary interest.
6. The undersigned further agrees to inform and require compliance by the following persons and entities with this anti-collusion statement as a condition of payment: all subcontractors, consultants, subconsultants, or any person, corporation, or legal entities that provide or furnish labor, material, equipment, or work related to this project.
7. All Covenants and Agreements made by the Contractor are made by it on behalf of the Contractor and its successors, personal representatives and assigns, the same as if they had been specifically named in each instance.

And further this deponent saith not.

Name of Company/Bidder

Title (Owner, Partner, President)

Subscribed and sworn to before me this _____ day of _____, 20__

My commission expires: _____, 20__

Notary Public

IV. BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto _____ as OWNER in the penal sum of _____ (Five Percent) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20__.

The Condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain BID, attached hereto and hereby made a part hereof to enter into an Agreement in writing, for the

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver an Agreement in the Form of Agreement attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said Agreement, and for the payment of all persons performing labor or furnishing materials in connection therewith, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year set forth above.

Principal

Surety

By: _____
Attorney-in-Fact

IMPORTANT - Surety companies executing BONDS shall appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the Commonwealth of Virginia.

V. QUESTIONNAIRE

~~If requested by the Owner, the following questions shall be answered in full by the Bidder, and submitted with the signed bid form. returned to the Owner within 72 hours.~~

1. Name of Company: _____
Trade Name (if different from Company Name): _____
Principal Office Address: _____

Telephone No(s): _____
Fax No(s): _____

- a. If a Corporation, answer the following:

When Incorporated: _____

In What State: _____

Names and Addresses of Directors: _____

Names and Addresses of Shareholders: _____

- b. If an Unincorporated Organization, answer the following:

Date of Organization: _____

Names and Addresses of Owners or Members: _____

Type and State of Organization: _____

- c. If a Partnership, state whether Partnership is General or Limited: _____

Names and Addresses of Owners or Partners: _____

2. a. How many years has this Bidder been in business as a Contractor under its present business name? _____
- b. What are prior names of this Bidder, if any? _____

3. How many years' experience in this type of construction work has this Bidder had:

1) As a Contractor _____ 2) As a Subcontractor _____

4. Provide a list of uncompleted Contracts at present held by this Bidder (attach supplemental sheet if necessary):

<u>Contract</u>	<u>Type of Work</u>	<u>Amount</u>	<u>Percentage Completed</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

5. List the Bidder's crew foremen and supervisors proposed for this Project and their years of related experience:

<u>Name</u>	<u>Years of Experience</u>	<u>Dates of Employment with Bidder</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. What construction equipment does this Bidder own that is available for the proposed work (attach supplemental sheet if necessary)?

-
-
-

- (The term "completed" means accepted and final payment received from the Owner or authorized representative).

[illegible]

9. Have you ever performed work for a municipal corporation, local governing body, or similar agency previously? (If all such bodies are listed under 8, this question need not be completed).

10. a. Has this Bidder ever failed to complete any work awarded to it? If yes, give name of Owner, name of Bonding Company and circumstances:

- b. Is this Bidder debarred by the Federal Government or by the Commonwealth of Virginia or by any other state, or by any town, city, or county?

Yes _____ No _____ If yes, please provide details:

- c. Has this Bidder ever had any judgements entered against it for the breach of contract for construction? If yes, please provide details:

- d. Give a summary of your financial statement. (List assets and liabilities, use an insert sheet, if necessary).

11. State approximate largest dollar volume of work performed by this Bidder in one year:

12. Give two (2) Banking Institution References:

a. Name: _____

Address: _____

Credit Available: _____

- b. Name: _____
Address: _____
Credit Available: _____
13. List three material suppliers and amount of credit available:

14. List insurance coverage and amount (or attach certificate of insurance):

Liability-Property

Liability-Personal Injury

Vehicle and Equipment

Other - Identify _____
15. Bonding reference - List surety company and highest coverage:

16. Have you or your authorized representative, personally inspected the location of the proposed Work, and do you have a clear understanding of the requirements of the Bid Documents?

- The undersigned hereby authorizes and consents to any person, firm or corporation to furnish any information requested by the Owner in verification of this statement of contractor's qualifications. Also, if it is the apparent low Bidder, the undersigned hereby agrees to furnish the Owner upon request, a complete and current financial statement:
- Contractor: _____
By: _____
Title: _____
Date: _____

VI. CERTIFICATION REGARDING DEBARMENT

This is to certify that this person/firm/corporation is not now debarred by the Federal Government or by the Commonwealth of Virginia or by any other state, or by any town, city, or county, from submitting Bids on contracts for construction covered by this solicitation, nor are they an agent of any person or entity that is now so debarred.

Name of Official

Title

Firm or Corporation

Date

End of Section

SECTION 103

AWARD AND EXECUTION OF AGREEMENT

I. AWARD AND EXECUTION OF AGREEMENT

1. Notice of Award.

- 1.1. A Notice of Award will be issued by the Owner, or the Bids rejected as soon as reasonably possible, but no later than 90 Days after the date of the opening of Bids. The Owner may, in its sole discretion, release any Bid and return the Bid Security prior to that date, or extend the acceptance period an additional 90 days with the consent of the apparent low bidder and surety.
- 1.2. The Owner reserves the right to waive any minor informalities, to reject any and all Bids in whole or in part, and may advertise for new Bids if, in its judgment, the best interests of the Owner will be served.
- 1.3. At the time of the issuance of the Notice of Award, the Owner shall publicly post an announcement of the award on/at <http://norfolk.gov/Bids.aspx>.

2. Signing of Agreement.

- 2.1. When the Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by 4 original copies of the Agreement, with all other written Contract Documents attached. Within 10 Days thereafter the Contractor shall sign and deliver all the original copies of the Agreement and attached documents to the Owner with the required Bid Security and Certificate of Insurance. Within 30 Days thereafter the Owner shall deliver one fully signed copy to the Contractor.
- 2.2. If the Successful Bidder fails to execute the Agreement within the time specified, the amount of Bid Security shall be paid to the Owner. In such case the Owner, at its discretion, may award the Work to the second Successful Bidder, or reject all Bids.

3. Performance and Payment Bonds.

- 3.1. The Successful Bidder shall execute and provide to the Owner, within 10 Days following Notice of Award, Performance and Payment Bonds with surety in an amount equal to 100% of the accepted Bid. The sureties of all Bonds shall be of such surety company or companies as are approved by the Owner and are authorized to transact business in the Commonwealth of Virginia. If the execution is by an attorney-in-fact, a power of attorney evidencing the authority of such attorney shall be attached to the Bond. Such power of attorney shall bear the same date as the Bond to which it is attached.
- 3.2. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws and Regulations and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U. S. Treasury Department.
- 3.3. Performance and Payment Bonds shall remain in full force during the warranty period defined in Section 107, VII.

4. Contractor's Insurance.

- 4.1. The Contractor shall provide and keep in full force and affect during the performance of the Work the kinds and amounts of insurance specified in Section 4.3 below and shall comply with all other provisions of this Section. Such insurance shall be provided and kept in full force by insurance companies authorized to do business in the Commonwealth of Virginia, and regulated by the Virginia Bureau of Insurance. All premiums and other costs of such insurance shall be paid by the Contractor. It will be assumed that the consideration paid or to be paid to the Contractor for the performance of the Work includes the premiums and other such costs of such insurance, and the Owner shall not be responsible therefore. Each insurance policy and certificate of insurance shall be signed by duly authorized representatives of such insurance companies in the State and shall be countersigned by duly authorized agents of such companies. The Contractor shall not be required to furnish the Owner with copies of the insurance contracts required by this Section unless requested from time to time by the Owner; but the Contractor shall provide on forms furnished by the Insurance Company or Owner a Certificate of Insurance issued by such Insurance Companies, in which the company shall irrevocably warrant that the insurance is provided to enable the Contractor to comply with and provide the required insurance; (provided, however, that in no event shall the insurance contract be expanded to afford coverage which is greater than the maximum coverage approved for writing in the Commonwealth of Virginia) and that it will not be canceled unless at least thirty days' prior written Notice to the effect is given to the Owner, anything in such insurance contract to the contrary notwithstanding, and that the insurance contract has been endorsed accordingly.
- 4.2. The Contractor shall provide the certificate of insurance to the Owner within 10 Days following the Notice of Award.
- 4.3. Insurance Requirements:
- A. The Contractor shall purchase and maintain during the life of this Agreement such Comprehensive General Liability Insurance including product and completed operations liability insurance as will provide protection from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether such performance is by Contractor, or by Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and shall otherwise bear responsibility therefore. The Contractor further agrees that all limits will be made available which are excess of the amounts below:

(1) Workers Compensation and Employers Liability

Coverage A - Statutory

Coverage B - \$100,000/\$100,000/\$500,000

A broad form of all states endorsement shall be attached.

(2) Commercial Auto Liability Including Hired and Non-Owned Car Liability Coverage

Limit of Liability - \$1,000,000 Per Occurrence

The Contractor shall purchase and maintain during the life of this Agreement such commercial automobile liability insurance including employer's non-ownership liability and hired car liability

insurance to protect him and any Subcontractors performing Work covered by this Agreement from claims for damages, whether such operations be by him or any Subcontractor, or by anyone directly or indirectly employed by either of them.

- (3) Commercial General Liability Including Contractual and Completed Operations.

Limit of Liability - \$1,000,000 Per Occurrence

- (4) Excess Liability Including Employers Liability, Commercial Auto Liability and Commercial General Liability.

Limit of Liability - \$1,000,000 Per Occurrence
\$3,000,000 Aggregate

- B. The Contractor shall be responsible for securing the Work site and shall assume all risk for vandalism or other damage that may occur, to project components, during construction.
- C. The Owner shall be named as an additional insured on the Commercial General Liability per ISO 2010 on a primary basis. The Contractor shall obtain a waiver of subrogation from its insurers on Worker's Compensation and All Risk Insurance policies. This requirement may be satisfied by obtaining appropriate endorsements to any master or blanket policy of insurance maintained. Owner's Commercial General Liability shall not contribute in any loss payment insured under the Contractor's Commercial General Liability policy
- D. Contingent liability and property damage insurance to protect the Owner (or his employees and agents, including the Engineer) shall be provided by endorsements to general liability or property damage policies. All aforesaid policies shall be endorsed to provide that the insurance company shall notify the Owner if policies are to be terminated or altered during the life of the contract.
- E. The General Liability insurance shall carry a contractual liability endorsement covering the hold harmless agreements contained in the Owner standard contract and the certificates filed with the Owner shall show that the contractual liability coverage has been obtained.
- F. Insurance coverage for personal injury and property damage, including insurance on vehicles and equipment, shall be in the same company.
- G. The Contractor shall also be required to submit to the Owner evidence of insurance coverage or self-insurance for all claims arising under the Worker's Compensation Laws of the State of Virginia.
- H. The Contractor will indemnify and hold harmless the Owner, and the Owner's officers, agents, employees, and other representatives, against any liability, loss or expense (including the loss of use of the Project), due to any act or omission of Contractor or any of their Subcontractors or of any of their respective employees in connection with the Work of the Contractor hereunder or due to any omissions or supervisory acts of the Owner in connection with the Work performed by the Contractor.

II. NOTICE OF AWARD

TO: _____

PROJECT TITLE: _____

The Owner has considered the Bid submitted by you for the above described Work in response to its Invitation for Bids dated _____, 20____, and Instructions to Bidders.

You are hereby notified that your Bid has been accepted for the Work in the amount of \$_____.

You are required by the terms of the Bid Documents to fully execute and return **all 4** copies of the Agreement along with the required Contractor's Performance Bond, Payment Bond, and Certificates of Insurance, **and Procurement Information Form** within **10** Days from the date of this Notice of Award.

The Certificate of Insurance must name the City of Norfolk as beneficiary (additional insured). It should also be accompanied by a Government Cancellation Clause/Statement guaranteeing a 30-day written cancellation notice. The certificate should also show that you have obtained:

- 1. Workmen's Compensation Insurance (including occupational diseases) covering the employees of the contractor and any of his subcontractors.**
- 2. Public Liability Insurance naming the City of Norfolk as additional insured.**
- 3. Comprehensive General Liability Insurance with contractual liability coverage of at least \$500,000/\$1,000,000 for bodily injury and \$250,000/\$500,000 for property damage.**
- 4. Automobile Liability Insurance including bodily injury and property damage for owned, non-owned, and hired vehicles with minimum limits per occurrence of \$500,000/\$1,000,000 for bodily injury and \$250,000/\$500,000 for property damage.**

Because these are requirements for all construction projects in the City of Norfolk, work on the project cannot begin until they are fulfilled.

As soon as the Agreement, bond forms, and certificate of insurance are submitted, the City will begin processing the necessary papers. You may begin work on the project after the Agreement and Notice to Proceed are issued to you.

The Hazards Communication Policy adopted by the Department of Utilities will be in effect during all work performed on and around City-owned facilities and properties. If you do not have a copy of this policy, please contact this office at 664-6701. We will be glad to send a copy to you.

If you fail to execute the Agreement and to furnish said Bonds and Certificate of Insurance within **10** Days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's

acceptance of your Bid as abandoned and as a forfeiture of your Bid Security. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner. The notice of award shall not be construed as notice to proceed.

Dated this _____ day of _____, 20__.

OWNER

Owner
By: _____
Name
Title: _____

CONTRACTOR

Contractor
By: _____
Name
Title: _____

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

III. AGREEMENT

This AGREEMENT, dated this _____ day of _____, 2016, by and between **The City of Norfolk, Virginia, acting by and through the City Manager**, hereinafter called the Owner; and **(Insert the Contractor's Company Name)**, (a corporation or an unincorporated organization organized and existing under the laws of the State of **Virginia** or, an individual trading under the above name) hereinafter called the Contractor.

WITNESSETH: The Owner and Contractor, for the consideration stated herein, agree as follows:

A. Scope of Work

The Contractor shall perform all required Work and shall provide and furnish all labor, materials, necessary tools, expendable equipment and utility and transportation service and all else required to complete the construction of the **Pump Station 87 Force Main Replacement** project all in strict accordance with the Drawings and Specifications, including any and all Addenda, and in strict compliance with the Contract Documents, the terms of which are incorporated herein by reference.

It is understood and agreed that said labor, materials, tools, equipment and service shall be furnished and said Work performed and completed under the direction and supervision of the Contractor and subject to the approval of the Owner or its authorized representative.

B. Engineer

This Project has been designed by **Hazen and Sawyer, PC**, who is hereinafter called the Engineer. **However, the Norfolk Department of Utilities will** act as the Owner's Representative, assume all duties and responsibilities, and have the rights and authority assigned to the Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents. In the event the Owner should not require the services of the Engineer for any or all parts of the project, the power, duties, and responsibilities conferred hereto to the Engineer shall be construed to be those of the Owner or its authorized representative.

C. Guarantee

All materials and equipment, furnished by the Contractor, and all construction involved in this Agreement are hereby guaranteed by the Contractor to be free from defects owing to faulty materials or workmanship for a period of one year after date of **Final Completion** of the Work. All Work that proves defective, by reason of faulty material or workmanship within said period of one year, shall be replaced by the Contractor free of cost to the Owner. These guarantees shall not operate as a waiver of any of the Owner's rights and remedies for default under or breach of the Agreement which rights and remedies may be exercised at any time within the period of any applicable statute of limitations.

- D. The Owner shall pay the Contractor as just compensation for the satisfactory performance of the Work, subject to any additions or deductions as provided in **the contractor's bid, Section 102, Clause III Bid Form submitted (Bid Opening Date)**.

The Contract Price is _____ (\$_____) based upon **unit and/or lump sum** prices extended as **submitted in the contractor's bid, Section 102, Clause III Bid Form dated (Bid Opening Date)**.

- E. Payments

The Owner will pay the Contract Price to the Contractor in the manner and at such times as set forth in Section 109 of the Hampton Roads Planning District Commission *Regional Construction Standards*, Fifth Edition, as referenced in Section I. below and as specifically revised for this Project.

- F. Time

The undersigned Contractor agrees to commence Work within **30 Days** after the date of Notice to Proceed and further agrees to Substantially Complete all Work under this Agreement within **90 Calendar Days** from the date of the Notice to Proceed and to reach Final Completion of all Work under this Agreement within **120 Calendar Days** from the date of the Notice to Proceed.

NOTE: The time(s) for completion included provisions for shop drawing review and lead time for pipe (and other material) deliveries, as well as weather delays associated with normal climate conditions. Such time shall also include the stipulation that the Contractor shall not assume all work can be accomplished with a single mobilization and demobilization. Due to seasonal water demand constraints, the Contractor shall coordinate with the City to schedule an appropriate date/time to perform valve replacement operations for each valve location. The scheduling of this work will be at the sole reasonable discretion of the City. In the event of an emergency, the Contractor may be required to delay the scheduled valve location work, and/or reinstate service immediately to existing water treatment plant yard piping, in which case, the City will extend the corresponding substantial and final completion date.

- G. Applicable Law/Compliance

- (1) Applicable Law

This Agreement shall be deemed to be a Virginia contract and shall be governed as to all matters of validity, interpretations, obligations, performance, or otherwise, exclusively by the laws of the Commonwealth of Virginia, and all questions arising with respect thereto shall be determined in accordance with such laws. Regardless of where actually delivered and accepted, this Agreement shall be deemed to have been delivered and accepted by the parties in the Commonwealth of Virginia.

- (2) Compliance with all Laws

Contractor shall comply with all federal, state and local statutes, ordinances, and regulations, now in effect or hereafter adopted, in the performance of Work set forth herein. Contractor represents that it possesses all necessary licenses and permits required to conduct its business and will acquire any additional license and permits necessary for performance of this Agreement prior to the initiation of Work. [If the Contractor is a corporation] Contractor further expressly represents that it is a corporation in good standing in the Commonwealth of

Virginia and will remain in good standing throughout the term of the contract. Contractor shall at all times observe all health and safety measures and precautions necessary for the sanitary and safe performance of the contract Work.

(3) Venue

Any and all suits for any claims or for any breach or dispute arising out of these Contract Documents shall be maintained in the appropriate court of competent jurisdiction in the City of Norfolk.

(4) Environmental Considerations

Any cost or expense associated with environmentally related violations of the law, the creation or maintenance of a nuisance, or releases of hazardous substance, including but not limited to, the cost of any clean up activities, removals, remediation, responses, damages, fines, administrative or civil penalties or charges imposed on the Owner, whether because of actions or suits by any governmental or regulatory agency or by any private party, as a result of the release of any hazardous substances, or any noncompliance with or failure to meet any federal, state or local standards, requirements, laws, statutes, regulations or the law of nuisance by the Contractor (or its agents, officers, employees, subcontractors, consultants, subconsultants, or any other persons, corporations, or legal entities employed, utilized, or retained by the Contractor) in the performance of this Agreement or related activities, shall be paid by the Contractor.

(5) Non-Discrimination/Drug-Free Workplace Provisions

(a) Employment discrimination by Contractor shall be prohibited. During the performance of this Agreement, Contractor agrees as follows:

- (i) Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification/consideration reasonably necessary to the normal operation of Contractor. Contractor will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act, and the Code of Virginia § 2.2-4311. If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the Agreement on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

- (ii) Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that Contractor is an equal opportunity employer.
 - (iii) Notices, advertisements and solicitations placed in accordance with federal law, rule or regulations shall be deemed sufficient for the purpose of meeting the requirements of this section.
 - (iv) Contractor will include the provisions of the foregoing subsections (i) and (ii), and (iii) in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
- (b) During the performance of this Agreement, Contractor agrees as follows:
- (i) Contractor will provide a drug-free workplace for Contractor's employees.
 - (ii) Contractor will post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
 - (iii) Contractor will state in all solicitations or advertisements for employees placed by or on behalf of Contractor that Contractor maintains a drug-free workplace.
 - (iv) Contractor will include the provisions of the foregoing subsections (i), (ii) and (iii) in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
 - (v) For the purposes of this section, "Drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a Contractor, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession, or use of any controlled substance or marijuana during the performance of the contract."

(6) Compliance With Federal Immigration Law

At all times during which any term of this Agreement is in effect, the Contractor does not and shall not knowingly employ any unauthorized alien. For purposes of this section, an "unauthorized alien" shall mean any alien who is neither lawfully admitted for permanent residence in the United States nor authorized to be employed by either Title 8, section 1324a of the United States Code or the U.S. Attorney General.

(7) Compliance With State Law – Authorization To Transact Business In The Commonwealth

Contractor hereby represents that it is organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership and is authorized to transact business in the Commonwealth as a

domestic or foreign business entity if so required by Title 13.1 or Title 50 or as otherwise required by law.

H. Liquidated Damages

The damage and loss to the Owner resulting from failure of the Contractor to complete the Work within the time specified in this Agreement, plus any extension of time granted, shall be stipulated in Section 108.X, and Section 102.III, Bid Form. Damage monies may be withheld on partial and final payment to the Contractor. (See Section 102.III Bid Form and Section 108.X for explanation and specified dollar amounts.) **Liquidated damages as stipulated in the Bid Form, in the amount of \$1,000.00 per Calendar Day for failure to meet the substantial completion date and \$500.00 per Calendar Day for failure to meet the final completion date will be assessed by the Owner for failure of the Contractor to complete the Work on or before the Date of Substantial and Final Completion stated above or as may be modified by duly executed Change Orders. If Substantial Completion has not been achieved by the scheduled Final Completion date, the liquidated damages for Substantial Completion will run until Substantial Completion is achieved.**

I. Component Parts of the Contract

This Agreement includes all completed components of the Bid and Contract Documents as defined in Section 101 of the HRPDC *Regional Construction Standards* (Latest Edition indicated in the Invitation For Bids), as revised for this Project all of which are incorporated herein by reference.

J. Binding

This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

K. Changes to the Agreement

No provision of this Agreement shall be changed, amended, modified, waived, or discharged except as agreed to in writing by the Owner and the Contractor.

L. Emergency Services

Under emergency conditions the City reserves the right to utilize the Contractor for related services, as deemed appropriate to help resolve the emergency. During the contract period, if an emergency situation (natural or man-made) occurs, the Contractor agrees to dedicate the personnel allocated to this project to assist the Owner during the recovery period. The Owner shall direct this work in writing and costs will be paid according to the rates for Additional Services. Hourly rates for these services will be at the rates agreed upon under this agreement.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and first above written in **4 (four)** counterparts each of which shall for all purposes be deemed an original.

OWNER

CONTRACTOR

City of Norfolk
Owner

Contractor

By: _____
City Manager

By: _____

Title: _____

Date: _____

Attest: _____

Address: _____

Attest: _____
City Clerk

APPROVED AS TO CONTENT:

Contractor's Registration No.: _____

(If Contractor is a corporation or an unincorporated organization, attach evidence of authority to sign)

Director of Utilities

[Corporate Seal]

APPROVED AS TO FORM:

Deputy City Attorney

I hereby certify that the money required for this contract (agreement, obligation or expenditure) is in the City Treasury to the credit of the fund from which it is to be drawn, and not appropriated for any other purpose.

Account No:

Amount:

Contract No:

Vendor Code:

Director of Finance

IV. PERFORMANCE BOND

Bond No. _____
Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____
_____ of _____
_____, hereinafter called the Contractor and _____ a corporation duly
organized and existing under and by virtue of the laws of the State of _____, hereinafter called
the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held
and firmly bound unto _____ as Owner, in the sum of
_____ dollars (\$ _____), lawful money of
the United States of America, for payment of which, well and truly be made to the Owner, the Contractor and
the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly
and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the
Owner dated _____, 20____, for _____

NOW THEREFORE, if the Contractor, and its successors and assigns, shall at all times duly, promptly, and
faithfully perform the Work and any alteration in or addition to the obligations of the Contractor arising
thereunder, including the matter of infringement, if any, of patents or other proprietary rights, and shall assure
all guarantees against defective workmanship and materials, including the guarantee period following final
completion by the Contractor and final acceptance by the Owner and comply with all the covenants therein
contained in the Specifications, Drawings, and other Contract Documents required to be performed by the
Contractor, in the manner and within the times provided in the Agreement, and shall fully indemnify and save
harmless the Owner from all costs and damage which it may suffer by reason or failure to do so, and shall
fully reimburse and repay it all outlay and expenses which it may incur in making good any default, and
reasonable counsel fees incurred in the prosecution of or defense of any action arising out of or in connection
with any such default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, for itself and its successors and assigns, hereby
stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract
Documents or to the Work to be performed thereunder, or payment thereunder before the time required
therein, or waiver of any provision thereof, or assignment, subletting or transfer thereof or any part thereof,
shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change,
extension of time, alteration, addition to the terms of the Contract Documents or any such payment, waiver,
assignment, subcontract or transfer.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the
right of any beneficiary hereunder, whose claim may be unsatisfied.

Whenever Contractor shall be declared by Owner to be in default under the Contract, the Owner having
performed Owner's obligations thereunder, the Owner shall have the right, at its option, to require the Surety
to promptly proceed to remedy the default within 30 days of notice by proceeding or procuring others to
proceed with completing the Agreement with its terms and conditions; and all reserves, deferred payments,
and other funds provided by the Agreement to be paid to Contractor shall be paid to Surety at the same times

and under the same conditions as by the terms of that Agreement such fund would have been paid to Contractor had the Agreement been performed by Contractor; and Surety shall be entitled to such funds in preference to any assignee of Principal of any adverse claimant. Notwithstanding the above, the Owner shall have the right, with the approval of the Surety which shall not be unreasonably withheld, to take over and assume completion of the Agreement and be promptly paid in cash by the Surety for the cost of such completion less the balance of the Contract price.

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this ____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

By: _____ (Seal)

Name: _____

Title: _____

Attest

SURETY

By: _____ (Seal)

Attest

APPROVED AS TO FORM: _____, 20____

DEPUTY CITY ATTORNEY

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

V. PAYMENT BOND

Bond No. _____
Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____
_____ of _____
_____ hereinafter called the Contractor and _____ a corporation duly
organized and existing under and by virtue of the laws of the State _____, hereinafter called
the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held
and firmly bound unto _____ as Owner, in the sum
of _____ dollars (\$ _____), lawful money of the United States of America, for
payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and
each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these
presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the
Owner dated _____, 20____, for _____

NOW THEREFORE, if the Contractor shall promptly make payments to all persons, firms, subcontractors,
and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in
the Agreement, and any authorized extension or modification thereof, including all amounts due for
materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools consumed, used or rented in
connection with the construction of the Work, and all insurance premiums on the Work, and for all labor
performed in the Work, whether by Subcontractor or otherwise, then this obligation shall be void, otherwise
to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration, or addition to the terms of the Contract Documents or to the Work to be
performed thereunder, shall in any way affect its obligation on this Bond, and it does hereby waive notice of
any such change, extension of time, alteration, or addition to the terms of the Contract Documents.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the
right of any beneficiary hereunder, whose claim may be unsatisfied.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this ____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

By: _____(Seal)

Name: _____

Title: _____

Attest

SURETY

By: _____(Seal)

Attest

APPROVED AS TO FORM: _____, 20_____

DEPUTY CITY ATTORNEY

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

VI. IRREVOCABLE LETTER OF CREDIT

IRREVOCABLE LETTER OF CREDIT NO. _____

WORDS IN PARENTHESES ARE INSTRUCTIONS. ANY VARIATIONS WILL BE REJECTED.

BANK LETTERHEAD

Marcus D. Jones, City Manager
City of Norfolk
810 Union Street
1101 City Hall Building
Norfolk, VA 23510

DATE

To Whom It May Concern:

We hereby authorize the City Manager, or agent, to draw on us for the account of **(Developer's Name and Address)** up to an aggregate amount of U.S. Dollars **(Amount)** available by your drafts at sight accompanied by certification of Director, Department of Public Works, that the developer failed to complete installation or performance in accordance with a plan known as **(Plan Name and Number)** or otherwise failed to perform in accordance with an agreement dated _____ between **(Developer's Name)** and the City. This Letter of Credit is irrevocable and unconditional.

We hereby further agree that:

- (a) Drafts drawn under and in compliance with the terms of this Letter of Credit will be duly honored if presented at our office on or before **(This Date Must Be At Least Six Months After Agreement Expiration Date)**.
- (b) Funds available under this Letter of Credit shall be paid by us in such amounts and at such times as determined by the Director, Department of Public Works, or the City Manager, in their sole discretion, provided that the amount drawn shall not exceed the aggregate amount specified herein. Checks will be made payable to "Treasurer, City of Norfolk" and directed to the attention of the City Manager.
- (c) We shall have no right, duty, obligation or responsibility to evaluate the performance or non-performance of the underlying contract between our customer and the beneficiary of this Letter of Credit.
- (d) We hereby agree that no change, extension of time, alteration or addition to work to be performed or to the plans and specifications relating to the same, shall in any way affect our obligations under this Letter of Credit and we hereby waive notice of any such change, extension of time, alteration, or addition, on the understanding that no such change, extension of time, alteration, or addition shall increase the amount of our obligation under this Letter of Credit.
- (e) It is a condition of this Letter of Credit that it will be automatically extended for successive six (6) month periods of time unless thirty (30) days prior to an expiration date we notify the Director, Department of Public Works, in writing by registered mail, that we elect not to renew this Letter of Credit for such additional period.

- (f) Upon receipt by you of such notice of non-renewal or in the event of a default, you may draw hereunder by means of your drafts on us, at sight accompanied by your written certification that you have not released liability under the aforesaid agreement or undertaking and the proceeds of your draft will be used by you to meet eventual payments under your agreement or until your undertaking is satisfied. You will refund to us the amount paid, less any amounts which may have been paid by you in the meantime under this agreement or undertaking. A default shall be deemed to have occurred on the part of the Developer whenever, in the sole judgment of the City Manger or the Director, Department of Public Works, the Developer is not diligently and satisfactorily completing the improvements for which the Letter of Credit has been given as security or at the date the underlying agreement, or any extension thereof, expires.
- (g) If the issuer of this Letter of Credit becomes critically undercapitalized, as defined in the Code of Federal Regulations, or insolvent, as defined in any applicable federal or state statute or regulation, the City shall be immediately entitled to draw on this Letter of Credit. In such event, you may draw on this Letter of Credit by means of your drafts on us, at sight accompanied by certification of the City Manager or the Director, Department of Public Works, that the issuer of this Letter of Credit has become critically undercapitalized, as defined in the Code of Federal Regulations, or insolvent, as defined in any applicable federal or state statute or regulation. The refund provisions of paragraph (f) above would also apply to a draft under this paragraph.
- (h) Except so far as otherwise expressly stated, this Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits, International Chamber of Commerce in effect on the date of issuance. The amount of any draft drawn hereunder must be endorsed on the reserve side hereof. All drafts must be marked "Drawn under **(Bank's Name)** Letter of Credit **(No. and Date as above)**".

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

- (i) Approval of this Letter of Credit by the City shall be deemed acceptance without further notice to the bank and/or the Developer.

(Bank Name)

By: _____
(Signature)

(Print or type name and title)

ACKNOWLEDGMENT (Notarization)

STATE OF _____:

COUNTY/CITY OF _____:

I, _____, a Notary Public in and for the State and County/City aforesaid, do hereby certify that _____ whose name is signed to the foregoing, this day personally appeared before me in my State and County/City aforesaid and acknowledged the same.

Given under my hand this _____ day of _____, 20____.

Notary Public

My Commission Expires: _____

CITY OF NORFOLK, VIRGINIA

APPROVED AS TO FORM AND CORRECTNESS:

City Attorney's Office

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

VII. ESCROW AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____, 20____, by, between and among the City of Norfolk, Virginia (hereinafter "City"), a municipal corporation chartered by the Commonwealth of Virginia:

_____ (hereinafter "Contractor"),

(Name of Bank)

(Address of Bank)

a trust company, bank, or savings and loan institution with its principal office located in the Commonwealth of Virginia (hereinafter referred to collectively as "Bank") and

(Name of Surety)

(Address of Surety)

(hereinafter "Surety") provides:

I. The city and the Contractor have entered into a contract with respect to the city of Norfolk Bid No. _____,

[entitled or described as]

("the contract"). This Agreement is pursuant to, but in no way amends or modifies the contract. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance of performance by the Contractor.

II. In order to assure full and satisfactory performance by the Contractor of its obligations under the contract, the City is required thereby to retain certain amounts otherwise due the Contractor. The Contractor has, with the approval of the City, elected to have these retained amounts held in escrow by the Bank. This agreement sets forth the terms of the escrow. The Bank shall not be deemed a party to, bound by, or required to inquire into the terms of, the contract or any other instrument or agreement between the City and the Contractor.

III. The City shall from time to time pursuant to its contract pay to the Bank amounts retained by it under the contract. Except as to amounts actually withdrawn from escrow by the City, the Contractor shall look solely to the Bank for the payment of funds retained under the contract and paid by the City to the Bank.

The risk of loss by diminution of the principal of any funds invested under the terms of this contract shall be solely upon the Contractor.

Funds and securities held by the Bank pursuant to this Escrow Agreement shall not be subject to levy, garnishment, attachment, lien, or other process whatsoever. Contractor agrees not to

assign, pledge, discount, sell or otherwise transfer or dispose of his interest in the escrow account or any part thereof, except to the Surety.

IV. Upon receipt of checks or warrants drawn by the City and made payable to it as escrow agent, the Bank shall promptly notify the Contractor, negotiate the same and deposit or invest and reinvest the proceeds in approved securities in accordance with the written instructions of the contractor. In no event shall the Bank invest the escrowed funds in any security not approved.

V. The following securities, and none other, are approved securities for all purposes of this Agreement:

- (1) United States Treasury bonds, United States Treasury Notes, United States Treasury Certificates of Indebtedness or United States Treasury Bills,
- (2) Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States,
- (3) Bonds or notes of the Commonwealth of Virginia,
- (4) Bonds of any political subdivision of the Commonwealth of the Bank or deposit by the Contractor, a Standard and Poor's or Moody's Investors Service rating of at least "A", and
- (5) Certificates of deposit issued by commercial Banks located within the Commonwealth, including , but not limited to, those insured by the Bank and its affiliates,
- (6) Any bonds, notes, or other evidences of indebtedness listed in Sections (1) through (3) may be purchased pursuant to a repurchase agreement with a bank, within or without the Commonwealth of Virginia having a combined capital, surplus and undivided profit of not less than \$25,000,000, provided the obligation of the Bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the Escrow Agent, so long as the repurchase obligation of the Bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100% of the amount of the repurchase obligation of the Bank, and the securities are held by a third party, and segregated from other securities owned by the Bank.

No security is approved hereunder which matures more than five years after the date of its purchase by the Bank or deposit by the Contractor.

VI. The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Bank approved securities in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower or par or market value, the latter as determined by the Bank. Any securities so deposited shall thereupon become a part of the escrowed fund.

Upon receipt of a direction signed by the City Manager or Assistant City Manager, the Bank shall pay the principal of the fund, or any specified amount thereof, to the City of Norfolk for the account of the project. Such payment shall be made in cash as soon as is practicable after receipt of the direction.

Upon receipt of a direction signed by the City Manager or Assistant City Manager or Director of Public Works or Director of Utilities, the Bank shall pay and deliver the principal of the fund, or any specified amount thereof, to the Contractor, in cash or in kind, as may be specified by the Contractor. Such payment and delivery shall be made as soon as is practicable after receipt of the direction.

VII. For its services hereunder the Bank shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Bank and the Contractor. Such fee and any other costs of administration of the Agreement shall be paid from the income earned upon the escrowed fund and, if such income is not sufficient to pay the same, by the Contractor.

VIII. The net income earned and received upon the principal of the escrowed fund shall be paid over to the Contractor in quarterly or more frequent installments. Until so paid or applied to pay the Bank's fee or any other costs of administration such income shall be deemed a part of the principal of the fund.

IX. The Surety undertakes no obligation hereby but joins in this Agreement for the Sole purpose of acknowledging that its obligations as surety for the Contractor's performance of the contract are not affected hereby.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

WITNESS the following signatures, all as of the day and year first above written.

CITY OF NORFOLK, VIRGINIA

By: _____
City Manager or Assistant City Manager

ATTEST:

City Clerk

Contractor

APPROVED AS TO FORM AND CORRECTNESS: By: _____
Officer, Partner or Owner

Deputy City Attorney

(Seal)

Name: _____

Title: _____

Bank

By: _____
Signature

Name: _____

Title: _____

Surety

By: _____
Signature

Name: _____

Title: _____

Ref: DOT FORM C-8
REV 1/1/87

MGR/gt 12/21/89

¹ If executed by Attorney-in-Fact, fully-executed Power of Attorney is attached. The power is recorded in Norfolk Circuit Court in Deed Book No. _____, Page _____.

VIII. NOTICE TO PROCEED

TO: _____

DATE: _____

PROJECT: _____

You are hereby notified to commence Work in accordance with the Agreement dated _____, 20____, on or before _____, 20____, and you are to substantially complete the Work within _____ Days thereafter and reach Final Completion of the Work within _____ Days thereafter. The date of Final Completion of all Work is therefore _____, 20____.

Liquidated damages as stipulated in the Bid Form, in the amount of **\$1000.00 per Calendar Day for failure to meet the substantial completion date and \$500.00 per Calendar Day for failure to meet the final completion date** will be assessed by the Owner for failure of the Contractor to complete the Work on or before the Date of **Substantial and Final Completion** stated above or as may be modified by duly executed Change Orders. **If Substantial completion has not been achieved by the scheduled Final completion date, the liquidated damages will run concurrently until substantial completion is achieved.**

OWNER: City of Norfolk

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE:

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

this the _____ day of

_____, 20 ____

CONTRACTOR: _____

BY: _____

TITLE: _____

End of Section

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 104

SCOPE OF WORK

I. INTENT OF AGREEMENT

- 1.1. The intent of the Agreement is to provide for completion of the Work specified therein.
- 1.2. If, during the performance of the Work, the Contractor finds a conflict, error or discrepancy in the Contract Documents, the Contractor shall so report to the Owner in writing at once and before proceeding with the Work affected thereby, except in the case of emergency or public safety, shall obtain a written interpretation or clarification from the Owner however, the Contractor shall not be liable to the Owner for failure to report any conflict, error or discrepancy in the Contract Documents unless the Contractor has actual knowledge thereof or should reasonably have known thereof.

II. AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS

- 2.1. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by a Change or Field Order pursuant to Section 109 II.

III. EXPLORATIONS AND REPORTS

- 3.1. Reference is made to the Special Provisions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by the Owner in preparation of the Contract Documents.
- 3.2. The Contractor shall visit the site of the proposed Work and make such explorations as the Contractor determines to be necessary.

IV. UNDERGROUND FACILITIES

- 4.1. The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to the Owner or Engineer by the owners of such Underground Facilities or by others.
- 4.2. The Owner and Engineer shall not be responsible for the accuracy or completeness of any such information and data. The Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owner's of such Underground Facilities during construction, for the safety and protection of said facilities, and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Base Bid.
- 4.3. If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which the Contractor could not reasonably have been expected to be aware of, the Contractor shall, promptly after becoming aware thereof and before performing any Work affected thereby, identify and immediately notify the owner of such Underground Facility and give written Notice thereof to that owner and to the Owner. The Owner will promptly review the Underground Facility to determine the extent to which the Contract

Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time the Contractor shall be responsible for the safety and protection of any such Underground Facility which is in service or which is to be placed in service. The Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility in service or which is to be placed in service, which directly and unavoidably impacts the installation of the Work, that was not shown or indicated in the Contract Documents and which the Contractor could not reasonably have been expected to be aware of.

- 4.4. If the existence of an Underground Facility described above unavoidably impacts the installation of the Work, the Contractor shall, to the fullest extent possible, continue the Work on other portions of the site. All delays must be shown by the Contractor to be directly attributable to said unforeseen conditions and limited to the time actually occasioned by such unforeseen conditions, and that the Contractor has prosecuted the other portions of the Work to the fullest extent possible.
- 4.5. The Contractor shall comply with the Underground Utility Damage Prevention Act, Section 56-265.14 through 56-26532, Code of Virginia of 1950, as enacted and amended, and shall be responsible for notifying the owners of utilities and requesting the locating and marking of all underground facilities before beginning any excavation.
- 4.6. The Contractor should be aware that in some instances buried cables, gas lines, sewer lines, and water lines 2-inches and smaller in diameter may have to be excavated by hand and slightly relocated to facilitate construction of the Work under this Agreement. This shall be considered incidental to the Work, and the Contractor will not be eligible for additional compensation.
- 4.7. At points where the Contractor's operations are adjacent to the properties of any utility, including railroads, and damage to which might result in considerable expense, loss, or inconvenience, Work shall not commence until arrangements necessary for the protection thereof have been completed.
- 4.8. The Contractor shall cooperate with owners of utility lines so that removal and adjustment operations may progress in a reasonable manner, duplication of adjustment work may be reduced to a minimum, and services rendered by those parties will not be unnecessarily interrupted.
- 4.9. If any utility service is interrupted as a result of accidental breakage or of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the authority in the restoration of service. If utility service is interrupted, repair work shall be continuous until service is restored. The Contractor shall be responsible for any damage to utilities that are attributable to his neglect or methods of performing the Work.

V. SUBSURFACE CONDITIONS

- 5.1. The Contractor shall promptly, and if possible, before such conditions are disturbed, except in the event of an emergency, notify the Owner by written Notice of:
 - A. subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or
 - B. unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract Documents.

- 5.2. The Owner shall promptly investigate the conditions, and if it is confirmed that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, an equitable adjustment shall be made and the Agreement shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless the Contractor has given the required written Notice; provided that the Owner may, if the facts so justify, consider and adjust any such claims asserted before the date of final payment.
- 5.3 All required written Notices shall be submitted to the Owner within 20 Days after occurrence of the event giving rise to such claim, or within 20 Days after the claimant recognizes the condition, whichever is later.

VI. SITE SECURITY

- 6.1. The Contractor shall be responsible for the security and safety of all project facilities including, but not limited to, all equipment, materials, site structures, and construction thereon. All security measures deemed necessary by the Contractor to comply with this requirement shall be at the Contractor's expense at no additional cost to the Owner. The Contractor shall be responsible for all site security until final acceptance of the Work by the Owner.

VII. CLEAN-UP, DISPOSAL AND RESTORATION

- 7.1. The Contractor shall maintain the site of the project in an orderly and clean condition and shall at intervals of no more than three (3) working days and at its expense, remove and legally dispose of accumulations of rubbish or refuse materials, surplus concrete, mortar and excavated materials not required or suitable for backfill from public and private property and rights-of-way. Washings from concrete mixers or mixing boxes shall not be deposited directly or indirectly in the drainage or sewer system or on paved streets. The Contractor shall keep the site, inclusive of vehicular and pedestrian traffic routes through the site, free of dirt and dust by periodic blading, power brooming, watering or other approved means. Road surfaces adjacent to the work area shall be cleaned of soil with mechanical brooms or other approved methods at the end of each working day. Road shoulders and driveways shall be stabilized so as to allow traffic flow (including mail and paper delivery vehicles, school buses and emergency vehicles) by the end of each working day.
- 7.2. The Contractor shall confine all equipment, the storage of materials and equipment, and the operations of workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.
- 7.3. The Contractor shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall any part of the work be subjected to stresses or pressures that will endanger it.
- 7.4. Upon completion and before final acceptance of the Work performed under the Agreement, the Contractor shall remove and legally dispose of all rubbish, surplus or discarded materials, false work, forms, temporary structures, field offices, signs, temporary erosion and siltation control measures, and equipment and machinery, and shall leave the site and ground occupied in connection with the performance of the Work in the conditions existing before the Work was started, to the satisfaction of the Owner.
- 7.5. All waste materials, including but not limited to excavated materials, demolished pavement, arboreal (landscaping) waste and other debris, that are not suitable for Project related purposes (e.g., backfill)

or are surplus to the needs of the Project, both as determined by the Owner, shall become the property of the Contractor. The Contractor shall dispose of all such material in accordance with his accepted Disposal Plan, as specified below, at no additional cost to the Owner.

- A. The Contractor shall submit a Disposal Plan for review and acceptance by the Owner prior to performing any Work that might generate waste materials. The plan shall include a complete description of the materials that are expected to be encountered and their proposed disposal site(s). The Contractor may change his Disposal Plan only by written notice to the Owner. The acceptance of a plan and/or any related notice to the Owner must be evidenced by a written response from the Owner.
- B. The Contractor shall insure that all permits related to his disposal operations have been obtained, and the Contractor shall comply with all requirements of those permits. The Contractor shall show evidence that all required permits have been obtained for all disposal sites by submitting a copy of all such permits to the Owner as part of the Contractor's Disposal Plan.

End of Section

SECTION 105

CONTROL OF WORK

I. REUSE OF CONTRACT DOCUMENTS

- 1.1. Neither the Contractor nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the Owner shall have or acquire any title to or ownership rights in any of the Contract Documents (or copies thereof) prepared by or bearing the seal of the Engineer; and, they shall not reuse any of the Contract Documents on extensions of the Project or any other project without written consent of the Owner and Engineer and specific written verification by the Owner.

II. COPIES OF CONTRACT DOCUMENTS

- 2.1. The Owner will furnish to the Contractor up to **five (5)** copies of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

III. CONTRACT DOCUMENTS

- 3.1. The Contract Documents will govern the Work set forth therein.
- 3.2. In cases of conflicts, Special Provisions shall govern over the *Regional Construction Standards*; Specifications shall govern over Drawings; figure dimensions shall govern over scaled dimensions; and, detailed Drawings shall govern over general Drawings; unless, the interpretation would result in a violation of any law or regulation applicable to the performance of the Work.
- 3.3. The Contractor shall, upon discovering any error, omission, or discrepancy in the Contract Documents, immediately notify the Owner.

IV. SHOP DRAWINGS AND SUBMITTALS

- 4.1. The Contractor shall compile a complete and comprehensive schedule of all the submittals anticipated to be made during the progress of the Work. The schedule shall include a list of each type of item for which the Contractor's drawings, Shop Drawings, material affidavits, material samples, guarantees, or other types of submittals are required. **The Contractor shall submit a completed copy of the Approved Products List for all standard sewer, water, and force main items. All items used shall have been manufactured within two (2) years of the bid date of the project.**
- 4.2. Prior to each submittal, the Contractor shall carefully review and coordinate all aspects of each item or sample submitted with any other item or sample being submitted and verify that each item and sample adheres in all respects with the requirements of the Contract Documents.
- 4.3. The Contractor shall certify that all materials used in the Work are in complete compliance with all specified provisions. Certification shall not be construed as relieving the Contractor from its responsibility of furnishing satisfactory materials. At the time of each submission, the Contractor shall in writing call the Owner's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

- 4.4. The Contractor shall submit four (4) copies, plus the number of copies desired to be returned, of Shop Drawings or submittals that are required by Section 105 or the Special Provisions **for a total of not more than ten (10)**. Each submission shall be accompanied by letter of transmittal in duplicate, listing the contents of the submission and identifying each item by reference to specification section or Drawing. The data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show the Owner the materials and equipment the Contractor proposes to provide.
- 4.5. The Contractor shall also submit samples to the Owner for review and approval in accordance with the accepted schedule of submittals. Each sample shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as the Owner may require for review. The review of a separate item or sample will not indicate approval of any assembly in which the separate item or sample functions.
- 4.6. The Contractor is responsible for submitting all Shop Drawings and schedules in a timely manner to avoid delaying the Work. The Owner shall within 21 days after receipt, return Shop Drawings and schedules to the Contractor indicating approval or disapproval. **Shop Drawings will not be reviewed prior to issuance of the Notice to Proceed.**
- 4.7. Review and/or approval of Shop Drawings will be for general conformance with the Contract Documents and shall not relieve the Contractor from the responsibility of furnishing materials and equipment of proper dimension, size, quality, quantity, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Approval shall not be construed as permitting any departure from the Project requirements, authorization of any increase in price, or approval of departures from additional details or instructions previously furnished by the Owner.
- 4.8. Before submitting each Shop Drawing or sample, the Contractor shall have determined and verified:
- A. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;
 - B. All materials with respect to the intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work; and
 - C. All information relative to the Contractor's sole responsibility in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and progress incident thereto.
- 4.9. Each Shop Drawing and sample submission shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's obligation under the Contract Documents with respect to the Contractor's review and approval of that submission. The Contractor's Shop Drawing stamp shall be as follows (or as otherwise approved by the Owner and Engineer):

(Owner's Name)

(Project Name)

Shop Drawing No.: _____

Specification Section: _____

With respect to this Shop Drawing or Sample, I have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated this Shop Drawing or Sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

_____ *No variation from Contract Documents*

_____ *Variation from Contract Documents as shown*

(Contractor's Name and Address)

By: _____

Date: _____

- 4.10. The Engineer will review and approve or disapprove or return as incomplete Shop Drawings and samples in accordance with the schedule of submittals submissions accepted by the Engineer. The Engineer's review and approval or disapproval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The Contractor shall make corrections required by the Engineer, and shall return the requested number of copies of Shop Drawings and samples for review and approval. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous submittals. Upon approval, two marked copies will be returned to the Contractor.
- 4.11. No progress payments will be made to the Contractor until the schedules are submitted to and acceptable to the Engineer. The progress schedule shall be acceptable to the Engineer as being the Contractor's schedule for the orderly progression of the Work to completion within any specified Contract Times, but such acceptance will neither impose on the Engineer responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve the Contractor from the Contractor's full responsibility therefor.
- 4.12. The Engineer will record time required by the Engineer or Engineer's consultants for excessive submittal review occasioned by the Contractor's re-submission, in excess of one re-submission of a required submittal, caused by unverified, unchecked or un-reviewed, incomplete, inaccurate or erroneous, or nonconforming submittals. The Engineer's costs will be an estimated average billing rate for labor plus related expenses.

- 4.13. Within ten (10) days after the Effective Date of the Agreement, the Contractor shall submit to the Engineer for approval a schedule listing the manufacturer of the items of equipment and materials proposed for the construction. Following approval of the schedule, no changes in material or equipment from those listed will be allowed except in unusual or extenuating circumstances. When such circumstances arise, the Contractor shall request, in writing, the Owner's approval of the proposed change, stating the circumstances necessitating such a change. The intent of this schedule is to name the manufacturers of material specified by a product standard and to designate which manufacturer will be used when more than one has been named for an item. The schedule shall not be interpreted as allowing any change from base Bid items or those substitute items offered with the Bid and accepted in the Agreement.

V. RECORD DRAWINGS

- 5.1 The Contractor shall keep one record copy of all Special Provisions, Specifications, Drawings, Addenda, Written Amendments, Change Orders, Shop Drawings, Owner-approved submittals, and samples at the site in good order and annotated to show all changes made during the construction process. These documents shall be available to the Owner for examination and shall be submitted to the Owner upon completion of the Work. As-built information (including dimensions, materials, existing utilities) shall also be included on the Drawings. Progress payments may be withheld for failure to keep neat, accurate and complete record drawings. Record Drawings shall be submitted with monthly invoices.
- 5.2 The Contractor shall include any field changes, deviations from the Drawings due both to field conditions and Change Orders.
- 5.3 Record information for projects shall include the following as a minimum:
- A. Size, horizontal and vertical location of all existing utilities uncovered during the course of the work. This shall include telephone cables and conduits, TV cables and conduits, electrical cables and conduits, gas lines, water line, sewer force mains, sanitary sewers, storm sewers and the like.
 - B. Horizontal and vertical location of the water, force main, sanitary and storm sewer installed at every 100-foot station, at interconnections, and at fittings, tees, bends and offsets. The frequency and location of survey shots will match the proposed grade elevations shown on the Drawings.
 - C. Location of lines plugged or capped, blowoffs, and air vents.
 - D. Location of all restraining devices used; for example, thrust blocks, retainer glands, tie rods, etc.
 - E. Location of all valves, ends of all lines and other fittings shall be accurately located by triangulation from two permanent structures, which will be visible on the ground surface.
 - F. Location and size of all taps and service line connections made, including corporation stops (if any) used for testing purposes.
 - G. Size (if greater than $\frac{3}{4}$ "), material, depth and location of both ends of the water service lines are required.

- H. Rim elevations of manholes and invert elevations of pipes entering and exiting the manhole.
 - I. Size, material, depth and location of sewer laterals including:
 - 1. Measurements taken from the nearest downstream manhole, then measure over perpendicular from that point on the main to the end of the lateral. All measurements are taken from the center of the manhole cover.
 - 2. If lateral comes out of a manhole in a cul-de-sac; triangulation from that manhole will be required.
 - 3. Measured depth from the finished grade at the end of the lateral.
 - J. Information required for public storm drain systems:
 - 1. Size, material and location of all storm sewer lines.
 - 2. Elevations shall be provided for all ditch, pipe and structure inverts and rims.
- 5.4 The Record Drawings shall include the following minimum accuracy for survey measurements and field measurements.
- A. Horizontal accuracy:
 - 1. Both surface and subsurface gravity sanitary sewer systems shall be measured in a survey to +/- 1.0 foot at the structure location.
 - 2. Both surface and subsurface pressure systems shall be measured in a survey to +/- 1.0 foot at the structure location.
 - 3. Curb/curb and gutter shall be measured in a survey to +/- 1.0 foot at high points, low points, curb returns, and various other positions following good engineering, construction and surveying practices.
 - 4. Storm Water Management Facilities (SWMF) shall be measured in a survey to +/- 1.0 foot, including the top of bank, bottom of bank, edge of water, pipes, structures, and setback distances to property lines and/or right-of-way lines and any unusual feature of each SWMF.
 - 5. Utility system components including, but not limited to, fire hydrants, meter vaults, meter boxes, water services, corporation stops, fittings, thrust restraint, laterals, cleanouts, valves, blowoff assemblies, air vent assemblies, water sampling stations, etc. shall be measured in a survey to +/- 1.0 foot.
 - 6. Project landscaping shall be measured in a survey to +/- 1.0 foot. Only large significant features, such as trees, will be surveyed. The species and caliper (size) shall be noted.
 - 7. Street signs and light poles shall be measured in a survey to +/- 1.0 foot.

B. Vertical accuracy:

	Survey Accuracy	Field Measurement
Manhole Rim	+/- 0.01 ft.	
Manhole Invert	+/- 0.01 ft.	
Gravity Sewer Slope	+/- 0.02%	
Valve Depth	+/- 0.1 ft.	
Pressure/vacuum systems	+/-0.05 ft.	
SWMF	+/- 0.01 ft.	
Curb/curb and gutter	+/- 0.01 ft.	
Offset		+/- 1.0 ft.
Lateral Depth		+/- 0.25 ft.

VI. ACCESS TO PROJECT

- 6.1. The Owner, the Owner's Representatives, the Engineer, testing agencies and governmental agencies with jurisdictional interests shall have access to the Project at all times for their observations, inspecting, and testing. The Contractor shall provide proper and safe conditions for such access.

VII. SURVEYS AND REFERENCE POINTS

- 7.1. The Owner shall furnish all necessary Drawings showing property lines and/or easements and the location of the Work. The Contractor shall provide a land surveyor licensed in the Commonwealth of Virginia to execute the Work in accordance with the Contract Documents and shall be responsible for the accuracy of this Work.
- 7.2. The Owner has established or will establish such general reference and control points and benchmarks on or about the Project site as will enable the Contractor to proceed with the Work. Prior to issuance of the Notice to Proceed, if the Contractor finds that any previously established reference points have been destroyed or misplaced, the Contractor shall promptly notify the Owner, and the Owner shall replace such general reference points and benchmarks at the Owner's expense.
- 7.3. The Contractor shall protect and preserve the established control points, bench marks and monuments and shall make no changes in locations without the written approval of the Owner. Any of these which may be lost or destroyed or which require shifting because of necessary changes in grades or locations shall, subject to prior approval of the Owner, be replaced and accurately located by the Contractor, at no expense to the Owner.
- 7.4. The contractor shall be responsible for the layout of the proposed work in its entirety. The layout shall be performed by a Licensed Land Surveyor and based on NAVD 88 (92) Datum.**

VIII. WORKING HOURS

- 8.1. Normal working hours shall be **7:30 a.m. to 4:30 p.m.**, Monday through Friday, except that Work shall not start any earlier than one-half hour after sunrise or continue beyond one-half hour prior to sunset. If the Contractor desires to perform Work outside the normal working hours, on Holidays, or on weekends, the Contractor shall request permission, in writing, 48-hours in advance to allow arrangements to be made. The Contractor may be charged an inspection fee by the Owner if such

work is approved. Where the Owner specifically directs the Contractor to work outside of normal working hours, no inspection fee will be imposed. The Owner may refuse the Contractor permission to work outside the normal working hours. The Contractor shall make reasonable efforts to avoid undue noise during the night and on weekends, including, but not limited to, fireproof covering necessary to dampen excessive noise from engines or pumps which operate before 7:00 a.m. and after 9:00 p.m., if it is necessary to work at those times.

- 8.2. The Contractor shall designate a representative and furnish a telephone number at which the representative may be contacted at any time after working hours. This representative shall be empowered and authorized to provide such personnel and equipment as may be required to remedy emergency situations that may develop after normal working hours, or on weekends and holidays.
- 8.3. The Contractor shall receive approval of the Owner, in advance, of any work to be performed on Holidays. The Owner reserves the right to deny permission to work on Sundays and/or Holidays without cause.

Holidays are as listed below:

New Years Day	1 st day of January
Martin Luther King's Birthday	3 rd Monday in January
President's Day	3 rd Monday in February
Memorial Day	Last Monday in May
Independence Day	4 th day in July
Labor Day	1 st Monday in September
Veteran's Day	11 th day of November
Thanksgiving Day	4 th Thursday in November
Day after Thanksgiving	Friday after 4 th Thursday in November
Christmas Eve	24 th day of December
Christmas Day	25 th day of December

If January 1, July 4, Veterans Day or Christmas fall on a Sunday, the following Monday shall be considered the Holiday. If these dates fall on a Saturday, the previous Friday shall be considered the Holiday.

The Contractor's attention is called to Section 109-1.5.C.1.d. regarding Owner compensation by the Contractor for overtime work performed outside normal working hours.

IX. PROJECT COORDINATION

9.1 Coordination with Owner

- A. The Contractor shall coordinate all construction activities with the Owner and shall obtain the Owner's approval as to schedule of Work, permits, temporary work, and traffic control.
- B. Progress meetings shall be held monthly on a date to be set by the Owner. The Contractor shall be present at all progress meetings. If progress is not made as scheduled, or if the Owner desires to discuss revised progress schedules or the quality of workmanship or other aspects of the work, additional progress meetings can be required.

- C. The Owner may construct or reconstruct any utility service in the highway or street or grant a permit for the same at any time. The Contractor shall not be entitled to any damages occasioned thereby other than a consideration of an extension of time.
- D. When authorized by the Owner, the Contractor shall allow any person, firm, or corporation to make an opening within the limits of the Project upon presentation of a duly executed permit from the Owner. When directed by the Owner, the Contractor shall satisfactorily repair portions of the Work disturbed by the openings. The necessary Work will be paid for as extra Work in accordance with these specifications and shall be subject to the same conditions as the original Work performed.

9.2 Coordination with Utilities

- A. The Owner and Contractor agree that disruption to public services shall be avoided whenever possible and minimized when it is not avoidable. In cases where the disruption of existing facilities could adversely impact public service delivery, acceptable duration(s) and time(s) of the outages shall be coordinated between the Contractor and Owner, so as to explicitly minimize disruption to public service delivery.
- B. Before the initiation of any excavation, the Contractor shall locate all existing utilities, culverts, and other structures. Work shall be coordinated with affected utility companies. Prior to excavation, the Contractor shall contact MISS UTILITY at (800) 552-7001 and comply with all MISS UTILITY requirements.
- C. All existing utilities, both public and private (including sewer, gas, water, electrical services, etc.), shall be protected and their operation shall be maintained throughout the course of the Work. Any temporary shutdown of an existing service shall be arranged by the Contractor between the Contractor and the responsible agency. The Contractor shall assume full responsibility and defend and hold the Owner harmless from the result of any damage that may occur as a result of the Contractor's activities.
- D. If any utility service is interrupted as a result of accidental breakage or of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the authority in the restoration of service. If utility service is interrupted, repair work shall be continuous until service is restored. The Contractor shall be responsible for any damage to utilities that are attributable to his neglect or methods of performing the work.
- E. The Owner shall provide Utility companies with copies of the construction plans and or scope of work prior to construction. If requested by the Owner, the Contractor shall provide each affected utility company with a copy of the proposed schedule of progress prior to commencing work.
- F. Existing facilities (such as water and sewer valves) shall be operated only by the facility owner or under the direct supervision of the facility owner's personnel. The Contractor shall inform the owner at least 48-hours in advance of the need for the operation of existing facilities.
- G. At points where the Contractor's operations are adjacent to the properties of any utility, including railroads, and damage to which might result in considerable expense, loss, or

inconvenience, Work shall not commence until arrangements necessary for the protection thereof have been completed.

- H. The Contractor shall cooperate with owners of utilities so that location, removal and adjustment operations may progress in a reasonable manner; duplication of adjustment work may be reduced to a minimum; and, services rendered by those parties will not be unnecessarily interrupted.
- I. The Contractor should be aware that in some instances buried cables, gas lines, water lines, etc., two inches and smaller in diameter may have to be excavated by hand and slightly relocated to facilitate construction of the Work under this contract. This shall be considered incidental to the Work, and shall be performed at no additional cost to the Owner.
- J. Should the location of any pipe or conduit greater than two-inches in diameter, pole, or other structures, above or below the ground be such that in the opinion of the Owner or his representative its removal, realignment, or change will be required due to work to be performed under this Contract, the removal, realignment, or change will be done as a Change Order, or will be done by the Owner of the obstructions, without cost to the Contractor. The Contractor shall maintain at his own expense the structures until such removal and before and after such realignment or change. The Contractor shall not be entitled to any claim for damages or extra compensation because of the presence of said structure, or because of any delay in the removal or relocation of the same.

X. SUPERVISION

- 10.1. The Contractor shall supervise and direct the Work, and shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall employ and maintain on the Project a qualified supervisor who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be the same as if mailed to the business address of the Contractor. The supervisor or a designated representative shall be present on the site at all times as required to perform adequate supervision and coordination of the Work. The Contractor shall notify the Owner in writing prior to any change of supervisor, and receive the Owner's approval for the replacement. **The supervisor shall be assigned exclusively to this project.**
- 10.2. Upon notification to the Contractor, the Owner reserves the right to suspend the Work until such time as a supervisor satisfactory to the Owner is assigned to the project. Contract Time shall not be extended for such suspension nor shall the Contractor be entitled to any additional payment of any kind whatsoever as a result of such suspended work.
- 10.3. Any employee of the Contractor or Subcontractor who is deemed unsuitable may be removed from the job site by the Owner, provided that Written Notice and just cause is given to the Contractor. Said employee shall be removed immediately upon receipt of said Notice.

XI. UNCOVERING WORK

- 11.1. If any work has been covered or concealed without the Owner's approval prior to being covered or concealed, the Owner may request to see such work and it shall be exposed by the Contractor. The Contractor shall pay the cost of opening or uncovering and replacement and shall, in addition, at no

cost to the Owner, make the necessary corrections to bring the work into accord with the Contract Documents.

- 11.2. Uncovering work shall be at the Contractor's expense unless the Contractor has given the Owner timely notice of the Contractor's intention to cover the same and the Owner has not acted with reasonable promptness in response to such notice.
- 11.3. If the Owner considers it necessary or advisable that covered Work previously approved be re-inspected or tested by others, the Contractor, at the Owner's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Owner may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation inspection and testing and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time or both directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate Change Order shall be issued.

XII. REMOVAL OF UNACCEPTABLE WORK

- 12.1. All Work that does not conform to the requirements of the Contract Documents shall be unacceptable.
- 12.2. The Contractor shall remove or correct all unacceptable and defective Work or materials. The replacement of Work and materials shall conform to the Contract Documents or be in a manner acceptable to the Owner. The Contractor shall bear all costs of such correction and/or removal and replacement.
- 12.3. Work done contrary to or regardless of the instructions of the Owner, Work done beyond the lines shown or as directed, except as herein provided, or any extra Work done without authority, will be considered unauthorized and will not be paid for under the provisions of the Agreement. Work so done may be ordered removed or replaced at no cost to the Owner.
- 12.4. If the Work is defective, or the Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the Owner may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any surety or other party. If the Contractor does not remedy, remove, or replace the rejected or condemned Work as instructed by the Owner within the time period stated by the Owner but in no case to exceed 30 Days after receiving written Notice, such remedy, removal, or replacement may be accomplished by the Owner at the Contractor's expense.

XIII. SUBSTANTIAL COMPLETION

- 13.1. Prior to Final Payment, but following completion of all required tests and inspections, the Contractor may request in writing that the Owner certify that the entire Project or any phase of the Project is Substantially Complete and request the Owner issue a Certificate of Substantial Completion. Within fourteen (14) working days the Owner will conduct an inspection of the Project with the Contractor and either issue a Certificate of Substantial Completion or notify the Contractor in writing of the incomplete items. The Certificate and attachments shall include the following:
- A. A listing of responsibilities for the security, operation, safety, maintenance, utilities and insurance on the substantially completed portion;
 - B. A tentative list of items to be completed or corrected prior to final payment; and,
 - C. The maximum time for items to be completed or corrected prior to final payment.
- 13.2. The Owner shall have the right to exclude the Contractor from the Project or phase of the Work certified to be Substantially Complete; however, the Owner will allow the Contractor reasonable access to complete or correct the Work.

XIV. USE OF COMPLETED PORTIONS

- 14.1. The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions may not have expired, but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the Work, the Contractor shall be entitled to such extra compensation or extension of time or both as the Owner and the Contractor may agree **by a Change Order**.

XV. FINAL INSPECTION

- 15.1. Upon receiving written Notice from the Contractor that the entire Work or an agreed upon portion is complete, the Owner will make a final inspection with the Contractor, and will notify the Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. The Contractor shall immediately take such measures as are necessary to complete such work or remedy such deficiencies.
- 15.2. This procedure shall be repeated until all items are corrected to the satisfaction of the Owner. Only written notification to the Contractor from the Owner will constitute final acceptance of any part of the Work under the Agreement.

XVI. CLAIMS

- 16.1. All claims, disputes, demands and other matters in question arising out of or relating to the Agreement or the Contract Documents, except for claims which have been waived by the Contractor's acceptance of final payment, will be addressed in accordance with the provisions of the Virginia Public Procurement Act and as stated herein; provided, however, the provisions of Section 2.2-4366 of that Act will not be applicable without the separate express written consent of the Owner.

- 16.2. Early or prior knowledge by the Owner of an existing or impending claim for damages could alter the plans, scheduling, or other action of the Owner or result in mitigation or elimination of the effect of the act objected to by the Contractor. Therefore, a written statement describing the act of omission or commission by the Owner or its agents that allegedly caused damage to the Contractor and the nature of the claimed damage shall be submitted to the Owner at the time of occurrence or beginning of the Work upon which the claim and subsequent action are based. If such damage is deemed certain in the opinion of the Contractor to result from his acting on an order from the Owner, he shall immediately take written exception to the order. Submission of a notice of claim as specified shall be mandatory. Failure to submit such notice shall be a conclusive waiver to such claim for damages by the Contractor. An oral notice or statement will not be sufficient nor will a notice or statement after the event.

The Contractor shall immediately notify the Owner of potential claim items for extra work. If the Contractor is directed by the Owner or performs work which is mutually deemed by the Contractor and the Owner not to be included under any of the items of the Bid and which has not been specifically ordered in writing by the Owner as extra work, the Contractor shall make a claim to the Owner for extra payment for such work by Written Notice within five (5) days after the occurrence, with detailed cost data to support the claim or the claim will not be considered.

If the Contractor's claim contains data that cannot be verified by the Owner's records, the data shall be subject to a complete audit by the Owner or its authorized representative if they are to be used as a basis for claim settlement.

If the Contractor wishes to make claim for an increase in the Contract Price or Contract Time, he shall submit all supporting data to the Owner and Engineer within twenty (20) Days from the time of initial occurrence. Failure to submit such data within twenty (20) Days shall be a conclusive waiver to such claim by the Contractor.

- 16.3 Claims, disputes, and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims in respect to changes in the Contract Price or Contract times will be referred initially to the Engineer in writing with a request for a formal decision in accordance with this paragraph. Written Notice of each such claim, dispute or other matter shall be delivered by the Contractor to the Engineer and the Owner promptly (but in no event later than twenty (20) days) after the start of the occurrence or event giving rise thereto, and written supporting data shall be submitted to the Engineer and the Owner promptly, (but not later than twenty (20) days) after the start of such occurrence or event and monthly thereafter for continuing events unless the Engineer allows an additional period of time for the submission of additional accurate data in support of such claim, dispute or other matter. The Owner shall submit any response to the Engineer and the Contractor within ten (10) days after receipt of the Contractor's last submittal (unless the Engineer allows additional time).

The Engineer shall render a written decision within twenty (20) days of receipt of the Owner's response. The Engineer's written decision on such claim, dispute, or other matter shall be final and binding upon the Owner and Contractor unless, within twenty (20) days after issuance of the Engineer's written decision, either party appeals the decision by giving the other party and the Engineer written notice of a request for negotiation.

Within ten (10) days of the delivery of said Notice, senior representatives of the Owner and the Contractor, having authority to settle the dispute, and the Engineer shall meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the dispute. The Owner's representative will participate in good faith during the negotiation and will have authority to approve changes in the Contract Time and Price.

In the event a mutually acceptable decision cannot be reached through negotiation within twenty (20) days of the appealing party's Notice, (or mutually agreeable longer period), or if the party receiving such Notice will not meet within ten (10) days, the Owner or Contractor may declare, by written Notice, delivered to the other party and to the Engineer, that the negotiation was unsuccessful and may initiate further appeal.

Any further appeal shall be initiated by written Notice of the appeal by the Owner or Contractor to the Engineer and non-appealing party within twenty (20) calendar days of receipt of the Notice of unsuccessful negotiation. Failure to issue a Notice of appeal within said period will result in the Engineer's decision being final and binding to the fullest extent allowed by law. If a written Notice of appeal is issued, the claim or dispute may be submitted for non-binding mediation at the discretion of Owner. If Owner chooses non-binding mediation, it shall be a condition precedent to the institution of any further administrative, legal or equitable proceedings by either party

If the Owner requests mediation upon issuance of the Notice of appeal, the parties shall endeavor to agree to a single mediator to mediate the dispute in a session not to exceed one-half day in length, unless extended by the agreement of both parties. If the parties cannot agree on a single mediator, they shall request the chief judge of the local state circuit court to designate a mediator. Unless the parties mutually agree otherwise, the mediation shall occur within ten (10) days of the mediator's selection. The costs of the mediation shall be paid by the parties on a pro rata basis.

The results of successful mediation will be implemented by a Change Order. Should the mediation be unsuccessful, it shall be terminated by written Notice to all involved by the mediator or Owner or Contractor. The dispute resolution process shall then proceed in accordance with paragraph 16.4.

- 16.4. A formal proceeding may then be instituted by the appealing party in a forum of competent jurisdiction within the Owner's locality, to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable state and city laws and regulations.

~~In the event of any litigation between the parties arising out of this Agreement, the prevailing party will be entitled to recover its attorneys' fees and expert fees, as well as all other costs and expenses of such litigation.~~

- 16.5. The Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Owner and the Contractor may otherwise agree in writing.

XVII. ENGINEER'S STATUS

- 17.1. All Work shall be performed under the general observation of the Engineer (if specified in the Special Provisions, otherwise, the Owner shall serve as the Engineer at its discretion). The Contractor shall carry out the Work in accordance with the Contract Documents. The construction means,

methods, techniques, sequences of procedures, and safety precautions and programs in connection with the Work shall be at the direction and the responsibility of the Contractor. The Engineer shall have authority to and shall reject any and all Work whenever it is necessary to do so in order to insure the proper execution of the Work in accordance with the Contract Documents. The Engineer shall have no authority to approve or order changes in the Work that alter the terms or conditions of the Agreement. The Owner shall confirm by written Notice within fourteen (14) calendar Days any oral order, direction, requirement or determination.

- 17.2. In case of the termination of the employment of the Engineer, the Owner may appoint a capable and reputable Engineer as a replacement. The status under the Agreement of the Engineer shall be that of the former Engineer.
- 17.3. Approval by the Engineer of any materials, plans, equipment or drawings proposed by the Contractor, shall be construed only to constitute an approval of general design. Such approval shall not relieve the Contractor for any responsibility for the accurate and complete performance of the work in accordance with Contract Documents, or from any duty, obligation, performance guarantee or other liability imposed upon him by the provisions of the Agreement.
- 17.4 The Contractor may be required to accompany the Owner for an on-site review of the project after award, but prior to the pre-construction conference and issuance of the Notice to Proceed. The purpose of the on-site review will be to compile a property report that will list, according to the following categories, the properties affected by construction as determined mutually by the Contractor and the Owner, or his representative.
- A. Unrestrained access to and from residences and business locations. This includes but is not limited to, the following types of scheduled projects:
 - 1. Street repair (non-emergency) or improvement projects.
 - 2. Utilities repair (non-emergency) or improvement projects.
 - 3. Sidewalk repair (non-emergency) or improvement projects.
 - B. Right to enjoy one's residence or business free of disturbing and unusual environmental changes as a result of an Owner-authorized construction project. Examples of such changes are excessive noise, dust, light, as well as unusual working hours and odors. This includes, but is not limited to, projects such as:
 - 1. Drainage repair (non-emergency) or improvement projects.
 - 2. Sewage repair (non-emergency) or improvement projects.
 - C. The right to properly plan for the relocation of one's personal property which must be moved as a result of an Owner-authorized construction project. This includes, but is not limited to, the following:
 - 1. Trees, shrubs, plants and flowers.
 - 2. Play equipment.
 - 3. Portable buildings.
 - 4. Fences (above grade or underground electric pet containment).
 - 5. Automobiles.

The property report is to remain on file with the Owner and the Contractor until project closeout.

XVIII. NOTICE TO COMPLY ORDER

See page 105-16.

XIX. STOP WORK ORDER

See page 105-17.

End of Section

CITY/COUNTY OF _____

NOTICE TO COMPLY

Department of _____

Pursuant to Section _____ of the Code of the City/County
of _____, Virginia, as amended, a City Manager/County
Administrator Designee inspected your site at _____
on _____, 20____ at _____ a.m. / p.m.

The following conditions of noncompliance were noted:

- ☐ SILT FENCE DOWN
- ☐ DISTURBED AREAS NOT STABILIZED
- ☐ SEDIMENT TRAPPING DEVICES NOT INSTALLED PROPERLY
- ☐ TRACKING ON PUBLIC ROAD
- ☐ OTHER: _____

The following corrective measures are needed to bring you into compliance:

- _____
- _____
- _____

These measures are to be completed before _____, 20____.

Notice ordered by _____, on _____, 20____.
(Designee of City Manager/County Administrator)

Hand Delivered _____ Certified Mail _____

If you have any questions, please call _____.
(Telephone number)

CITY/COUNTY OF _____

STOP WORK ORDER

Permit Number _____

Date _____

Department of _____

Pursuant to Section _____ of the Code of the
City/County of _____, Virginia, as amended, a substantial
Code violation exists at _____. You are
hereby notified that further work at this location must be

IMMEDIATELY DISCONTINUED

Corrective Measures Required:

Ordered by: _____, on _____, 20____.
(Designee of City Manager/County Administrator)

Notice served to _____, on _____, 20____.

Stop Work Order in Effect Until _____

(Signature of Enforcement Officer)

THIS PAGE WAS INTENTIONALLY LEFT BLANK

SECTION 106

CONTROL OF MATERIAL

I. TESTS AND INSPECTIONS

- 1.1. All material and workmanship shall be subject to inspection, examination and test by the Owner at any time during manufacture and/or construction. The Owner shall have the right to reject defective material and workmanship or require their correction. **The City will furnish testing services for compaction and concrete.**
- 1.2. The Contractor shall provide at its expense the testing and inspection services required by the Contract Documents. The Owner will provide at his expense all inspection and testing services not required by the Contract Documents; provided, however, the Contractor will be responsible for the payment of all failing tests.
- 1.3. The Contractor shall furnish promptly without additional charge all reasonable facilities, labor, and materials, necessary and convenient for making such tests as may be designated in the Contract Documents. The Contractor shall work with the Owner and the Engineer in scheduling and coordinating Owner provided testing or inspection services.
- 1.4. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public body having jurisdiction require any Work (or part thereto) specifically to be inspected, tested, or approved by someone other than the Owner, the Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish the Owner the required certificates of inspection, or approval. **All Components shall be listed and labeled by a nationally recognized testing lab.** The Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for the Owner's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to the Contractor's purchase thereof for incorporation in the Work.
- 1.5. Inspections, tests or approvals by the Owner shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents.
- 1.6. The failure of the Owner to reject or condemn materials and workmanship not conforming to the Contract Documents shall not prevent the Owner from rejecting materials and workmanship found not to be in accordance with the Contract Documents at any time prior to the acceptance of the completed Work, nor shall it be considered as a waiver of any nonconformance with the Contract Documents which may be discovered later, or as preventing the Owner at any time prior to the expiration of the guarantee period or of the expiration of any applicable statutory limitation period for legal actions for Contractor default from recovering damages for work not in accordance with the Contract Documents.

II. LABOR, MATERIALS AND EQUIPMENT

- 2.1. The Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The Contractor shall at all times maintain good discipline and order at the site.

- 2.2. Unless otherwise specified, the Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the Work.
- 2.3. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the Owner, the Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents. **All material shall be manufactured within two (2) years of the bid date of the project.**
- 2.4. It shall be the responsibility of the Contractor to legally dispose of all excess material at his expense unless otherwise indicated on the Drawings and/or noted in the Specifications.
- 2.5. No material that is not required for the Work on this Project may be stored on site or within the Project boundaries or on land designated for Project use, unless approved by the Owner in writing prior to placement.

Equipment Rental Reimbursement Rates: The contractor shall use the monthly rate, or a percentage thereof, for equipment as stated in the most current edition of the Rental Rate Blue Book for any and all claims for extra compensation, which may arise in the course of the work. Rates are based on Twenty-two (22) work days per month.

III. WORK BY OWNER

- 3.1. The Owner may perform other work related to the Project at the site by the Owner's own forces, have other work performed by utility owners, or let other direct contracts for Work at the site. If the fact that such other work is to be performed was not noted in the Contract Documents, Written Notice will be given to the Contractor prior to starting any such other work.

End of Section

SECTION 107

LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

I. PERMITS AND REGULATIONS

- 1.1. The Contractor shall procure all permits and licenses pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the Work except those provided by the Owner, and specified in the Special Provisions.
- 1.2. The Contractor shall be fully responsible for knowledge of and shall abide by each and every law, rule or regulation of all public bodies having political jurisdiction over the Project and in force at the time of the Contract; including, the safety of persons or property and the protection of persons and property from damage, injury or loss. The Contractor shall erect and maintain all necessary safeguards for such safety and protection and hold harmless the Owner and its agents, officers, or employees against any claim for liability arising from or based on any violation, whether by himself, his agents, his employees or subcontractors. If the Contractor observes that the Contract Documents are at variance with any such law, he shall promptly notify the Owner in writing. The Contractor shall execute and file the documents, statements, and affidavits required under any applicable federal or state law or regulation affecting his Bid or Agreement or prosecution of the Work thereunder. The Contractor shall permit examination of any records made subject to such examination by any federal or state law or by regulations promulgated thereunder by any state or federal agency charged with enforcement of such law. The Contractor shall not be entitled to claim any damages for delay occasioned by compliance with such laws. Where such laws are changed during the course of the Agreement, and where such changes create additional costs to the Agreement or affect the time of the Agreement, such changes shall be made effective through Change Orders prepared in accordance with the Contract Documents.
- 1.3. The Contractor shall comply fully with the U.S. Department of Labor Safety and Health Regulation promulgated under the Occupational Safety and Health Act of 1970, as amended, and under Section 107 of the Contract Work Hours and Safety Standards Act, as amended. The Contractor shall also comply fully with the Overhead High Voltage Act as set forth in Chapter 30, Title 59.1 of the Code of Virginia; Subpart P - "Elevations, Trenching and Shoring", of the Virginia Occupational Safety and Health Standards for Construction Industry; the Virginia Confined Space Standard 1910.146 of the Virginia Occupational Safety and Health Standards for General Industry; and the "Underground Utility Damage Prevention Act" as set forth in Chapter 10.3, Title 56 of the Code of Virginia, 1950, as amended. The above listing of safety laws and regulations is for informational purposes and in no way alters or limits Contractor's responsibility to comply with the safety laws of all public bodies having jurisdiction as set forth in Section 107-1.2 above.

II. LAND, EASEMENTS, AND RIGHTS-OF-WAY

- 2.1. Prior to issuance of Notice to Proceed, the Owner shall obtain all land, easements, and rights-of-way necessary for carrying out and for the completion of the work to be performed and pursuant to the Contract Documents, unless otherwise specified herein or otherwise mutually agreed. A land surveyor licensed in the Commonwealth of Virginia must perform the layout. Easements for temporary uses and detours requested by the Contractor and approved by the Owner in lieu of a detour within the right of way or easement area shall be acquired by the Contractor without the Owner being a party to the Agreement.

- 2.2. The Owner shall provide to the Contractor information that delineates and describes the lands owned, rights-of-way, or easements acquired, and permits obtained.
- 2.3. The Contractor shall provide at its own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials. The Contractor shall not use private property in connection with the Work unless prior written permission is obtained from the property owner. A copy of the written permission indicating the name, address, and phone number of the property owner shall be furnished to the Owner. Upon completion of the use of the property, the Contractor shall also furnish the Owner a release signed by the property owner indicating that the property has been satisfactorily restored.
- 2.4. The Contractor shall acquire all necessary and appropriate Permit(s) from the locality, VDOT, or both, for entrance(s) to off-site storage or lay-down yard(s) and shall abide by all conditions required by the Permit. The Contractor shall be solely responsible for all costs incurred in acquiring the Permit and all costs associated with the efforts necessary to comply to Permit requirements.

The Contractor shall utilize the most direct means of access to the Work area and shall not access the Work area through adjacent neighborhoods, parking areas, etc. Any and all damages to adjacent areas resulting from the Contractor's activities shall be the sole responsibility of the contractor and shall be repaired at the Contractor's expense, to the complete satisfaction of the Owner, locality/VDOT, and the affected property owner(s).

III. PROTECTION OF WORK, PROPERTY & PERSONS

- 3.1. The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall provide and maintain all necessary watchmen, barricades, lights, and warning signs, and take all necessary precautions for the protection and safety of the public.
- 3.2. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. The Contractor shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection, and shall notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor shall remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, or anyone for whose acts any of them will be liable.
- 3.3. The Contractor shall designate a responsible member of its organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner
- 3.4. In accordance with generally accepted construction practices, and the requirements of OSHA, the Contractor shall be solely and completely responsible for conditions of the Project site. This requirement shall apply continuously and not be limited to normal working hours. The Contractor

shall comply with Federal and State safety regulations, at the site of the Work and provide such equipment and medical facilities as necessary to supply first aid service to anyone who may be injured. The Contractor shall promptly report in writing to the Owner all accidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the site and which caused death, personal injury or property damages, giving full details and statement of witnesses. In addition, if death or serious injuries or serious damages are caused, the accidents shall be reported immediately to both the Engineer and the Owner. If any claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts, in writing, to the Owner.

- 3.5. Until final acceptance of the Work by the Owner, the Contractor shall have charge and care thereof and shall take every precaution against damage to the Work or to any part thereof by action of the elements or from any other cause whether installed, in storage, or off-site. The Contractor shall rebuild, repair, restore, and make good damage to any portion of the Work occasioned by any of the foregoing causes before final acceptance and shall bear the expense thereof. The Owner may reimburse the Contractor for repair of damage to Work attributable to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor. In case of suspension of work, the Contractor shall be responsible for the Project and shall take such precautions as may be necessary to prevent damage to the Work, provide for erosion and environmental control and drainage control, and erect any necessary temporary structures, signs, or other facilities at his own expense. During the suspension of Work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under the Contract and shall take adequate precautions to protect new tree growth and other important vegetation against damage.
- 3.6. Emergency traffic such as police, fire and disaster units shall be provided reasonable access to the work area at all times. The Contractor shall coordinate partial or full street closures with all emergency services, such as police, fire and disaster units, and shall bear the responsibility of notification to same of all closures, blockages and re-openings.
- 3.7. The Contractor shall, during the progress of the Work and as directed by the Owner, remove from the Owner's property and from all public and private property and rights-of-way, at its own expense, all temporary structures, rubbish, debris, piles of earth, foreign matter, and waste materials resulting from his operations. The site of the Work shall be restored to the conditions existing before the Work was started, to the satisfaction of the Owner. Lawns, pavements, sidewalks, and other surfaces shall be preserved where practicable, but if damaged, shall be fully restored.
- 3.8. The Owner may take corrective action if the Contractor fails to perform cleanup and restoration in an orderly, continuous, and expeditious manner. The Owner may take corrective action three days after delivery of notice to do so to the Contractor and deduct the cost from any monies due the Contractor.
- 3.9. The Contractor shall preserve property and improvements along the lines of and adjacent to the Work unless their removal or destruction is called for by the Contract Documents. The Contractor shall use suitable precautions to prevent damage to such property.
- 3.10. When the Contractor finds it necessary to enter on private property, he shall secure from the property owner or lessee a written permit for such entry prior to moving thereon. An executed copy of this permit shall be furnished to the Owner.

- 3.11. The Contractor shall be responsible for damage or injury to property during the prosecution of the Work resulting from any act, omission, neglect, or misconduct in the method of executing the Work or attributable to defective Work or materials. This responsibility shall not be released until final acceptance of the Project.
- 3.12. When direct or indirect damage is done to property by or on account of any act, omission, neglect or misconduct in the method of executing the Work or in consequence of the non-execution thereof on the part of the Contractor, the Contractor shall restore such property to a condition substantially equal to that existing before such damage was done by repairing, rebuilding or restoring, as may be directed by the Owner, or making settlement with the property owner. The Contractor shall secure from the property owner a release from any claim against the Owner without additional compensation therefor. A copy of this release shall be furnished to the Owner.
- 3.13. All property boundary markers shown on the Drawings or discovered during the course of construction shall be protected. All property boundary markers disturbed due to construction activities shall be replaced by the Contractor at no expense to the Owner. Property boundary markers shall be restored by a surveyor licensed in the State of Virginia and all restored property boundary markers shall be shown on the Record Drawings.
- 3.14. The Contractor shall employ a licensed Plumbing Contractor, who shall obtain the necessary permits and shall do all Work on private property in accordance with the International Plumbing Code, latest edition. The Owner will obtain the permission of the property owner to work on private property. No payment will be made for work done on private property until all restoration work is complete to the satisfaction of the Owner and the homeowner.

The Contractor shall be paid based on the number of permits that have been signed and approved by the Building and Codes Inspector as evidenced by copies of the approved permits submitted to and accepted by the Engineer. Copies of permits shall be submitted with monthly invoices.

- 3.15. The Contractor will notify the affected property owners, in writing **ten (10)** calendar Days prior to commencement of Work. "Affected Property Owners" shall be those property owners whose properties are affected by construction on the Project in the following manner: (i) restrained access to and from residences and business locations; (ii) interference with the right to enjoy one's residence or business free of disturbing and unusual environmental changes as a result of the Project, such as excessive noise, dust, light, as well as unusual working hours and odors; and (iii) the relocation of personal property, such as trees, shrubs, plants and flowers, play equipment, portable buildings, fences and automobiles, which must be moved as a result of the Project. Such Notice shall be deemed properly given if mailed by first class, postage prepaid, to the address for the property owners shown in the local tax records.
- 3.16. It shall be the Contractor's paramount responsibility to additionally notify each residence and business that construction adjacent to their property is imminent. This notification will be given and noted no less than 48 hours prior to Work commencing adjacent to the affected property. The Notice from the Contractor shall be written and may be hand delivered to each affected residence and business. A separate Notice shall be delivered each time the entrance to each residence and business will be blocked or inaccessible.

- A. If this Notice is mailed, time is to be allowed such that receipt by the addressee is at least 48 hours prior to Work commencement. Such Notice shall be deemed properly given if mailed by first class, postage prepaid, to the address for the property owners shown in the local tax records. A duplicate copy of each mailed Notice is to be forwarded to the Owner.
- B. If this Notice is hand delivered, a duplicate copy of each Notice is to be forwarded to the Owner indicating the date of delivery and if personal contact was achieved.

IV. ENVIRONMENTAL STIPULATIONS

- 4.1. Any cost associated with violations of the law including, but not limited to, remediations, clean up cost, fines, administrative or civil penalties or charges, and third party claims imposed on the Owner by any regulatory agency or by any third party as a result of the Contractor's noncompliance with federal, state, or local environmental laws and regulations or nuisance statutes by the Contractor or by Subcontractors, consultants, sub-consultants, or any other persons, corporations or legal entities retained by the Contractor for this Agreement, shall be paid by the Contractor.

No separate payment will be made for the Work or precautions described herein except where provided for as a specific item in the Agreement or except where provision has been made for such payment in these specifications.

- 4.2. Pollution:

- A. Water

The Contractor shall exercise every reasonable precaution throughout the duration of the project to prevent pollution of rivers, streams, and impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, paints, sedimentation, and other harmful material shall not be discharged into or alongside rivers, streams, or impoundments or into channels leading to them.

Construction discharge water shall be filtered to remove deleterious materials prior to discharge into state waters. During specified spawning seasons, discharges and construction activities in spawning areas of state waters shall be restricted so as not to disturb or inhibit aquatic species that are indigenous to the waters. Neither water nor other effluence shall be discharged onto wetlands or breeding or nesting areas of migratory waterfowl. When used extensively in wetlands, heavy equipment shall be placed on mats. Temporary construction fills and mats in wetlands and flood plains shall be constructed of approved non-erodible materials and shall be removed by the Contractor to natural ground when the Owner so directs.

If the Contractor dumps, discharges, or spills any oil or chemical that reaches or has the potential to reach a waterway, he shall immediately notify all appropriate jurisdictional state and federal agencies and shall take immediate actions to contain, remove, and properly dispose of the oil or chemical.

Excavation material shall be disposed of in approved areas above the mean high water mark shown on the plans in a manner that will prevent the return of solid or suspended materials to state waters. If the mark is not shown on the plans, the mean high water mark shall be considered the elevation of the top of stream banks.

1. All waste materials, including but not limited to excavated materials, demolished pavement, arboreal (landscaping) waste and other debris, that are not suitable for project related purposes (e.g. backfill) or are surplus to the needs of the project, both as determined by the Engineer, shall become the property of the Contractor. The Contractor shall dispose of all such material in accordance with his accepted Disposal Plan at no additional cost to the City.
2. The contractor shall submit a Disposal Plan for review and acceptance by the Engineer prior to performing any work that might generate waste materials. The plan shall include a complete description of the materials that are expected to be encountered and their proposed disposal site(s). The Contractor may change his Disposal Plan only by written notice to the Engineer. The acceptance of a plan and/or any related notice to the Engineer must be evidenced by a written response from the Engineer.
3. The Contractor shall insure that all permits related to his disposal operations have been obtained, and the Contractor shall comply with all requirements of those permits. The Contractor shall show evidence that all required permits have been obtained for all disposal sites by submitting a copy of all such permits to the Engineer as part of the Contractor's Disposal Plan.

Construction operations in rivers, streams, or impoundments shall be restricted to those areas where channel changes are shown on the plans and to those that shall be entered for the construction of structures. Rivers, streams, and impoundments shall be cleared of false-work, piling, debris, or other obstructions placed therein or caused by construction operations.

The Contractor shall prevent stream constriction that would reduce stream flows below the minimum, as defined by the State Water Control Board, during construction operations. If it is necessary to relocate an existing stream or drainage facility temporarily to facilitate construction, the Contractor shall design and provide temporary channels or culverts of adequate size to carry the normal flow of the stream or drainage facility. The Contractor shall submit a temporary relocation design to the Owner for review and acceptance in sufficient time to allow for discussion and correction prior to beginning the work the design covers. Costs for the temporary relocation of the stream or drainage facility shall be included in the Contract Price for the related pipe or box culvert.

When a live watercourse must be crossed by construction vehicles more than twice in any six month period, a temporary vehicular stream crossing constructed of nonerrodible material shall be provided.

Contractor shall comply with all provisions of the latest edition of the Virginia Erosion and Sedimentation Control Handbook.

B. Air

The Contractor shall comply with the provisions of the State Air Pollution Control Law and Rules of the State Air Pollution Control Board, including notifications required therein.

Burning shall be performed in accordance with applicable local laws and ordinances and under the constant surveillance of watchpersons. Care shall be taken so that the burning of materials does not destroy or damage property or cause excessive air pollution. The Contractor shall not burn rubber tires, asphalt, used crankcase oil, or other materials that produce dense smoke. Burning shall not be initiated when atmospheric conditions are such that smoke will create a hazard to the motoring public or airport operations. Provisions shall be made for flagging vehicular traffic if visibility is obstructed or impaired by smoke. At no time shall a fire be left unattended.

Asphalt mixing plants shall be designed, equipped, and operated so that the amount and quality of air pollutants emitted will conform to the Rules of the State Air Pollution Control Board.

Emission standards for asbestos incorporated in the EPA's National Emission Standards for Hazardous Air Pollutants apply to the demolition or renovation of any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof that contains friable asbestos.

C. Noise

The Contractor's operations shall be performed so that exterior noise levels measured during a noise-sensitive operation shall not be more than 80 decibels within 100 feet from the point of origin or within ten (10) feet of a noise-sensitive facility. Noise-sensitive facility is any facility for which lowered noise levels are essential if the facility is to serve its intended purpose. Such facilities include, but are not limited to, those associated with residences, hospitals, nursing homes, churches, schools, libraries, parks and recreational areas.

The Owner may monitor construction-related noise. If construction noise levels exceed the specified limits, the Contractor shall take corrective action before proceeding with operations. The Contractor shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to noncompliance with these requirements.

The Owner may prohibit or restrict to certain portions of the project any work that produces objectionable noise between 9 P.M. and 7 A.M. If other hours are established by local ordinance, the local ordinance shall govern.

Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment.

When feasible, the Contractor shall establish haul routes that direct his vehicles away from developed areas and ensure that noise from hauling operations is kept to a minimum.

~~These requirements are not applicable if the noise produced by sources other than the Contractor's operation at the point of reception is greater than the noise from the Contractor's operation at the same point.~~

D. Forest Fires

The Contractor shall take all reasonable precautions to prevent and suppress forest fires in any area involved in construction operations or occupied by him as a result of such operations. The Contractor shall cooperate with the proper authorities of the state and federal governments in reporting, preventing, and suppressing forest fires. Labor, tools, or equipment furnished by the Contractor upon the order of any forest official issued under authority granted the official by law shall not be considered a part of the Contract. For fires originating by no fault of the Contractor, the Contractor may negotiate with the proper forest official for compensation for such labor, tools, or equipment.

4.3. Archeological, Paleontological, and Rare Mineralogical Findings:

In the event of the discovery of prehistoric ruins, Indian or early settler sites, burial grounds, skeletal remains, relics, artifacts, fossils, stone tools, meteorites, or other articles of archeological, paleontological, or rare mineralogical interest during the prosecution of work, the Contractor shall act immediately to suspend work at the site of the discovery and notify the Owner. The Owner will immediately notify the proper state authority charged with the responsibility of investigating and evaluating such finds. The Contractor shall cooperate and, upon request by the Owner, assist in protecting, mapping, and removing the findings. Findings shall become the property of the Owner unless they are located on federal lands, in which event they shall become the property of the U.S. government.

When such work delays the progress of the Work, the Owner will give consideration to adjustments in the Contract Time limit. However, no adjustment in Contract Price nor Time will be allowed for delays that do not exceed 2 working days from the time the Contractor is notified to stop work. **If the contractor is assisting in removing the remains, the Owner will give consideration to adjustment in payment.**

V. TEMPORARY FACILITIES

- 5.1. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of employees as may be necessary to comply with the requirements of any governing body and regulatory agency having jurisdiction.

The Contractor shall pay for and furnish temporary facilities (such as light, power, and water) complete with connecting piping, wiring, lamps, and similar equipment as necessary. The Contractor shall install, maintain, and remove temporary facilities upon completion of the Work. The Contractor shall obtain all permits and bear all costs in connection with temporary facilities at no expense to the Owner. The use of temporary facilities shall be in compliance with the requirements of the facility owner.

- 5.2. The Contractor shall provide at least one self-contained single-occupant toilet unit of the chemical, or aerated recirculation type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar non absorbent material. Unit shall be emptied and serviced regularly

VI. EMERGENCIES

- 6.1. In emergencies affecting the safety of persons, or the Work, or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Owner, shall act to prevent

threatened damage, injury or loss. The Contractor shall give the Owner prompt Written Notice of any significant changes in the Work or deviations from the Contract Documents caused thereby. Any compensation, claimed by the Contractor on account of emergency work, shall be determined by agreement between the Owner and the Contractor, and a Change Order shall be issued to document the changes.

- 6.2. **During the contract period, if an emergency situation (natural or man made) occurs, the Contractor agrees to dedicate the equipment and personnel allocated to this project to assist the Owner during the recovery period. The Owner shall direct this work and costs will be paid on a time and material basis. Pre-approved rates will be applied as backed up by certified payrolls and rental rates.**
- 6.3. **If an emergency situation should occur (natural or manmade) during the contract period and the project is shut down for any length of time, the contractor shall not receive any monetary compensation, with the exception of work performed to prepare the site for the impending event. However, an extension on contract time will be allowed.**

VII. WARRANTY AND GUARANTEE

- 7.1. The Contractor shall warrant and guarantee to the Owner that all Work is in accordance with the Contract Documents and is not defective. Prompt notice of all defects shall be given to the Contractor. The Contractor shall promptly correct all defective Work performed and replace defective materials or items found deficient during the final inspection, in a manner satisfactory and at no additional cost to the Owner for a period of one (1) year following the date of **Final Completion**; provided, however, if the local ordinances or code regarding warranties and guarantees, or if any provision in the local ordinances or code regarding the timing of performance or defect bonds conflicts with such one (1) year period, the local ordinance or code shall control. This warranty and guarantee shall not operate as a waiver of any of the rights and remedies of the Owner for default under or breach of the Agreement which rights and remedies may be exercised at any time within the period of any applicable statute of limitations.

The City will ~~shall~~ hold a “pre-final” inspection to test all valves and hydrants. The City Inspector and representatives from the Water Distribution Division ~~shall~~ will be present for the inspection. The final inspection will not be held until all deficiencies found in the pre-final inspection have been corrected.

- 7.2. Where defective Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this Article, the correction period hereunder with respect to such Work will be extended for an additional period of one (1) year after such corrections or removal and replacement has been satisfactorily completed. Repetitive malfunction of an equipment or product item shall be cause for replacement and an extension of the correction period to a date one (1) year following acceptable replacement. A repetitive malfunction shall be defined as the third failure of an equipment or product item following original acceptance.
- 7.3. If the Contractor does not promptly correct the defective Work or replace defective materials, the Owner may have the defective Work corrected or the rejected Work removed and replaced, and all costs of such removal and replacement shall be paid by the Contractor.
- 7.4. Certain equipment or items may be required in the Contract Documents to be warranted for periods longer than one year.

- 7.5. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Contract Documents or by Change Order.

VIII. OPENING SECTIONS OF PROJECTS TO TRAFFIC

- 8.1. When specified in the Contract or when directed by the Owner, certain sections of the Work may be opened to traffic.
- 8.2. On any section of the Work opened by order of the Owner where the Contract Documents do not provide for traffic to be carried through the Work and the Contractor has not been dilatory in prosecuting the Work, the Contractor will not be required to assume any expense entailed in maintaining the road for traffic. Such expense will be borne by the Owner or will be compensated for by Change Order. Repair of slides and repair of damage attributable to traffic will be compensated for by Change Order. The cost of all other repairs shall be borne by the Contractor.
- 8.3. On any section of the Work opened by the order of the Owner where the Contract Documents do not provide for traffic to be carried through the Work, any additional cost for the completion of other items of Work that are occasioned because of the changed working conditions will be compensated by Change Order.
- 8.4. If the Contractor is dilatory in completing the Work, he shall not be relieved of the responsibility for maintenance during the period the section is opened to traffic prior to final acceptance. Any expense resulting from the opening of such portions under these circumstances, except for slides, shall be borne by the Contractor. The Contractor shall conduct the remainder of the construction operations so as to cause the least obstruction to traffic.

IX. NO WAIVER OF LEGAL RIGHTS

- 9.1. The Owner shall not be precluded or stopped by any measurement, estimate, or certificate made either before or after final acceptance of the Work and payment therefor from showing (1) the true amount and character of the Work performed and materials furnished by the Contractor, (2) that any such measurement, estimate, or certificate is untrue or incorrectly made, or (3) that the Work or materials do not conform with the provisions of the Contract. The Owner shall not be precluded or stopped, notwithstanding any such measurement, estimate, or certificate, and payment in accordance therewith, from recovering from the Contractor or his surety, or both, such damage as it may sustain by reason of his failure to comply with the terms of the Contract. Neither the acceptance by the Owner or any representative of the Owner, nor any payment for or acceptance of the whole or any part of the Work, nor any extension of time, nor any possession taken by the Owner shall operate as a waiver of any portion of the Contract or of any power herein reserved or of any right to damages. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach. The Owner reserves all rights, privileges, immunities and defenses available to it at law.

End of Section

SECTION 108

PROSECUTION AND PROGRESS OF WORK

I. PATENT FEES AND ROYALTIES

- 1.1. The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of the Owner its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner in the Contract Documents.
- 1.2. To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner, the Engineer, the Engineer's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

II. TAXES

- 2.1. The Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by the Contractor in accordance with the Laws and Regulations of the Project that are applicable during the performance of the Work. (The Contractor may apply to the Virginia Department of Environmental Quality for tax exempt status for certain wastewater products.)

III. NOTICE TO PROCEED

- 3.1. Written Notice to Proceed will be given after the Agreement has been executed and the required Bid Security and insurances have been filed with and approved by the Owner.
- 3.2. The Contractor shall notify the Owner and all other governing bodies having jurisdiction, of the time and location that work will begin at least 48 hours prior to beginning Work.

IV. PRE-CONSTRUCTION CONFERENCE

- 4.1. Within ten (10) Days of the Effective Date of the Agreement, a conference attended by the Contractor, the Owner, and others as appropriate will be held to discuss the Project, and to discuss procedures relating to Shop Drawings, submittals, Applications for Payment, and other Project issues, and to establish a working relationship among the parties as to the Work.

V. CONSTRUCTION PROGRESS SCHEDULE

- 5.1. Within ten (10) Days after the Effective Date of the Agreement, the Contractor shall submit a written schedule to the Owner showing the proposed order of Work and indicating the time required for completion of major items of Work. This schedule shall take into account the passage or handling of traffic with the least practicable interference and the orderly, timely and efficient prosecution of the Work. The schedule will be used as an indication of the sequence of the major construction

operations and as a check on the progress of the Work.

- A. **A construction schedule in the form of a critical path shall be submitted to the Owner as part of the submittal process prior to beginning construction and shall be updated when duration or sequencing changes.**
 - B. **Upon receipt of an approved "Work Schedule", the Contractor shall submit to the Owner, within 10 days,**
 - 1. **An estimated payment schedule by each month of project duration.**
 - 2. **A composite curve to show the estimated value of work completed and stored materials less specified retainage.**
 - 3. **key months when work will be 50, 80, 90, and 100 percent complete shall be established.**
 - 4. **Identify when facilities will be fully operational.**
 - C. **During the course of work, the Contractor shall update with new composite curves at key months or whenever variation is expected to be more than plus or minus 10 percent. The original or previous composite curves shall be retained as dashed curves on all updates.**
 - D. **The Owner reserves the right to audit all reports and schedules. For cost-reimbursement contracts, change orders issued for fixed priced contracts or other contracts in excess of \$30,000, which include the provisions of services, the Contractor shall retain all books, records and other documents relative to this contract for five (5) years after final payment or until audited by the Office of the City Auditor or designee, whichever is sooner. The City of Norfolk Utilities Department its authorized agents and/or City Auditors shall have full access to and the right to examine and duplicate any of said materials during said period.**
- 5.2. The Contractor shall update the progress schedule monthly to reflect any schedule changes required to complete the remaining Work in accordance with the requirements of the Contract Documents. The updated schedule shall be submitted to the Owner for acceptance with the monthly application for progress payment; no payment will be made if the updated schedule is not submitted. All proposed adjustments in the progress schedule shall generally conform to the progress schedule then in effect and will comply with any provisions of the general requirements applicable thereto.

VI. SUBCONTRACTS

- 6.1. ~~Except as otherwise noted, contract Work, the cost of which is at least fifty percent (50%) of the total Contract Price shall be performed by the Contractor's own organization.~~
- 6.2. No part of the Work shall be transferred or subcontracted without prior written consent of the Owner, and no such consent or approval shall release the Contractor from any obligations to the Owner or persons employed by the Subcontractors, or to those supplying materials to the Subcontractors.
- 6.3. The Contractor agrees that it is as fully responsible to the Owner for the acts and omissions of its Subcontractors and persons either directly or indirectly employed by the Subcontractors as it is for the acts or omissions of persons directly employed.

- 6.4. Nothing contained in the Agreement shall create any contractual relation between any Subcontractor and the Owner.
- 6.5. **The Contractor shall provide the Owner, in writing, the names of any minority and disadvantaged business subcontractors to be used on the project on the form provided, including the estimated dollar amount of such subcontract and the minority classification of such subcontractors. A minority and disadvantaged business is one that is at least 51% owned by an Asian American, Black, Hispanic, American Indian, Eskimo, Aleut, or Female. No contract pay applications or invoices will be reviewed or processed until the Owner receives this information.**

VII. COMMENCEMENT AND PROSECUTION OF WORK

- 7.1. The Contractor shall commence Work within ten (10) Days of the date specified in the Notice to Proceed. Time being of the essence of this Project, the Contractor shall prosecute the Work diligently, using such means and methods of construction as will secure its full completion within the time period specified in the Agreement. No Work shall be done at the site prior to the date specified in the Notice to Proceed.
- 7.2. The Contractor shall proceed with the Work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the Work as specified in the Agreement is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Project.
- 7.3. The Contract Time will commence on the date indicated in the Notice to Proceed.
- 7.4. Once the Contractor has commenced Work, it shall be prosecuted continuously and to the fullest extent possible except for interruptions caused by delays authorized or ordered by the Owner **by a Change Order or by weather.**

Except as set forth below, Contractor agrees that it will make no claim for damages arising from delay and that the Contractor's sole remedy for delay is to request a Change Order as set forth herein. The Contract time may be extended by Change Order for such reasonable time as the Owner determines if:

- i) The Contractor is delayed in the progress of work by any act or omission of the Owner or the Engineer, or by any separate Contractor employed by the Owner, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature;**
- ii) Such delay affects the overall completion of the work;**
- iii) The Contractor gives written notice to the Owner within 48 hours of the start of the occurrence, stating the cause of the potential delay and estimate of the possible time extension involved; and**
- iv) The Contractor gives written notice to the Owner of any actual time extension requested as a result of the aforementioned occurrences within 10 days after the delay has been remedied.**

Notwithstanding the foregoing, it is agreed that this paragraph does not prevent Contractor from making a claim for costs or damages for unreasonable delay caused by acts of omissions of the Owner, its agents or employees due to causes within their control, provided that the Contractor satisfies the notice requirements contained herein.

- 7.5. Gifts, gratuities, or favors shall not be given or offered by the Contractor to personnel of the Owner.
- 7.6. The Contractor shall not employ any personnel of the Owner or the Engineer for any services without the prior written consent of the Owner.
- 7.7. Workers shall have sufficient skill and experience to perform properly the Work assigned to them. Workers engaged in special or skilled work shall have sufficient experience in such work and in the operation of equipment required to perform it properly and satisfactorily. Any person employed by the Contractor or any subcontractor who, in the opinion of the Owner, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Owner, be removed forthwith by the Contractor or subcontractor employing the person and shall not be employed again on any portion of the work without the approval of the Owner.
- 7.8. Equipment shall be of sufficient size and in such mechanical condition as to meet the requirements of the Work and produce a satisfactory quality of work. Equipment and the Contractor's methods and means shall be such that no damage to the roadway, adjacent property, or other highways will result from its use. The Owner may order the removal and require replacement of unsatisfactory equipment.

VIII. SUSPENSION OF WORK

- 8.1. The Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than 90 Days or such further time as agreed upon by the Contractor, by Written Notice to the Contractor. Such Notice shall specify the date on which Work shall be resumed and the Contractor shall resume the Work on the date so specified. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the Contractor makes a claim in accordance with the Contract Documents, except that no such increase or extension shall be allowed if the suspension was due to a failure by the Contractor to perform the Work in accordance with the Agreement.

IX. TERMINATION OF AGREEMENT

- 9.1. Termination for the Convenience of the Owner

The performance of Work under this Agreement may be terminated by the Owner in accordance with this section in whole, or in part(s), whenever the Owner shall determine that such termination is in the best interest of the Owner. Any such termination shall be effected by delivery to the Contractor of a notice of termination specifying the extent to which performance of Work under the Agreement is terminated, and the date upon which such termination becomes effective.

After receipt of a notice of termination, and except as otherwise directed by the Owner, the Contractor shall:

- A. Stop Work under the Agreement on the date and to the extent specified in the notice of termination.

- B. Place no further orders or subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the Work under the Agreement that is not terminated.
- C. Terminate all orders and subcontracts to the extent that they relate to the performance of the Work terminated by the notice of termination.
- D. Assign to the Owner, and as directed by the Owner, all of the right, title and interest of the Contractor under the orders and subcontracts so terminated. The Owner shall have the right and discretion to settle or pay any and all claims arising out of the termination of such orders and subcontracts.
- E. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Owner. This approval or ratification will be final for all purposes of this section.
- F. Transfer title and deliver to the Owner, as directed by the Owner, the fabricated or unfabricated parts, Work in process, completed Work, supplies, and other materials produced as a part of or acquired in connection with the performance of the Work terminated by the notice of termination, and the completed or partially completed plans, drawings, information and other property which, if the Agreement has been completed, would have been required to be furnished to the Owner.
- G. Use his best efforts to sell as directed or authorized by the Owner, property of the type referred to in Paragraph F above; provided, however, that the Contractor shall not be required to extend credit to any purchaser. The proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Owner to the Contractor under this Agreement or shall otherwise be credited to the Contract price or cost of the Work covered by this Agreement or paid in such manner as directed by the Owner. The Contractor may acquire any such property under the conditions prescribed and at a price or prices approved by the Owner.
- H. Complete performance of that Work which was not terminated by the Owner.
- I. Take such action as may be necessary, or as the Owner may direct, for the protection and preservation of the property related to this Agreement which is in the possession of the Contractor and in which the Owner has, or may acquire, an interest.
- J. Within 30 Days after the receipt of the Notice of termination, the Contractor may submit a list to the Owner for approval, certified as to quantity and quality of any or all items of, inventory not previously disposed of, exclusive of items, the disposition of which has been directed or authorized by the Owner, and may request the Owner to remove such approved items or enter into a storage agreement covering the same. Not later than 15 Days thereafter, the Owner will accept title to such approved items and remove them or enter into a storage agreement covering same. The list submitted shall be subject to final verification by the Owner upon removal of the items, or if the items were stored within 45 Days from the date of submission of the list. Any necessary adjustment to correct the list as submitted shall be made prior to final settlement.
- K. Within 30 Days after receipt of the notice of termination, the Contractor shall submit to the Owner his termination claim. Such claim shall be submitted in writing. Upon failure of the

Contractor to submit its termination claim within the time allowed, the Owner may, at its discretion, reject such termination claim. Such termination claim shall include the cost of the following:

1. The cost of supplies accepted by the Owner and not previously paid for by the Owner, appropriately adjusted for any saving of freight or other charges.
2. The cost incurred in the performance of the Work terminated, including Initial cost and preparatory expense allocable thereto, but exclusive of any cost attributable to supplies paid or to be paid for by the Owner.
3. The cost of settling and paying claims arising out of the termination of Work under subcontracts or orders which are properly chargeable to the terminated portion of the Agreement, exclusive of amounts paid or payable on account of supplies or materials delivered or services furnished by subcontractors or vendors prior to the effective date of notice of termination and previously paid for by the Owner.
4. A reasonable amount of profit or commission, which will be determined based on the Project's specific overhead and expense data at the rate computed in the original Contract Price or, at the discretion of the Owner, as determined by an audit. The cost of the audit will be borne by the Contractor.
5. Cost of reasonable storage, transportation and other costs incurred in connection with the protection or disposition of property allocable to this termination portion of the Agreement.
6. The total sum to be paid to the Contractor shall not exceed the Contract Price as reduced by the amount of payments previously made and its further reduced by the Contract Price of Work not terminated. Said total sum shall also be reduced by the reasonable value, as determined by the Owner, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Owner or to a buyer.

9.2. Termination with Cause/Default

In the event that the Contractor shall for any reason or through any cause be in default of the terms of this Agreement, the Owner may give the Contractor written Notice of such default by certified mail/return receipt requested at the address set forth herein.

Unless otherwise provided, Contractor shall have ten (10) Days from the date such notice is mailed in which to cure the default. Upon failure of the Contractor to cure the default, the Owner may immediately cancel and terminate this Agreement as of the mailing date of the default notice.

Upon termination, the Contractor shall withdraw its personnel and equipment, cease performance of any further Work under this Agreement, and turn over to the Owner any Work in process for which payment has been made.

In the event of violations of law, safety or health standards and regulations, this Agreement may be immediately canceled and terminated by the Owner and provisions herein with respect to opportunity to cure default shall not be applicable.

9.3. Contractor's Right to Terminate the Agreement

Should the Work be stopped for a period of 90 Days or more, through no fault of the Contractor, or should the Owner fail to pay the Contractor any payment within a reasonable length of time after said payment shall become due, the Contractor may, upon seven (7) Days written notice to the Owner, stop Work, or terminate the Agreement and recover from the Owner payment for all Work executed, plus any loss actually sustained, plus reasonable profit and damage; provided, however, the total recovery from Owner shall not exceed the Contract Price.

X. LIQUIDATED DAMAGES

- 10.1. It is mutually understood and agreed by and between the Contractor and Owner that in the execution of the Work, time is an essential element of the Agreement, and it is important that the Work proceed vigorously to completion.
- 10.2. The Owner has the right to deduct *any* liquidated damages from any money in the Owner's hands, otherwise due, or to become due, to the Contractor, and to sue for and recover any additional compensation for damages for non-performance of the Work or failure to complete the Work within the Contract Time.
- 10.3. The assessment of liquidated damages for failure to complete the Work within the Contract Time shall not constitute a waiver of the Owner's right to collect any additional damages that the Owner may sustain by failure of the Contractor to carry out the terms of the Agreement.

The contract will contain a clause deducting One Thousand Dollars and No Cents (\$1000.00) per calendar day as liquidated damages for failure to complete work prior to the established Substantial Completion date. And an additional Five Hundred Dollars and No Cents (\$500.00) per calendar day as liquidated damages for failure to complete work prior to the established Final Completion date. If substantial completion is not achieved by the time of final completion then liquidated damages for both substantial and final completion shall run concurrently until substantial completion is achieved.

- 10.4. In the event of delay in the completion of the Work as specified beyond the Completion Date as adjusted by Change Orders, it would be difficult to determine the exact amount of the loss or damages suffered by the Owner due to delays in completion of the Agreement. Therefore, for every - Day of delay past Completion Date of this Agreement as adjusted by Change Orders, the Contractor and the Contractor's Surety will be liable to the Owner, as liquidated damages for delay and not as a penalty, in the sum designated in Section 102, III. Bid Form, and in paragraph H of the Agreement between Contractor and Owner as set forth in Section 103, for each and every calendar Day the Contractor shall be in default, as follows:
 - A. If Substantial Completion has not been achieved by the scheduled Substantial Completion date, the Substantial Completion liquidated damages shall accrue each day until Substantial Completion is achieved.
 - ~~B. If neither Substantial Completion nor Final Completion has been achieved by the scheduled Final Completion date, only Substantial Completion liquidated damages shall occur each day until Substantial Completion is achieved and, thereafter, Final Completion liquidated damages shall accrue each day until Final Completion is achieved.~~

- C. If Substantial Completion has been achieved but Final Completion has not been achieved by the Final Completion date, Final Completion liquidated damages shall accrue each day until Final Completion is achieved.
- ~~D. Substantial Completion liquidated damages and Final Completion liquidated damages shall not run concurrently.~~
- E. The scheduled Final Completion date shall not be extended, in any case, solely because Substantial Completion was not achieved by the scheduled Substantial Completion date.
- F. This paragraph will not apply to delays in completion of the Work due to acts of God, acts of the Public Enemy, acts of the Government (in either its sovereign or contractual capacity), fires, floods, strikes, or unusually severe weather, provided, that the Contractor shall, within five (5) days from the end of the month in which such delay occurred, notify the Owner in writing of the causes of delay and the facts relating thereto; and, provided that such delay occurs prior to the Substantial Completion date or, if Substantial Completion has been achieved, such delay occurs prior to the Final Completion date. Failure to provide such notice shall preclude the Contractor from claiming that delays resulted from the acts of God, acts of the Public Enemy, acts of the Government (in either its sovereign or contractual capacity), fires, floods, strikes, or unusually severe weather.
- G. Nothing in the above clause shall be interpreted as limiting in any way, the Owner's right to proceed against the Contractor for additional damages or losses. Liquidated damages are for delay only and are in addition to any other rights available to the Owner by contract or law. To the fullest extent permitted by Laws and Regulations, the Contractor shall waive any defense as to the validity of such liquidated damages as set forth herein on the grounds that such liquidated damages are void as penalties or are not reasonably related to actual damages.
- 10.5. Weather shall be considered "unusually severe", only if a weather condition (or any combination of weather conditions) prevents the Contractor from working a number of workdays during a calendar month, which number exceeds the number of workdays listed below for that calendar month. Delays will only be allowed for the amount of lost work days in excess of the following:
- | | | | |
|----------|---|-----------|---|
| January | 6 | July | 4 |
| February | 4 | August | 3 |
| March | 4 | September | 3 |
| April | 3 | October | 3 |
| May | 4 | November | 3 |
| June | 4 | December | 5 |
- 10.6. The Contractor shall anticipate the potential loss of the number of workdays listed above for each calendar month due to weather, and shall schedule the Work accordingly. Any schedules submitted shall include the above number of days each month as lost days. The Owner shall determine, upon examination of submitted evidence, whether or not weather prevented the Contractor from performing Work on the days claimed by the Contractor. The Owner's determination shall be final and binding upon the parties.
- 10.7. The Work shall be considered complete when the following criteria have been met; all items of the Work have been constructed, inspected and accepted by the Owner and further that all punch list items have been corrected and the Owner has issued a letter of acceptance.

XI. SEPARATE CONTRACTS BY OWNER

- 11.1. The Owner reserves the right to award other contracts in connection with the Project, the work under which may proceed simultaneously with the execution of this Agreement. The Contractor shall afford other separate contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and the Contractor shall take all reasonable action to coordinate its Work with theirs. If the work performed by the separate contractor is defective or so performed as to prevent the Contractor from performing the Work, the Contractor shall immediately notify the Owner upon discovering such conditions. Upon receiving notification, the Owner shall take such appropriate steps as are necessary to allow the Contractor to perform Work under the Agreement, and appropriate extensions of time and change orders will be given to the Contractor, pursuant to the Agreement, to compensate for any delays and extra costs caused by separate contractor's performance.

XII. INDEMNIFICATION

- 12.1. To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner, the Engineer, the Engineer's Consultants and officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including, but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act, errors, omissions, recklessness, or intentionally wrongful conduct of the Contractor, any Subcontractor, any supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity.
- 12.2. In any and all claims against the Owner or any of the Owner's consultants, agents, officers, directors, or employees by any employee (or the survivor or personal representative of such employee) of the Contractor, any Subcontractor, any supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any such Subcontractor, supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.
- 12.3. The indemnification obligations of the Contractor shall not extend to the damages caused by the Owner and the Owner's consultants, officers, directors, employees or agents resulting from the negligent preparation or approval of, Drawings, or Specifications.

End of Section

THIS PAGE WAS INTENTIONALLY LEFT BLANK

SECTION 109

MEASUREMENT AND PAYMENT

I. MEASUREMENT AND PAYMENT PROCEDURES

1.1. General

- A. Measurement will be made on the basis of completion of the Work in accordance with the Contract Documents and the appropriate specification section.
- B. Measurement of quantities will be made by the Contractor in the presence of the Owner. The methods of measurement and computations used in determination of quantities of materials furnished and installed shall be those generally recognized as conforming to good engineering practice.
- C. The term "Complete in Place" will mean that the item of Work shall be furnished and installed in accordance with the Contract Documents complete with all appurtenances necessary for the item to be used for its intended function. Testing and acceptable results shall be included.
- D. Linear foot and vertical foot measurements shall be measured along the horizontal plane of the ground or paved surface.
- E. Area computations shall be made on the surface. Pay measurements for area computations will not exceed plan dimensions as shown on the Drawings, unless otherwise approved by the Owner in writing.
- F. No payment will be made for length, width, or depth, in excess of that shown on the Drawings or specified in the Specifications for any construction, unless otherwise approved by the Owner in writing.
- G. The term "Each" when used as an item of payment will mean complete payment for the Work described in the Contract Documents.
- H. The word "Lump Sum" when used as an item of payment will mean complete payment for Work described in the item, including all materials, labor, and equipment necessary to complete the Work in accordance with the Contract Documents.
- I. Quantities will be measured and paid for in accordance with one of the following methods, and as specified on the Bid form

1.1.Incidental Items

- J. There are numerous incidental items of work that are required to complete the Project. While these items may not be specifically mentioned or illustrated by the Contract Documents and there may be no specific pay items listed for them, the Contractor will be required to perform those incidental tasks that can be anticipated through inspection of the Contract Documents, inspection of the construction area, and experience in this class of construction.

- K. Items considered incidental work shall not be measured for payment or paid for as such unless specified as unit price by items on the bid form. These items and their costs shall be included in the unit prices or lump sum bid for the pay items unless bid separately. Incidental items include but are not limited to the following:

1. Allaying dust and mud
2. Daily cleanup
3. Excavation and dewatering
4. Furnishing, hauling, placing, manipulating, and compacting material
5. Location of existing utilities
6. Material royalties
7. Mobilization and demobilization
8. Offsite disposal of excess excavated, surplus and remnant excavated materials
9. Permits, unless provided by the Owner
10. Removal and replacement of existing signs, fences, mail boxes, and similar existing improvements
11. Site restoration and cleanup
12. Site security
13. Stakeout and surveying
14. Traffic control
15. Minor relocation of buried cables, gas lines, water lines, sewer lines, or similar utility lines 2 inches and smaller in diameter
16. Construction entrances
17. Pavement marking
18. Final Surface restoration
19. Top soil and seeding
20. Clearing and grubbing
21. Protection of existing utilities and other facilities.

L. **Description of Measurement and Payment Items**
Refer to Section 110 - Special Provisions. Appendix D

1.2 Schedule of Values for Lump Sum Bid Items

- A. Within fourteen (14) days after the Effective Date of the Agreement, the Contractor shall submit a schedule of values for all of the Work which shall include quantities and prices of items aggregating the Contract Price and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices shall include an appropriate amount of overhead and profit applicable to each item of Work. The Owner shall review the schedule and shall respond in writing to the Contractor within ten (10) Days either approving or disapproving the schedule. If the schedule of values is disapproved, the Contractor shall resubmit the schedule with revised value or additional substantiating data and the Owner shall either approve or disapprove the revised schedule within ten (10) Days. No payments shall be processed or approved until the schedule of values is approved by the Owner.

1.3 Application for Progress Payment by Contractor

- A. Unless otherwise provided in this Section, the Owner shall make monthly progress payments to the Contractor on the basis of a duly certified and approved Application for Payment for Work performed during the preceding calendar month as approved by the Owner.
- B. At least ten (10) Days before each partial progress payment (but not more often than once a month), the Contractor shall submit to the Owner an Application for Payment filled out and signed by the Contractor for the Work completed during the period covered by the partial progress payment estimate and supported by such data as is required by the Contract Documents.
- C. The schedule of values for lump sum items established as provided in Section 109-1.2 shall serve as the basis for progress payments and shall be incorporated into a form of Application for Payment acceptable to the Owner.
- D. **Record drawings must be submitted with monthly invoices per section 105.V**

1.4 Payment for Material on Hand

If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall be accompanied by a bill of sale, invoice or other instrument documenting that the materials and equipment are free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance, all of which will be satisfactory to the Owner. The Owner, at its sole discretion, may not pay for stored materials without prejudice and without cause.

1.5 Review of Applications for Progress Payments

- A. The Owner shall, within ten (10) Days after receipt of each Application for Payment, make such investigations as deemed necessary to verify the accuracy of the Application for Payment and either accept the application as accurate and suitable for payment or return the Application to the Contractor indicating in writing the Owner's reasons for refusing payment. If payment is refused, the Contractor shall make the necessary corrections and resubmit the Application and the Owner shall have an additional ten (10) Days after receipt of the corrected Application for Payment from the Contractor to determine whether this Application is accurate and suitable for payment.
- B. The Owner shall, within 30 Days after acceptance of the Application for Payment, make payment to the Contractor. The Owner may refuse to make payment of the full amount because claims have been made against the Owner on account of the Contractor's performance or furnishing of the Work, or because Liens have been filed in connection with the Work, or because there are other claims entitling the Owner to a set-off against the payment. The Owner shall give the Contractor immediate written Notice stating the reasons for its failure to make payment.
- C. The Owner may also refuse to make payment of the full amount because there are other items entitling the Owner to retain set-offs from the amount recommended, including but not limited to:

1. Owner compensation to the Engineer for actual costs for extra personnel hours for labor plus expenses because of the following Contractor caused events:
 - a. Witnessing re-testing of corrected or replaced defective work.
 - b. Return visits to manufacturing facilities to witness factory testing or re-testing.
 - c. Evaluation of proposed substitutes and in making changes to Contract Documents occasioned thereby.
 - d. Overtime worked by the Contractor necessitating the Engineer, Resident Project Representative (and support staff, if any), to work overtime.
2. Liability for liquidated damages incurred by the Contractor as set forth in the Agreement.
3. Loss to Owner caused by Contractor acts or omissions including, but not limited to:
 - a. Defective Work not remedied;
 - b. Claims filed or reasonable evidence indicating probable filing of claims against the Contractor;
 - c. Failure of the Contractor to make payments properly to subcontractors or for materials or labor;
 - d. A reasonable doubt that the Project can be completed for the balance then unpaid;
 - e. Failure to maintain (each month) the record set of Drawings and Specifications. Failure to provide the Owner with record Drawings and Specifications within thirty (30) calendar Days from the date of the Substantial Completion;
 - f. Failure to periodically remove and dispose of accumulated debris, rubbish, and discarded/damaged materials;
 - g. Persistent failure to carry out the Work in accordance with the Contract Documents;
 - h. A reasonable doubt that the Work will be completed within the Contract Time.
4. Failure of the Contractor to submit an updated progress schedule or other required supporting documentation (if requested by the Owner) to the Owner with the monthly application for progress payment.

1.6 Retained Funds

- A. The Owner shall retain **five percent (5%)** of the total amount of each partial progress payment to assure faithful performance of the Agreement by the Contractor. The Owner will release all retainage upon Final Payment.
- B. Pursuant to and in accordance with Section 2.2-4334 of the Code of Virginia, the Contractor may exercise the option to use the escrow account utilization procedure with respect to retained funds. The Contractor may do so by indicating its preference for this procedure in the appropriate space provided on the Bid Form.
 - 1. Should this option be selected, the Contractor shall execute the Escrow Agreement and shall submit same to the Owner in the manner prescribed by law. If the Escrow Agreement form is not submitted as noted, the Contractor shall forfeit such rights to the use of the escrow account utilization procedure.
 - 2. In order to have retained funds paid to an escrow account, the Escrow Agreement shall be executed by the Contractor, the escrow agent, and the surety, and shall be submitted by the Contractor to the Owner for approval by the Owner's attorney. The Contractor's escrow agent shall be a trust company, bank or savings institution with its principal office located in the Commonwealth of Virginia. The Escrow Agreement shall contain the complete address of the escrow agent and surety, and the executed Escrow Agreement will be authority for the Owner to make payment of retained funds to the Escrow Agent. After approving the Escrow Agreement, the Owner shall pay to the escrow agent the funds retained as provided herein except that funds retained for lack of progress or other deficiencies on the part of the Contractor shall not be paid to the Escrow Agent. The Escrow Agent may, in accordance with the terms of the Escrow Agreement, invest the funds paid into the escrow account and pay earnings on such investments to the Contractor or release the funds to the Contractor provided that such funds are fully secured by approved securities.
 - 3. Retained funds invested and securities held as collateral for retainage may be released only as and when directed by the Owner. When the Final Payment is paid, the Owner shall direct to the Contractor monies due as determined by the Owner. The Owner reserves the right to recall retained funds and to release retained funds to the surety upon receipt of written request from the Contractor or in the event of default.
 - 4. The escrow account procedure shall apply to any contract for the sum of Two Hundred Thousand Dollars (\$200,000), or more, for construction of highways, roads, streets, bridges, parking lots, demolition, clearing, grading, excavating, paving, pile driving, miscellaneous drainage structures, and the installation of water, gas, sewer lines, and pumping stations.

1.7 Conditions of Payment to Contractor

- A. All material and Work covered by partial progress payments shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the safety and protection of all materials and

Work upon which payments have been made or the restoration or replacement of any damaged or stolen Work or property or as a waiver of the right of the Owner to require the fulfillment of all the terms of the Agreement

- B. Prior to Substantial Completion, the Owner, ~~with the concurrence of the Contractor~~, may use any completed or substantially completed portions of the Work. Such use shall not constitute an acceptance of such portions of the Work.
- C. The Owner shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the Work, or the restoration of any damaged Work except such as may be caused by agents or employees of the Owner.
- D. The Contractor shall indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools and all supplies, incurred in the furtherance of the performance of the Work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents but in no event shall the provisions of this Section be construed to impose any obligations upon the Owner to either Contractor, the Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.
- E. The Contractor shall take one of the two following actions within seven (7) days after receipt of amounts paid to the Contractor by the Owner for Work performed by the Subcontractor under the Agreement:
 - 1. Pay to the Subcontractor the proportionate share of the total payment received attributable to the Work performed by the Subcontractor under the Agreement; or
 - 2. Notify the Owner and Subcontractor, in writing, of his intention to withhold all or a part of the Subcontractor's payment with the reason for nonpayment.
- F. All contracts awarded by the Contractor to a Subcontractor for any portion of the Work shall include:
 - 1. An interest clause that obligates the Contractor to pay interest to the Subcontractor on all amounts owed by the Contractor that remain unpaid after seven (7) days following receipt by the Contractor of payment from the Owner for Work performed by the Subcontractor under that contract, except for amounts withheld as allowed.

2. An interest rate clause stating, "Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month."
 3. A payment clause that requires (i) individual contractors to provide their social security numbers and (ii) proprietorships, partnerships, limited liability companies and corporations to provide their federal employer identification numbers.
- G. The Contractor shall include in each of its subcontracts a provision requiring each Subcontractor to include or otherwise be subject to the same payment and interest requirements as specified in Section 1.7 above, with respect to each lower-tier Subcontractor.
- H. A Contractor's obligation to pay an interest charge to a Subcontractor pursuant to the payment clause in this section may not be construed to be an obligation of the Owner. A contract modification may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

1.8 Final Payment

After the Contractor has completed all corrective Work as determined by a final inspection to the satisfaction of the Owner and has delivered all maintenance and operations manuals, schedules, guarantees, bonds, certificates of inspection, and other documents as required by the Contract Documents, the Contractor may make application for final payment following the procedure for partial progress payments. Within thirty (30) days after approval, the Owner shall pay to the Contractor the amount stated, less all prior payments and advances to or for the account of the Contractor. All prior estimates and payments including those relating to extra Work shall be subject to correction by this payment, which is called the Final Payment. The Contractor's obligation to perform the Work and complete the Project in accordance with the Contract Documents shall be absolute. Neither approval of any progress or Final Payment by the Owner nor the issuance of a Certificate of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Project or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor any correction of defective Work by Owner shall constitute an acceptance of Work not in accordance with the Contract Documents.

1.9 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the Final Payment shall be and operate as a release to the Owner of all claims and of all liability to the Contractor for all things done or furnished in connection with this Work excepting the Contractor's claims for interest upon Final Payment, should this payment be improperly delayed. No payment, final or otherwise, or partial or entire use or occupancy of the Work by the Owner, shall constitute an acceptance of any Work or materials not in accordance with the Contract Documents, nor shall the same relieve the Contractor of responsibility for faulty materials or workmanship or operate to release the Contractor or his Surety from any obligation under the Contract, the Performance Bond and Payment Bond.

1.10 Assignments

Neither party to the Agreement shall sell, transfer, assign or otherwise dispose of the whole or any parts of the Agreement or of the right, title or interest therein without the prior written consent of the

other, nor shall the Contractor assign any monies due or to become due hereunder, without the previous written consent of the Owner.

1.12 Payment Affidavit

The Owner, before making any payment, including the final payment, if it is deemed that such procedure necessary to protect his interests, may require the Contractor to furnish an affidavit from all subcontractors and material suppliers used in conjunction with this Contract that each has been paid in full, or in the alternative, an affidavit that so far as he has knowledge or information, all payments have been made and that there is no basis under which a claim against the payment bond could be filed. However, the Owner may make payments in part or in full to the Contractor without requiring the affidavits, and the payments so made shall not impair the obligations of any Surety or Sureties on any bond or bonds furnished under this Contract.

II. CHANGE ORDERS AND FIELD ORDERS

- 2.1. The Owner may at any time, as the need arises, order changes within the scope of the Work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, an equitable adjustment shall be authorized by Change Order.
- 2.2. The Contract Price and Contract Time may be changed only by a Change Order, approved by the Owner prior to the performance of the Work by the Contractor or granted by the Owner upon written Notice by Contractor submitted in accordance with Section 104-5.2 and 5.3 or Section 105-16.2. The value of any Work covered by a Change Order or of any claim for increase or decrease in the Contract Price or Contract Time shall be established in accordance with the following methods in the order of precedence listed below:
 - A. established contract unit prices;
 - B. an agreed lump sum or unit price established by direct negotiation between the Contractor and the Owner; ~~or,~~
 - C. In the event that any changes in the Work are not settled under A. and B. above, the Contract Price shall be adjusted for non-negotiated items in accordance with the following:
 1. In any case such change involves extra Work which is performed by the Contractor, the Contract Price shall be increased by fifteen (15%) for overhead and profit. ~~(a) the direct cost of such Work, as mutually agreed upon or otherwise as determined in accordance with the Contract Documents, and (b) ten percent (10%) of the amount of (a) to cover Contractor's additional job (field and home office) overhead, and (c) five percent (5%) of the sum of (a) and (b) to cover Contractor's additional job profit.~~
 2. In any case such change involves extra Work which is performed by a Subcontractor, the Contract Price shall be increased by ten percent (10%) of total determined in paragraph C(1) above for overhead and profit. ~~(a) the amount paid by the Contractor to the Subcontractor for such extra Work, and (b) seven and one half percent (7 1/2%) of the amount paid to the Subcontractor to cover the Contractor's additional job (field and home office) overhead and (c) five percent (5%) of the sum~~

~~of (a) and (b) to cover Contractor's additional job profit. On Work performed by the Subcontractor, the Subcontractor shall be allowed overhead and profit in accordance with paragraph C(1) above.~~

3. In the case of either subparagraph 1 or 2 above, the Contract Price shall also be increased by the corresponding increase in the cost of the Contractor's performance bond.
- 2.3. It is the Contractor's responsibility to notify his Surety of any change affecting the general scope of the Work or change in the Contract Price and/or Contract Time so that the amount of the applicable Bonds shall be adjusted accordingly. The Contractor shall furnish proof of such adjustment to the Owner.
- 2.4. Whenever changes, alterations, additions, omissions, or revisions are called for by the Owner for which the necessary Drawings and details have been completed and submitted to the Contractor, or when changes, alterations, additions or omissions are clearly given in writing to the Contractor, the Contractor is to submit an itemized statement of quantities and prices incidental to such revisions, changes, additions and omissions.
- 2.5. The Owner may at any time order minor changes within the scope of Work by issuing a Field Order. The Contractor shall proceed with the performance of any changes in the Work so ordered by the Owner unless the Contractor believes that such Field Order entitles the Contractor to a change in Contract Price or Time or both, in which event the Contractor shall give the Owner written Notice thereof within seven (7) days after the receipt of the ordered change. The Contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the Owner. The Owner shall respond to such written Notice from Contractor within twenty-one (21) days after receipt.
- 2.6. If any item in the Agreement is determined to be unnecessary for the proper completion of the Work contracted, the Owner may, upon written Notice to the Contractor, eliminate such item from the Agreement. Payment will not be made for such item except that the Contractor shall be compensated for the actual cost of any Work performed for the installation of such item and the net cost of materials purchased, including freight and tax costs, as evidenced by invoice. No additional compensation will be made for overhead or anticipated profit.
- 2.7. The Contractor shall not be entitled to any adjustment in the Contract Price or Contract Time due to any condition or alleged condition if:
 - A. The Contractor knew of the existence of such conditions at the time the Contractor made a final commitment to the Owner in respect of Contract Price and Contract Time by the submission of a Bid; or
 - B. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Contract Documents to be conducted by or for the Contractor prior to the Contractor making such final commitment; or
 - C. The Contractor failed to give the written Notice within the time and as required by Section 104-5.2 and 5.3 or Section 105-16.2.

III. CHANGE ORDER

City of Norfolk
DEPARTMENT OF UTILITIES
CHANGE ORDER

PROJECT:	CONTRACT TIME:	Calendar Days
CHANGE ORDER No.	CONTRACT No.:	
	VENDOR CODE:	

Description of work under this contract:

Changes Ordered:

Reason for Change Order:

Subject to the following conditions an equitable adjustment is established as set out below:

Contract Price	Contract Time
<input type="checkbox"/> Not Changed	<input type="checkbox"/> Not Changed
<input type="checkbox"/> Increased By Dollars	<input type="checkbox"/> Increased By Calendar Days
<input type="checkbox"/> Decreased By Dollars	<input type="checkbox"/> Decreased By Calendar Days

Contract Amount adjusted to \$**** Bonded amount is \$***. Bond rider is / is not required.

The foregoing is in accordance with the items listed below:

- A. The aforementioned change, and work affected thereby, is subject to all contract stipulations and covenants.
- B. The rights of the City are not prejudiced; and
- C. All claims against the City which are incidental to or as a consequence of the aforementioned changes are satisfied.

City of Norfolk By: Kristen M. Lentz P.E. Date Director	Accepted by Contractor Company: Signature: _____ Date: _____
--	--

I hereby certify that the money required for this change order is in the City Treasury to the credit of the fund from which it is to be drawn and not appropriated for any other purpose.

\$ _____	_____	_____	_____
Amount	Account No.	Director of Finance	Date

_____	_____
Deputy City Manager	Date

Approved as to form by
City Attorney: 6/2013

IV. APPLICATION FOR PAYMENT

PROJECT SUMMARY

Date: _____ Contractor's Name: _____
Project Name: _____ Project Number: _____

Original Contract Amount: \$ _____
Original Contract Time: _____ days
Adjusted Contract Amount (by approved Change Orders): \$ _____
Adjusted Contract Time (by approved Change Orders): _____ days
Adjusted Contract Completion Date: _____

STATUS OF WORK PERFORMED

A. Total Value of All Work Performed to Date: \$ _____
B. Less _____ % Retained by Owner: \$ _____
C. Net Amount Earned on Contract to Date: (A-B) \$ _____
D. Less Amounts of Previous Payments Approved: \$ _____

BALANCE DUE THIS PAYMENT: (C – D) \$ _____

Value of Work Remaining to be Completed: \$ _____
Percentage Complete to Date (Value/Time): _____ % _____ %

CERTIFICATION OF CONTRACTOR

I certify to the best of my knowledge and belief that all items and amounts on the face of the attached estimate and invoice and this Application for Payment are correct; that all Work has been performed and/or material supplied in full accordance with the terms and conditions of the Contract Documents, including all duly authorized deviations, substitutions, alterations, additions and/or deletions; that the foregoing is a true and correct statement of the Contract Price up to and including the last day of the period covered by this estimate and Application for Payment; that no part of the "BALANCE DUE THIS PAYMENT" has been received; that all previous Progress Payments received on this Agreement have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with the Work covered by prior applications for payment under this Agreement; and that all materials and equipment incorporated in said payment or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances.

APPROVALS

This Application for Payment has been checked, verified and approved for payment by:

_____ Contractor	By	_____ Title	_____ Date
_____ Construction Inspector	By	_____ Title	_____ Date
_____ Engineer (Consultant)	By	_____ Title	_____ Date
_____ Project Manager (City of Norfolk)	By	_____ Title	_____ Date

~~V. ESCROW AGREEMENT~~

~~THIS ESCROW AGREEMENT, made and entered into this _____ day of _____, 20____, by, between and among the _____ (Owner) and _____ (Contractor), and _____ (Bank), a trust company, bank, or savings and loan institution with its principal office located in the Commonwealth and _____ (Surety), provides:~~

~~5.1. The Owner and the Contractor have entered into an Agreement dated (month, date, year), with respect to a Project titled _____ (the Agreement). This Escrow Agreement is pursuant to, but in no way amends or modifies the Agreement. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance of performance by the Contractor.~~

~~5.2. In order to assure full and satisfactory performance by the Contractor of its obligations under the Agreement, the Owner is entitled to retain certain amounts otherwise due the Contractor, known as retainage. The Contractor has, with the approval of the Owner, elected to have such retainage held in escrow by the Bank. This document sets forth the terms of the escrow. The Bank shall not be deemed a party to, bound by, or required to inquire into the terms of the Agreement or any other instrument or agreement between the Owner and the Contractor.~~

~~5.3. The Owner shall from time to time pursuant to its Agreement pay to the Bank amounts retained by it under the Agreement. Except as to amounts actually withdrawn from escrow by the Owner, the Contractor shall look solely to the Bank for the payment of funds retained under the Agreement and paid by the Owner to the Bank.~~

~~The risk of loss by diminution of the principal of any funds invested under the terms of this Escrow Agreement shall be solely upon the Contractor.~~

~~5.4. Funds and securities held by the Bank pursuant to this Escrow Agreement shall not be subject to levy, garnishment, attachment, lien or other process whatsoever. The Contractor agrees not to assign, pledge, discount, sell or otherwise transfer or dispose of its interest in the escrow account or any part thereof, except to the Surety.~~

~~5.5. The following securities, and none other, are approved securities for all purposes of this Escrow Agreement:~~

~~A. Unites States Treasury Bonds, United States Treasury Notes, Unites States Treasury Certificates of Indebtedness or United States Treasury Bills;~~

~~B. Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States.~~

~~C. Bonds or notes of the Commonwealth of Virginia;~~

~~D. Bonds of any political subdivision of the Commonwealth of Virginia, if such bonds carried, at the time of purchase by the Bank or deposit by the Contractor, a Standard and Poor's or Moody's Investors Service rating of at least "A"; and,~~

~~E. Certificates of deposit issued by commercial banks located within the Commonwealth, including, but not limited to, those insured by the Bank and its affiliates.~~

~~F. Any bonds, notes, or other evidences of indebtedness listed in Paragraphs A through C may be purchased pursuant to a repurchase agreement with a bank, within or without the Commonwealth of Virginia having a combined capital, surplus and undivided profit of not less than \$25,000,000, provided the obligation of the Bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the Escrow Agent, so long as the repurchase obligation of the bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100% of the amount of the repurchase obligation of the Bank and the securities are held by a third party, and segregated from other securities owned by the Bank.~~

~~No security is approved hereunder which matures more than five years after the date of its purchase by the Bank or deposit by the Contractor.~~

~~5.6. The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Bank securities approved, in writing, by the Owner in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower par or market value, the latter as determined by the Bank. Any securities so deposited shall thereupon become a part of the escrowed fund.~~

~~Upon receipt of a direction signed by the chief administrative and financial official of the Owner, the Bank shall pay the principal of the fund, or any specified amount thereof, to the Owner. Such payment shall be made as soon as is practicable after receipt of the direction.~~

~~Upon receipt of a direction signed by either the chief administrative or the chief financial official on behalf of the Owner, the Bank shall pay and deliver the principal of the fund, or any specified portion thereof, to the Contractor, in cash or in kind, as may be specified by the Contractor. Such payment and delivery shall be made as soon as is practicable after receipt of the direction.~~

~~5.7. For its services hereunder the Bank shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Bank and the Contractor. Such fee and any other costs of administration of this Escrow Agreement shall be paid from the income earned upon the escrow fund and, if such income is not sufficient to pay the same, by the Contractor.~~

~~Under no circumstances shall the Owner be responsible to the Bank for any fee or costs of administering this Escrow Agreement, account, or escrow fund.~~

~~5.8. The net income earned and received upon the principal of the escrow fund shall be paid over to the Contractor in quarterly or more frequent installments. Until so paid or applied to pay the Bank's fee or any other costs of administration such income shall be deemed a part of the principal of the fund. All income earned shall be reported by the Bank to the Internal Revenue Service and other taxing authorities on the Contractor's Tax. I.D. Number, except for interest withdrawn by the Owner pursuant to paragraph IV.~~

VI. AFFIDAVIT OF PAYMENT OF CLAIMS

BY: _____ (Contractor)

THIS DAY _____ personally appeared before me, _____, a Notary Public in and for the City/County/State of Virginia, and being by me first duly sworn states that all Subcontractors and suppliers of labor and materials have been paid all sums due them to date for work performed or materials furnished in the performance of the Agreement between:

_____ (Owner)

and _____ (Contractor)

dated _____, 20____, for the construction of _____

_____ or arrangements have been made by the Contractor satisfactory to such Subcontractors and suppliers with respect to the payments of such sums as may be due them by the Contractor.

CONTRACTOR

BY: _____

TITLE: _____

DATE: _____

Subscribed and sworn to before me this
_____ day of _____, 20____.

My commission expires on the
_____ day of _____, 20____.

NOTARY PUBLIC

SEAL OF CONTRACTOR

NOTARY SEAL

VII. CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Description: _____ Project No _____

Location: _____ Other: _____

Completion Date: _____
Contract Date: _____
Contract For: _____ Contractor: _____
Owner: _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

TO WIT: The Owner and Contractor are hereby advised that the work to which this certificate applies has been inspected by authorized representatives of the Owner, Contractor, and Engineer, and that all Work is hereby declared to be substantially complete in accordance with the Contract Documents on:

Date of Substantial Completion

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive and the failure to include an item in it does not alter the responsibility of the CONTRACTOR to complete all items of the Work in accordance with the Contract Documents. When this certificate applies to a specified part of the Work, the items in this tentative list shall be completed or corrected by the CONTRACTOR within _____ days of the above date of substantial completion. The date of substantial completion is the date which all guarantees and warranties begin, except as follows:

This certificate is issued, accepted, and acknowledged by:

_____ Engineer	By _____	_____ Title	_____ Date
_____ Contractor	By _____	_____ Title	_____ Date
_____ Owner	By _____	_____ Title	_____ Date

VIII. STATEMENT OF SURETY COMPANY

IN ACCORDANCE with the provisions of the AGREEMENT dated _____, 20____,

BETWEEN _____
(OWNER)

AND _____
(CONTRACTOR)

THE _____
(SURETY)

SURETY on the Material and Labor Payment BOND of:

(CONTRACTOR)

after a careful examination of the books and records of said CONTRACTOR or after receipt of an affidavit from CONTRACTOR, which examination of affidavit satisfies SURETY that all claims for labor and materials have been satisfactorily settled, hereby approves of the final payment to the said _____, CONTRACTOR, and by these presents witnesseth that payment to the CONTRACTOR of the final estimates shall not relieve SURETY of any of its obligations to

(OWNER)

as set forth in the said SURETY COMPANY'S BOND.

IN WITNESS WHEREOF, said SURETY has hereunto set its hand and seal this _____ day of _____, 20____.

ATTEST:

(SEAL) _____ BY _____
PRESIDENT

NOTE: This statement, if executed by any person other than the President or Vice President of the Company, shall be accompanied by a certificate of even date showing authority conferred upon the person so signing to execute such instruments on behalf of the Company represented.

IX. CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS THAT:

_____ (Contractor) of _____ County/City and State of _____ does hereby acknowledge that he has received this day from the _____ (Owner) the sum of One Dollar (\$1.00) and other valuable consideration in full satisfaction and payment of all sums of money owing, payable and belonging to _____ (Contractor) Dated _____, 20____.

NOW, THEREFORE, the said _____ (Contractor) _____ (for myself, my heirs, executors and administrators; for itself, its successors and assigns) do by these presents remise, release, quitclaim and forever discharge the said _____, Owner, its successors and assigns, of and from all claims and demands arising from or in connection with the said Agreement dated _____, 20____, and of and from all, and all manner of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements, promises, variances, damages, judgements, extents, executions, claims and demand, whatsoever in law or equity, or otherwise which against the said _____, Owner, its successors and assigns ever had, now have, or which (I, my heirs, executors, or administrators; it, its successors and assigns) hereafter can, shall or may have, for upon or by reason for any matter, cause or thing whatsoever, from the beginning of the world to the date of these presents.

IN WITNESS WHEREOF _____ (Contractor) _____ has caused these presents to be duly executed this _____ day of _____, 20____.

Signed, Sealed and Delivered
in the Presence of:

CONTRACTOR _____
(SEAL)

BY: _____

Title

ATTEST:

SECRETARY

X. MANHOLE/STRUCTURE PROTECTIVE COATING POST INSTALLATION CERTIFICATION
(Submit prior to Substantial Completion)

Project Name _____
Owner _____
Contractor _____
Agreement No. _____

Applicator _____ Company Name: _____ Address: _____ Telephone: _____	I certify that the coating system identified below was installed in conformance with the manufacturer's recommendations at the conditions listed below. <div style="text-align: right;"> _____ Date </div>
_____ Applicator	

This applicator is certified by _____, Coatings Manufacturer, located at _____ (Address)	
and approved in the proper application of the specified coating system. The materials and workmanship for Type B (80 mil) coatings systems are warranted for a period of five (5) years from the date of Substantial Completion of the project.	
_____ Coatings Manufacturer Authorized Representative/Title	_____ Date

Coating System: _____
 (Use Separate Form For Each Coating System Applied)

Date Applied	Manhole/Structure Number	Actual Substrate Conditions			Ambient Air Conditions		Min/Max Recoat (Hrs/Hrs)	Dry Film Thickness	
		CSP Rating	Temp. (°F)	Moisture (Yes/No)	Temp. (°F)	Humidity (%)		(Avg)	(Min)

XI. STANDARD BID ITEMS AND UNITS

Section	Bid Item	Category	Unit
301	Clearing and grubbing	Clearing and Grubbing	ACRE or LS
301	Tree protection fencing	Clearing and Grubbing	LF or EA
302	Storm sewer pipe (diameter and type)	Drainage Structures	LF
302	Pipe culverts (waterway opening)	Drainage Structures	LF
302	Pipe reducers (larger diameter)	Drainage Structures	LF
302	Jacked pipe (diameter and type)	Drainage Structures	LF
302	Reinstalled pipe (diameter)	Drainage Structures	LF
302	End sections (standard and size)	Drainage Structures	EA
302	End walls	Drainage Structures	EA
302	Box culverts (waterway opening)	Drainage Structures	LF
302	Pipe grate	Drainage Structures	LF or EA
302	Drop / yard inlets, catch basins, and intake boxes	Drainage Structures	EA
302	Base section (drop inlets and manholes)	Drainage Structures	LF
302	Manhole (0-6' depth) (4 or 5 foot diameter)	Drainage Structures	EA
302	Manhole (>6' depth) (4 or 5 foot diameter)	Drainage Structures	VF
302	Conflict manhole	Drainage Structures	EA
302	Concrete spring boxes	Drainage Structures	EA
302	Junction boxes	Drainage Structures	EA
302	Reconstructed manholes	Drainage Structures	EA
302	Precast Arches	Drainage Structures	LF
303	Regular excavation	Earthwork	CY
303	Pavement demolition (type and depth of pavement) [in proposed pavement]	Earthwork	SY
303	Pavement demolition (type and depth of pavement) [outside proposed pavement]	Earthwork	SY
303	Curb & gutter demolition	Earthwork	LF
303	Existing structure demolition	Earthwork	EA
303	Existing pipe demolition	Earthwork	LF
303	Existing Sidewalk Demolition	Earthwork	SY
303	Existing Driveway Demolition	Earthwork	SY
303	Undercut Excavation (regular)	Earthwork	CY
303	Select Material (min. CBR)	Earthwork	CY
303	Select Bedding (regular)	Earthwork	CY or TON
303	Suitable Fill (regular)	Earthwork	CY or TON
303	Backfill of Undercut Excavation (regular)	Earthwork	CY or TON
303	Surcharge placement and removal	Earthwork	CY
303	Settlement plate	Earthwork	EA
303	Geotextile fabric for Base Preparation	Earthwork	SY
303	Select Bedding/Backfill of Undercut Excavation (trenching)	Earthwork	CY or TON
303	Undercut Excavation (trenching)	Earthwork	CY
303	Sheeting, bracing, and shoring left in place	Earthwork	LS

Section	Bid Item	Category	Unit
	(trenching)		
303	Rip Rap for erosion control	Earthwork	TON or SY
303	Check dam (log or rock)	Earthwork	EA
303	Baled straw check dam	Earthwork	EA
303	Temporary silt fence	Earthwork	LF
303	Geotextile fabric for Erosion Control	Earthwork	SY
303	Temporary filter barrier	Earthwork	LF
303	Sediment basin excavation	Earthwork	CY
303	Slope drain	Earthwork	EA
303	Siltation control excavation for Sedimentation Traps and Basins	Earthwork	CY
303	Inlet Protection (type of device)	Earthwork	EA
303	Construction entrance	Earthwork	EA
305	Select material—Type I	Subgrade and Shoulders	TON
305	Select material—Types II or III	Subgrade and Shoulders	CY
305	Gravel Driveway Replacement	Subgrade and Shoulders	EA
309	Aggregate material (base course)	Aggregate Base Course	CY or TON
309	Aggregate base material (base course for curb and gutter)	Aggregate Base Course	CY or TON
310	Tack coat	Tack and Prime Coat	GALLON
310	Prime coat	Tack and Prime Coat	GALLON or SY
313	Asphalt surface treatment	Asphalt Surface Treatment	SY
315/ 315A	Asphalt concrete (type and class)	Asphalt Concrete Pavement	TON or SY
315/ 315A	Bituminous Leveling Course	Asphalt Concrete Pavement	TON
315/ 315A	Edge clipping of shoulders	Asphalt Concrete Pavement	LF
315/ 315A	Asphalt Driveways (Thickness)	Asphalt Concrete Pavement	SY or EA
317	Pavement Patch	Pavement Patching	LF or SY
406	Reinforcing steel or welded wire mesh	Reinforcing Steel	POUND
406	Epoxy coated reinforcing steel	Reinforcing Steel	POUND
414	Dry riprap (class and depth)	Riprap	SY or TON
414	Mortared riprap	Riprap	SY
414	Grouted riprap	Riprap	SY or TON
414	Dumped riprap	Riprap	SY or TON
414	Concrete riprap in bags	Riprap	CY
414	Erosion control rip rap	Riprap	SY or TON
501	Underdrain and combination underdrain	Underdrains	LF
501	Geotextile Fabric	Underdrains	LF
502	Curb, combination curb and gutter (detail designation)	Concrete Items	LF
502	Gutter, standard, radial and entrance	Concrete Items	SY or LF
502	Paved ditch	Concrete Items	SY or LF

Section	Bid Item	Category	Unit
502	Paved flume	Concrete Items	SY or LF
502	Street Connection pavement	Concrete Items	SY or LF
502	Energy Dissipators	Concrete Items	EA
502	Sign island	Concrete Items	EA or SY
502	Median barriers (including delineators)	Concrete Items	LF
502	Median Strips	Concrete Items	LF or SY
502	Directional island curb	Concrete Items	LF
502	Hydraulic cement concrete sidewalks (thickness)	Concrete Items	SY
502	Concrete steps (concrete)/Reinforcing Steel	Concrete Items	CY/LBS
502	Handrails	Concrete Items	LF
502	Geotextile drainage fabric	Concrete Items	SY
502	Curb Cut Ramps	Concrete Items	SY
502	Composite Detectable Warning Panels	Concrete Items	SF
502	Concrete Driveway Replacement (Pipe Installation)	Concrete Items	EA
502	Concrete Driveway	Concrete Items	SY
505	Guardrail (Standard)	Guardrail and Steel Median Barriers	LF
505	Radial guardrail (Standard)	Guardrail and Steel Median Barriers	LF
505	Reuse guardrail (Standard)	Guardrail and Steel Median Barriers	LF
505	Median barrier (Standard)	Guardrail and Steel Median Barriers	LF
505	Intermediate anchorage assembly	Guardrail and Steel Median Barriers	EA
505	Terminal Guardrail Treatment (Back of ditch)	Guardrail and Steel Median Barriers	LF
505	Terminal Guardrail (Roadway side)	Guardrail and Steel Median Barriers	EA
505	Reuse guardrail terminal (Standard and type)	Guardrail and Steel Median Barriers	LF or EA
505	Fixed object attachment (Standard)	Guardrail and Steel Median Barriers	EA
505	Special design guardrail bridge attachment (B or Str. No.)	Guardrail and Steel Median Barriers	LS
505	Cable barricade (Standard)	Guardrail and Steel Median Barriers	EA
505	Guardrail terminal site preparation (Standard)	Guardrail and Steel Median Barriers	EA
505	Bull nose barrier	Guardrail and Steel Median Barriers	EA
505	Guardrail terminal (Standard and type)	Guardrail and Steel Median Barriers	LF or EA
507	Fences (Standard and Height)	Fences	LF
507	Gate (Standard and Length)	Fences	EA
510	Remove, reset, relay, adjust, install, modify, reconstruct relocate, existing (Item or standard)	Relocating or Modifying Existing Miscellaneous Items	EA, LF, SY, CY or LS
510	Adjust structure heights	Relocating or Modifying Existing Miscellaneous Items	EA
511	Allaying dust	Allaying Dust	HR
512	Flagger Service (Certified)	Maintaining Traffic	HR
512	Flagger Service (Police assisted)	Maintaining Traffic	HR
512	Pilot vehicle	Maintaining Traffic	HR

Section	Bid Item	Category	Unit
512	Electronic Arrow	Maintaining Traffic	HR
512	Warning Light	Maintaining Traffic	DAY
512	Group 2 Channelizing Devices	Maintaining Traffic	DAY,
512	Traffic barrier service (per location) (Type and/or standard)	Maintaining Traffic	LF
512	Traffic barrier service guardrail termination (standard)	Maintaining Traffic	EA or LF
512	Impact attenuator service (Type)	Maintaining Traffic	EA
512	Temporary signalization	Maintaining Traffic	LS
512	Construction pavement marking (type and message)	Maintaining Traffic	LF
512	Construction pavement message marking (type and width)	Maintaining Traffic	EA
512	Temporary Pavement marker ([] way)	Maintaining Traffic	EA
512	Eradication of existing pavement marking (per 6 inch width)	Maintaining Traffic	LF
512	Temporary Detour (standard and type)	Maintaining Traffic	LF
512	Crusher run aggregate (No. 25 or 21A)	Maintaining Traffic	TON
512	Type III Barricades	Maintaining Traffic	EA
512	Construction Signs	Maintaining Traffic	SF
512	Truck Mounted Attenuator	Maintaining Traffic	HR
512	Portable Traffic Control Signal	Maintaining Traffic	LS
512	Portable Changeable Message Sign	Maintaining Traffic	HR
512	Maintenance of Traffic	Maintaining Traffic	LS
513	Mobilization (3 payments)	Mobilization & Demobilization	LS
515	Milling Pavement	Milling Pavement	SY
521	Pavers	Pavers	SF
530	Abandon Pipe, (diameter/flowable fill) < larger than 2 inch>	Abandonment of Existing Pipelines and Structures	LF or CY
530	Abandon Meter Boxes	Abandonment of Existing Pipelines and Structures	EA
530	Abandon Laterals and Cleanouts (on Active Mains)	Abandonment of Existing Pipelines and Structures	LF or EA
530	Abandon Drainage Structures	Abandonment of Existing Pipelines and Structures	EA
530	Abandon Metallic Structures	Abandonment of Existing Pipelines and Structures	EA
530	Abandon Manholes	Abandonment of Existing Pipelines	EA
530	Abandon Meter/Valve Vaults/Boxes	Abandonment of Existing Pipelines and Structures	EA
602	Topsoil (4 or 6 inch depth)	Topsoil	ACRE or SY
603	Lime, fertilizer, seed and mulch	Seeding	ACRE or SY
604	Sod, fertilizer and lime	Sodding	SY
605	Plants (Type and size)	Planting	EA
605	Mulching and remulching	Planting	100 SF
608	Mowing	Mowing	HR or LS
700	Concrete foundation (Standard, type and, size)	Traffic Control Devices	EA

Section	Bid Item	Category	Unit
700	Electrical service (Standard and type)	Traffic Control Devices	EA
700	Luminaire arm (Length)	Traffic Control Devices	EA
700	Lighting pole (Standard luminaire mounting height, and length of luminaire arm)	Traffic Control Devices	EA
700	Signal pole (Standard, length, number, and length of arms)	Traffic Control Devices	EA
700	Overhead sign structure	Traffic Control Devices	EA
700	Bridge mounted sign structure (Location)	Traffic Control Devices	EA
700	Pedestal pole (Standard and length)	Traffic Control Devices	EA
700	Wood pole (Class and length)	Traffic Control Devices	EA
700	Conductor Cable (Size/number)	Traffic Control Devices	LF
700	Conduit (Type and size)	Traffic Control Devices	LF
700	Trench Excavation (Standard)	Traffic Control Devices	LF
700	Junction box (Standard)	Traffic Control Devices	EA
700	Sign Posts	Traffic Control Devices	EA
700	Test Bores	Traffic Control Devices	EA
700	Electrical service grounding electrode (per 10 foot)	Traffic Control Devices	EA
700	Bored Conduit	Traffic Control Devices	LF
704	Pavement line marking (Type and/or class and width)	Traffic Control Devices	LF
704	Pavement message marking (Message)	Traffic Control Devices	EA
704	Pavement marker (Type, [] way, and/or type pavement)	Traffic Control Devices	EA
801	Water main (Type & diameter)	Water Distribution Systems	LF
801	Fire hydrant assembly (Type I, II or III)	Water Distribution Systems	EA
801	Water sampling stations	Water Distribution Systems	EA
801	Gate valves (size and diameter)	Water Distribution Systems	EA
801	Butterfly Valves (diameter)	Water Distribution Systems	EA
801	Water Meter Box	Water Distribution Systems	EA
801	Tapping sleeve/valve (diameter)	Water Distribution Systems	EA
801	Blowoff Assembly	Water Distribution Systems	EA
801	Manual air vent assembly	Water Distribution Systems	EA
801	Type K copper service lines (jack and pull) (single or dual)	Water Distribution Systems	LF or EA
801	Type K copper service lines (open cut) (single or dual)	Water Distribution Systems	LF or EA
801	Private Service Relocations	Water Distribution Systems	EA
801	Polyethylene encasement	Water Distribution Systems	LF
801	Connections to existing water mains	Water Distribution Systems	EA
801	Plugging Existing 2" Water Main	Water Distribution Systems	EA
801	Offset of Existing Water Main	Water Distribution Systems	LF
801	Cut in Tees	Water Distribution Systems	EA
801	Cut in Crosses	Water Distribution Systems	EA

Section	Bid Item	Category	Unit
801	Cut in Valves	Water Distribution Systems	EA
802	Gravity sewer pipe (diameter, type and depth 0-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, >20')	Sanitary Gravity Sewer Systems	LF
802	Sewer laterals (type and diameter)	Sanitary Gravity Sewer Systems	LF or EA
802	Manhole, 0' to 6' in depth (4 or 5 foot dia.)	Sanitary Gravity Sewer Systems	EA
802	Manhole extra depth (4 or 5 foot dia.)	Sanitary Gravity Sewer Systems	VF
802	Drop Manhole (inside or outside)	Sanitary Gravity Sewer Systems	EA
802	Standard manhole frame and cover	Sanitary Gravity Sewer Systems	EA
802	Watertight manhole frame and cover	Sanitary Gravity Sewer Systems	EA
802	Clean-out assemblies (mainline and service lateral)	Sanitary Gravity Sewer Systems	EA
802	Remote Camera/TV Inspection	Sanitary Gravity Sewer Systems	LF
802	Connections to existing manholes	Sanitary Gravity Sewer Systems	EA
802	Connections from existing manholes	Sanitary Gravity Sewer Systems	EA
802	Manhole and Mainline Cleanout adjustment rings	Sanitary Gravity Sewer Systems	EA
802	Manhole/Structure Coatings (Type A or B, 4 or 5 foot manhole diameter)	Sanitary Gravity Sewer Systems	VF or EA
803	Force main (type and diameter)	Sanitary Force Main Systems	LF
803	Manual air vent assembly	Sanitary Force Main Systems	EA
803	Gate valves (size and diameter)	Sanitary Force Main Systems	EA
803	Tapping sleeve/valve (size and diameter)	Sanitary Force Main Systems	EA
803	Connections to existing force mains or manholes	Sanitary Force Main Systems	EA
803	Interior Pipe Corrosion Lining (Diameter)	Sanitary Force Main Systems	LF
803	Offset of Existing Force Main	Sanitary Force Main Systems	LF
803	Cut in Tees	Sanitary Force Main Systems	EA
803	Cut in Crosses	Sanitary Force Main Systems	EA
803	Cut in Valves	Sanitary Force Main Systems	EA
804	Bore and jack casing (diameter)	Boring and Jacking	LF
806	Horizontal Directional Drill	Horizontal Directional Drilling	LS

Sanitary Sewer Rehabilitation

(Sections 810-822)

810	Light Cleaning (diameter)	Sewer Line Cleaning	LF
810	Heavy Cleaning (diameter and number of passes greater than 3)	Sewer Line Cleaning	LF
810	Manhole Cleaning	Sewer Line Cleaning	EA
811	Television Inspection (CCTV Only)	Television Inspection	LF
812	Bypass Pumping / Flow _____ MGD (Flow > 2 MGD)	Bypass Pumping	LS
813	CIPP Method/Wall Thickness=____mm (Diameter)	Pipe Rehabilitation By Cured In- Place Method	LF
813	Removal of Intruding Service Lateral	Pipe Rehabilitation By Cured In-	EA

Section	Bid Item	Category	Unit
	Connections (Ferrous or Non Ferrous)	Place Method	
814	Fold and Form Method / Wall Thickness = SDR _____ (diameter)	Pipe Rehabilitation By Fold and Form Pipe Method	LF
814	Removal of Intruding Service Lateral Connections (Ferrous or Non Ferrous)	Pipe Rehabilitation By Fold and Form Pipe Method	EA
815	Pipe Bursting	Pipe Bursting	LF
815	Sealing and Benching Manholes	Pipe Bursting	EA
816	Sewer Joint Testing (diameter)	Sewer Joint Testing	EA
817	Chemical Joint Sealing / Grouting	Chemical Grouting	GAL
	Sewer Point Repair		
818	(diameter, material, and depth 0-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, >20')	Point Repair By Excavation	LF
819	Insitu Structural Point Repair / Wall Thickness = _____ mm (diameter)	Insitu Structural Point Repair	LF
820	Insitu Point Repair by Sectional Lining / Wall Thickness = _____ mm (diameter)	Insitu Point Repair By Sectional Lining	LF
821	Service Laterals (diameter and material)	Sanitary Sewer Service Reconnection	LF
822	Manhole Cementitious Coating (4- or 5-ft diameter)	Manhole Rehabilitation	VF
822	Manhole Frame Seals	Manhole Rehabilitation	EA

End of Section

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 110

SPECIAL PROVISIONS

I. CONSTRUCTION DRAWINGS

Plans are the property of the Owner and shall not be used for any purposes other than those specified in these Contract Documents.

II. HAMPTON ROADS PLANNING DISTRICT COMMISSION REGIONAL CONSTRUCTION STANDARDS

Prior to Construction, the Contractor is required to obtain a copy of the Hampton Roads Planning District Commission *Regional Construction Standards* (Fifth Edition), from the Hampton Roads Planning District Commission located in Chesapeake, Virginia.

The following modifications, additions, or deletions to the HRPDC *Regional Construction Standards* are hereby incorporated into the contract documents.

Section 104 – SCOPE OF WORK

Section III. Explorations and Reports

Add: 3.1 Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the “technical data” contained in such reports and explorations, but such reports and explorations are not Contract Documents Such “technical data” is identified in the Special Provisions (Appendix F, Appendix I, and Appendix J). Except for such reliance on such “technical data,” Contractor may not rely upon or make claim against Owner or Engineer, or any of the officers, directors, members, partners, agents, consultants, or subcontractors with respect to:

- A. The completeness of such reports and explorations for Contractor’s purposes, including but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto.
- B. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings.
- C. Any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

Section 200 – PRODUCTS AND MATERIALS

Subsection 5.11

Add: F. Precast Polymer Mortar Concrete Manholes

1. Polymer concrete precast utility structures shall be furnished with waterstops, sleeves and openings as noted on the Drawings. Box out for wall pipes shall conform accurately to the sizes and elevations of the adjoining pipes. Precast utility structures shall be watertight and conform to the requirements of ASTM C478 and ASTM D 6783 with the following modifications there to:
 1. Materials:
 - a. The manufacturer shall use polyester or vinyl ester resin systems designed for use with this particular application. Resin content shall be a minimum of 7% by weight.
 - b. All aggregate, sand and quartz powder shall meet the requirements of ASTM C33, where applicable.
 - c. Resin additives, such as curing agents, pigments, dyes, fillers and thixotropic agents, when used shall not be detrimental to the manhole.
 - d. Gaskets shall be suitable for the service intended. All gaskets shall meet the requirement of ASTM C443.
 2. Manholes shall meet the following:
 - a. Manhole section shall have an internal diameter of 4'-0", unless noted otherwise.
 - b. Minimum manhole wall thicknesses shall be as necessary to meet Design Criteria as specified herein.
 - c. Polymer concrete manholes shall be designed to resist hydrostatic pressures with a minimum safety factor of 2.0 for full depth conditions from grade to invert. Manholes shall also be designed with sufficient bottom anchorage and side friction to resist buoyancy.
 - d. Precast manholes shall be as manufactured by US Composite Pipe, or equal.
 - e. The date and name of manufacturer shall be marked inside each precast section.

- f. No more than two lift holes may be cast or drilled in each section. Lifting holes shall not penetrate through manhole walls to interior of manhole.
- g. Dimensions shall be as shown on the Drawings.
- h. Mechanical Details such as piping, electrical, and other details shall be as shown on the Drawings.

Section 806 – HORIZONTAL DIRECTIONAL DRILLING

Subsection 1.3 B

Add: “10. Provide a plan to monitor and/or quantify excavated materials to ensure roadways, utilities, and structures are not undermined during horizontal directional drilling operations.”

11. Provide a surveying and monitoring plan for review prior to construction. The plan shall identify location of the settlement monitoring points, reference benchmarks, survey schedules and procedures, and reporting format/frequency.

12. Provide a contingency plan that addresses potential conditions such as encountering obstructions, steering corrections, loss of ground, drilling fluid migration to the surface, excessive settlement. “

III. SEQUENCE OF CONSTRUCTION

See Sheet G-2 for Suggested Sequence of Construction

IV. APPENDICES

APPENDIX A: Substance Abuse and Drug-Free Workplace Ordinance
APPENDIX B: Procurement Information Form
APPENDIX C: Norfolk Modifications
APPENDIX D: Measurement and Payment Items
APPENDIX E: Norfolk Details
APPENDIX F: Soil Borings
APPENDIX G: Tree Protection Notes
APPENDIX H: Contractor’s Use of Temporary Facilities and Staging Areas
APPENDIX I: Test Hole Data Sheets
APPENDIX J: USACE Concurrence Letter
APPENDIX K: Project Sign Details

- THIS PAGE LEFT INTENTIONALLY BLANK -

APPENDICES

- APPENDIX A: Substance Abuse and Drug-Free Workplace Ordinance
- APPENDIX B: Procurement Information Form
- APPENDIX C: Norfolk Modifications
- APPENDIX D: Measurement and Payment Items
- APPENDIX E: Norfolk Details
- APPENDIX F: Soil Borings
- APPENDIX G: Tree Protection Notes
- APPENDIX H: Contractor's Use of Temporary Facilities and Staging Areas
- APPENDIX I: Test Hole Data Sheets
- APPENDIX J: USACE Concurrence Letter
- APPENDIX K: Project Sign Details

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



APPENDIX A

Substance Abuse and Drug-Free Workplace Ordinance

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



2/5/96 SB
Form and Correctness Approved:

By

Philip H. Tappan
Office of the City Attorney

Form CCO-003

Contents Approved:

By

[Signature]
DEPT.

NORFOLK, VIRGINIA

ORDINANCE No. 38,261

R-1

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 33.1 OF THE NORFOLK CITY CODE, 1979, BY ADDING ONE NEW SECTION NUMBERED 33.1-58 ENTITLED SUBSTANCE ABUSE AND DRUG-FREE WORK PLACE POLICY FOR CITY CONSTRUCTION CONTRACTS.

- - -

WHEREAS, the City of Norfolk has pledged to maintain a Substance Abuse and Drug-Free Work Place; and

WHEREAS, the City of Norfolk intends to extend this policy to contractors engaged through the City's procurement process and are the recipients of public funds, therefore,

BE IT ORDAINED by the Council of the City of Norfolk:

Section 1:- That Chapter 33.1 of the Norfolk City Code, 1979, is hereby amended and reordained by adding one subsection numbered 33.1-58 which shall read as follows:

Sec. 33.1-58. Substance Abuse and Drug-Free Work Place Policy for City Construction Contracts.

Every bid response for a construction project solicited on or after March 1, 1996, shall include, by reference or incorporation, legally defensible, written substance abuse policies which shall be in effect during the period of performance of the contract. Notwithstanding the aforesaid, every contract as declared by the Director of Public Works entered into on or after March 1, 1996, shall include, by reference or incorporation, legally defensible, written substance abuse policies which shall be in effect during the period of performance of the contract. The substance abuse policy shall include all workers who will perform on City of Norfolk projects both general and sub-contractors. Said policies shall include, but not be limited to, the following requirements:

(a) Drug testing by a state approved laboratory licensed to conduct such tests in accordance with standards established by the National Institute On Drug Abuse (NIDA). Drugs to be tested for shall be as follow:

- (1) Amphetamines/Methamphetamine (e.g., crystal and speed);
- (2) Cocaine and Crack Cocaine;
- (3) Opiates (e.g., Codeine, Heroin, Morphine, Hydromorphone, Hydrocodone);
- (4) Phencyclidine (PCP); and
- (5) Marijuana (THC).
- (6) Alcohol.

(b) Drug testing will be conducted on the employee(s) by and at the expense of the employer before the employee(s) is/are allowed to visit and/or work on any job site.

(c) Random drug testing shall be required. The criteria for random testing should be based upon the function(s) performed by the employee, particularly those functions in which a momentary lapse could cause death, serious bodily injury or destruction of property.

(d) Testing upon reasonable suspicion is required. For purposes of this section, "reasonable suspicion" means - an articulable belief based on specific facts, and reasonable inferences, drawn from those facts, that an employee is under the influence of drugs or alcohol. Circumstances which constitute a basis for determining reasonable suspicion may include, but are not limited to:

- (1) a pattern of abnormal or erratic behavior (e.g. hyperactivity, unexplained mood swings, paranoia, hallucinations);
- (2) information provided by a reliable and credible source;
- (3) a work-related accident;
- (4) direct observation of drug or alcohol use;
- (5) possession of drugs or drug paraphernalia; or
- (6) presence of the physical symptoms of drug or alcohol use (e.g., glassy or bloodshot eyes, odor of alcohol on breath, slurred speech, needle marks/scar tracks on arms, unusual drowsiness or sluggishness).

(e) Written notice of the testing policy is required to be given to all employees by the employer.

(f) A consent form shall be executed authorizing the drug and/or substance abuse testing and permitting the release of tests results to the employer to be used to prove compliance with drug and/or substance abuse policies. Test results for all personnel working pursuant to a City of Norfolk contract will be made available to the City on a confidential basis.

(g) A refusal to consent section will be required which specifically informs the employee that refusal to consent to a drug and/or substance abuse test will be grounds for preventing the employee from working on City of Norfolk contracted work.

(h) Confirmation of positive test results through at least one additional test is required.

(i) Confidentiality of tests results, except as exempted by other sections of this section, is required as part of any drug and/or substance abuse policy adopted pursuant to this section.

(j) An employer is required to notify the City of Norfolk of any employee who is arrested or convicted for drug related offenses as stipulated in this section as soon as such information is known to the employer.

(k) A section stipulating that searches may be conducted of all areas and property jointly controlled by the employee(s) and the employer, or fully controlled by the employer, is required.

(l) A severability section stating that each provision of the drug and/or substance abuse policy is severable from other sections and provisions of the policy and, if found to be illegal by a Court, such invalidity shall not affect the validity of the other sections or provisions.

(m) No contractor shall allow any employee to engage in work on a City of Norfolk project upon notification of a positive test result unless and until the employees is certified to be drug free.

(n) That the City Manager is hereby authorized to take all actions necessary to implement the aforesaid provisions including, defining terms, establishing reports and forms and establishing deadlines for the production of information.

Section 2:- That this ordinance shall be in effect from and after its adoption.

Adopted by Council February 6, 1996
Effective February 6, 1996

TRUE COPY
TESTE:

R. BRECKENRIDGE DAUGHTREY, CITY CLERK

BY: DEPUTY CITY CLERK

APPENDIX B

Procurement Information Form

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



**CITY OF NORFOLK
DEPARTMENT OF UTILITIES
PROCUREMENT INFORMATION FORM**

In an effort to document the extent of our minority and Norfolk procurement activities, the Department of Utilities, Division of Engineering, P. O. Box 1080, Norfolk, VA 23501, requests that you complete this form and return it to us with the signed construction contract or professional services agreement. This information will be used for statistical purposes only.

PROJECT NAME: _____

FIRM'S NAME: _____

1. What is your firm's minority status (based on the Federal or State criteria)?
 - 1a. Please circle the alpha description that applies to your firm. Is the majority ownership of the firm:
 - a) African American male owned b) African American female owned
 - c) White female owned d) Other female owned
 - e) Hispanic f) Eskimo
 - g) Asian American h) American Indian
 - i) Aleut
2. Does your firm intend to use minority firms in conduction the work? ____Yes ____No. If yes, please list the minority firm's name and dollar value of the work.

FIRM'S NAME

DOLLAR VALUE

3. Please state your firm's intention to procure materials from minority firms and the dollar value of those procurements.

FIRM'S NAME

DOLLAR VALUE

4. Please list the dollar value of your firm's minority payroll for the project (to be provided quarterly).

1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

5. Please list the dollar value of the firm's payroll for the project paid to Norfolk residents (to be provided quarterly).

1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

6. What is the dollar value of your firm's procurement for project materials and services from firms located in Norfolk?

FIRM'S NAME

DOLLAR VALUE

I certify that the above information is correct to the best of my knowledge, as of the below date.

Signature: _____ Date: _____

Title: _____

APPENDIX C
Norfolk Modifications

December 2010

Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
All Sections Sections 200 - 800		Measurement for Payment.	Replace	See Appendix D for City of Norfolk Department of Utilities Measurement and Payment Item Descriptions. Replace all references to Measurement for Payment in the technical specifications with Appendix D.
109	XI	Standard Bid Items and Units	Delete	Use City of Norfolk Measurement and Payment descriptions. Refer to Appendix D.
All 100 sections		General Provisions	Replace	Revise all HRPDC General Provisions with Norfolk City Modifications and Department of Utilities Modifications
200	II.2.2	Quality Assurance	Add	Norfolk Arboricultural Specifications and Standard Practice Manual
	III.3.6	Submittals	Add	Add the following sentences: "Requests for substitutions shall be submitted at the pre-construction meeting and must be approved in writing by the Engineer prior to the start of any construction."
	V.5.6.A.1.c.	Hydraulic Cement Concrete	Delete	Delete the words, "fly ash"
	V.5.6.A.1.c.(1)	Hydraulic Cement Concrete	Delete	Delete the entire paragraph
	V.5.6.A.1.d.	Hydraulic Cement Concrete	Delete	Delete the words, "the fly ash content shall not exceed 30% for Class F,"
	V.5.6.A.6.g.	Hydraulic Cement Concrete	Delete	Delete the entire section
	V.5.6.A.6.I.	Hydraulic Cement Concrete	Delete	Delete the entire section
	V.5.10.A.9	Ductile Iron Pipe	Add	Ductile Iron pipe shall have Protecto 401 ceramic epoxy lining, or equal hydrogen sulfide resistant lining approved by the Department.
	V.10.B.5	PVC Pipe	Modify	Correct the second sentence to read: "When Compact fittings are used, they shall have a minimum acceptable pressure rating of 350 psi."
	V.5.10.D.	HDPE Pipe	Delete	HDPE shall not be used
	V.5.10.E.1.a.b	Valves	Delete	Delete "with threaded connections" from the first sentence.
	V.5.10.E.1.a.c	Valves	Add	Accessories: Provide zinc plated bonnet bolts, studs and nuts for unsubmerged service. Provide stainless bonnet bolts, studs and nuts for submerged service. Make wedging devices bronze to iron or bronze to bronze. Provide glands which are bronze or bronze bushed and bronze gland bolts and nuts.
	V.5.10.E.1.c	Valve Operators	Delete	"A valve key wrench of adequate length and of each type required shall be provided for each project."
	V.5.10.E.1.d	Valve Stem Extensions	Delete	Strike out section
200	V.5.10.E.3.	Check Valves	Add	Provide single disc swing check valves designed to allow a full diameter passage and to operate with a minimum loss of pressure. Provide 1/8 through 3 inch check valves that meet the requirements of MSS SP-80. Provide 4 inch through 24 inch check valves that meet the requirements of AWWA C508. Equip check valves with bronze renewable seat rings, bronze discs or disc rings and bronze disc hinge bushings and pins. Carefully mount discs and provide discs that swivel in disc hinges. Provide pins, discs and other parts that are noncorrosive, nonsticking and properly cured to operate satisfactorily within a temperature range of 34 to 100 degrees Fahrenheit and with the fluids specified. Equip 6 inch and larger check valves with outside levers and weights. Provide check valves manufactured by American Flow Control, Clow Valve, M&H Valve, Mueller Valve, or approved equal.

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
200	V.5.10.G.3.c	Joint Restraint Devices	Add	Harnessing: For ductile-iron pipe and fittings with mechanical joints that require harnessing, provide ductile-iron mechanical joint retainer glands.
	V.5.10.G.4.c	Joint Restraint Devices	Add	Harnessing: For PVC joints requiring harnessing, provide Series 1300/1390 restraining fittings as manufactured by Uni-flange, Corp., Series 1110 HV and Series 2000 PV as manufactured by EBAA Iron Sales, Inc., or equal.
	V.5.11.A.5	Ductile Iron Pipe Fittings	Modify	Correct the second sentence to read: "When Compact fittings are used, they shall have a minimum acceptable pressure rating of 350 psi."
	V.5.11.A.7.a	Ductile Iron Pipe Fittings	Add	After ANSI/AWWA add "Current department approved linings include Protecto 401 ceramic epoxy lining. Other hydrogen sulfide resistant linings shall be submitted for review and approval as equal".
	V.5.11.B.8	PVC Pipe Fittings	Add	Add paragraph "For Mains installed, where cover is 10' (ten feet) or greater, the pipe shall be C900/C905 DR 18 or Ductile Iron."
	V.5.11.B.9	PVC Pipe Fittings	Add	Add paragraph "All fittings shall be molded or ductile iron. No fabricated fittings will be allowed."
	V.5.19.A.5	Ductile Iron Pipe fittings	Modify	Correct the second sentence to read: " When Compact fittings are used, they shall have a minimum acceptable pressure rating of 350 psi."
	V.5.19.B.3.	PVC Pipe	Delete	"couplings, and fabricated fittings" and "or fitting".
	V.5.19.B.6	PVC Pipe	Add	Add as the final sentence in the paragraph: "Where Schedule 80 PVC is used, solvent cement shall meet the requirement of ASTM D-2564."
	V.5.19.B.7.	PVC Pipe	Delete	Strike out paragraph
	V.5.19.E	Copper Water Pipe	Delete	Strike the sentence that starts, "Fittings shall be wrought..."
	V.5.19.F.1.c.	Valves	Delete	Strike out "with threaded connections".
	V.5.19.F.1.d.	Valves	Add	All gate valves for water shall open right (clockwise).
	V.5.19.F.3.a	Butterfly Valves	Modify	Replace "16 inches" with "20 inches".
	V.5.19.F.1.d.	Valve Operators	Modify	Strike out the sentence that begins, "A valve key wrench..." Add the following: "NOTE: Water valves open right (clockwise)."
	V.5.19.F.5.	Valve Stem Extensions	Delete	Strike out paragraph
	V.5.19.H.2.	Fire Hydrants	Delete	"The fire hydrant shall be painted with a high gloss, alkalyd industrial enamel (colors to be selected by Owner)".
	V.5.19.H.3	Fire Hydrants	Delete	Strike out paragraph
	V.5.19.H.6	Fire Hydrants	Delete	Strike out paragraph
	V.5.19.H.7	Fire Hydrants	Add	"All fire hydrants shall be manufactured in complete accordance with American Water Works Association Specification C502, latest revised edition, and shall be as manufactured by the Darling Valve & Manufacturing Company (Model B-50-B), Mueller Centurian A-421, Pacer Model W-67, Kennedy K-81, or approved equal. Hydrants shall have full 360 degree revolving heads and shall open by turning the operating nut to the right (clockwise).
	V.5.19.K.4.a.	Concrete Reaction Blocking	Add	Add the phrase, ", or as designated by the Engineer," after the word, "Drawings".
	V.5.19.K.4	Concrete Reaction Blocking	Delete	subsections b and c
	V.5.19.L.2.	Tapping Valves and Sleeves	Delete	Strike out the sentence, "The valves shall be subjected to a factory test..."
	V.5.19.L.3.a.	Tapping Sleeves for DI Pipe and PVC C-900	Modify	In the first sentence insert "full bodied" between "shall be" and "mechanical joint". Delete "in accordance with ANSI/AWWA C110/A21.10. and" from the sentence beginning with "Tapping sleeves shall be..."

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
	V.5.19.L.3.b.	PVC pipe (Other than C-900)	Delete	Strike out the first paragraph, which begins, "Tapping sleeves shall be complete..."
	V.5.20.B.	Subsurface Utility Warning Tape	Modify	Replace "metalized" with "non-metallic".
	V.5.21.F.1	Manhole Rehabilitation Using Cementitious Products	Delete	Delete entire section
	V.5.21.I.2	Manhole Frame Seals	Delete	After "only be installed with" delete " the cementitious lining and"
303	II.2.2.E.1	Trench Bedding and Backfilling	Modify	Replace "Contractor" with "Inspector".
	II.2.2.E.4.	Trench Bedding and Backfilling	Modify	Replace the paragraph with: "Backfill material shall be solidly compacted around the pipe in 6" layers up to sub-base of the roadway or the existing ground elevation. As a minimum, compact each layer of the backfill material to 95% maximum density as determined in accordance with VTM-1.
	II.2.2.E.7.	Trench Bedding and Backfilling	Modify	Replace in the first sentence, "...material to not less than the following percentages at the maximum..." with "...material to 95% maximum..."
	II.2.2.E.7.	Trench Bedding and Backfilling	Delete	sub sections "a – c".
	II.2.2.E.7.G.	Trench Bedding and Backfilling	Add	<p>"The City may, at any time, require compaction testing to ensure compliance with the specifications. A recognized testing laboratory that is selected by the City will conduct all tests. The testing laboratory is to be qualified in the field of the materials to be tested. If applicable, all tests will be conducted in accordance with V.D.O.T.'S "Manual for Virginia Testing Methods" (Current Edition, as Revised). Payment for all tests will be in accordance with the following:</p> <p>A) The cost of all tests failing to meet the minimum requirements will be borne by the Contractor.</p> <p>B) The costs of all tests that either meet or exceed the minimum requirements shall be borne by the City.</p>
	II.2.2.G.2.	Pavement Removal for Placement of Pipelines	Modify	Replace the sentence beginning with "The minimum requirements for a" with "Temporary paving shall be installed and maintained to provide a suitable driving surface on residential streets. Contractor shall allow dust. Acceptable daily temporary pavement shall be VDOT 21A Stone, BM-25, recycled asphalt pavement and crush concrete. Crushed concrete shall be permitted on a case by case basis. The inspector has the final decision of the acceptability of temporary paving".
	II.2.3.	Tolerances	Delete	Complete Section
801	II.2.2.C.7.	Pipe Installation	Modify	Replace "300" with "100"
	II.2.2.F.	Tracer Wire	Modify	Replace "attached every 10 feet to" with "Directly on top of the pipe secure by placing acceptable Fill Material by hand.".
	II.2.2.G.	Subsurface Utility Tape	Modify	Re-write the paragraph to read," All non-metallic water mains shall be identified by a subsurface non-metallic utility warning tape placed at an elevation of 12" above the copper tracer wire or as directed by the owner, conforming to Section 200."

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
801	II.2.3.A.	Valve Installation	Modify	After "direction of openings" insert the following, "(All water valves open right)". Re-write the second sentence to read, "Valves found not opening to the right, or determined to be defective by the Owner shall be rejected, removed from the site, and replaced by the Contractor at no additional cost to the Owner."
	II.2.6.C.	Restraint	Add	After "...coating" add the following, "or as directed by the Owner."
	II.2.7.C.	Connections to Existing Mains	Delete	Delete the sentence that begins with, "Connection shall be..."
	II.2.7.F.4	Connections to Existing Mains	Modify	Replace the paragraph with, "Tie-ins to existing mains shall only be performed after the new main has been satisfactorily pressure tested and chlorinated. The contractor may not tie-in the new main to the existing main until after the results of the bacteriological tests have been completed and approved by the owner."
	II.2.7.G.	Tapping Existing Mains Under Pressure	Delete	Delete subsections 3,4, and 6.
	II.2.7.G.5.	Tapping Existing Mains Under Pressure	Modify	Change the sentence to read, "Pressure shall be maintained for one (1) hour period without evidence of leakage."
	II.2.7.G.7.	Tapping Existing Mains Under Pressure	Add	In the first sentence, after "...branch are acceptable" add the following, "unless otherwise directed by the Owner."
	II.2.8.B.1.	Pressure Test	Modify	In the sentence which begins, "Water mains shall be..." remove the portion that states, "1.5 times the expected working pressure or" and the portion that states, "whichever is greater".
	II.2.8.B.7.	Pressure Test	Modify	Replace this subsection with, "The test pressure shall be maintained at the pressure stated in the project specifications throughout the duration of the test period. The water used to maintain the test pressure shall be measured and shall be less than the allowable leakage in order for the main to have passed the test."
802	II.2.8.C.2.	Leakage Test	Modify	Insert the word "excess" between "...until the" and "leakage."
	II.2.1.E.	General	Add	Provide cut sheets for all manholes, 100 ft. stations and end-of-line cleanouts.
	II.2.1.F.	General	Add	All Services which are reconnected to the replaced sewer main shall be shown on the "As Built" drawings with the exact distance from the nearest manhole and with the details of the method of reconnection.
	II.2.2.C.4.	Pipe Laying	Add	"If a swab is in the pipe for cleaning, the grade shall be checked and recorded for each joint of pipe.
	II.2.2.C.6	Pipe Laying	Modify	After "...shall be closed" insert " by use of a temporary bulkhead" and delete " to the satisfaction of the Owner".
	II.2.2.D.1.	Alignment and Grade	Modify	Replace "Drawings" with "approved laying schedule".
	II.2.2.D.2.	Alignment and Grade	Delete	Entire subsection
	II.2.3.B.	Manhole Installation	Add	To the end of the second sentence after: non-shrink grout-"and coated to match surfaces of manholes."
	II.2.4.B.1.a. (5).	Pipe Testing - Gravity Lines	Add	"Contractor is responsible for uncovering and restoring spot check sites at no additional cost to the Owner."
	II.2.4.B.1.a. (8)	Pipe Testing - Gravity Lines	Modify	Replace the last sentence with, "See Section 811."
	II.2.5.B	Connections	Modify	In parentheses should read (where stubs are bricked up or openings do not exist).
	II.2.6	Manhole Coating Warranty	Modify	In third line change to Final Completion.

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
803	II.2.2.F	Tracer Wire	Modify	Replace "attached every 10 feet to" with "Directly on top of the pipe secure by placing acceptable Fill Material by hand."
	II.2.2.G	Subsurface Utility Tape	Modify	Re-write the paragraph to read "All non-metallic water mains shall be identified by a subsurface non-metallic utility warning tape placed at an elevation of 12" above the copper tracer wire or as directed by the Owner, conforming to Section 200."
	II.2.3.A	Valve Installation	Modify	After "direction of openings" insert the following: "(All sanitary sewer valves open left)". Re-write the second sentence to read "Valves found not opening to the left, or determined to be defective by the Owner shall be rejected, removed from the site, and replaced by the Contractor at no additional cost to the Owner."
805	I.1.2.B.2	Unusual Conditions	Modify	Replace the second half of the sentence that begins, "pressure tested in place..." and ends "...and tested in place." with, " , and meets current Virginia Department of Health Sewage Collection and Treatment Regulations."
810	II.2.2.F.3	Acceptance of Cleaning Operation	Add	A television inspection shall be completed after cleaning to verify that the cleaning operation was successful. The television inspection shall be in accordance with Section 811 - Television Inspection.
811	I.1.2.D.	Submittals	Add	Overflow Prevention Plan
	I.1.2.E.	Submittals	Add	Overflow Containment and Cleanup Plan
	II.2.1.B.1.	Equipment	Add	Sewer scanner and evaluation technology, similar to the Blackhawk pipeline assessment system, is an acceptable alternative to CCTV.
	II.2.2.A.2.	Flow Control	Modify	The end of the last sentence to read, "...unless approved by the Owner in advance".

Standard Details	CI_08	Residential Entrance w/out Curb and Gutter	Delete	Use Norfolk Public Works/Codes Standard Driveway Entrance Detail
	DS_02	Precast Concrete Conflict Manhole	Delete	
	EW_01	Pipe Bedding Details	Delete	
	EW_02	Payment Limits Trench Excavation and Backfill	Delete	
	EW_03	Trench Width Detail for Payment of Contingent Items	Delete	
	EW_04	Typical trench Detail for HDPA 9Type S) Storm Drain Pipe	Delete	
	FE_01	Typical Chain Link Fence & Gate Detail	Delete	
	LS_01	Tree Planting - Slopes	Delete	
	RC_01	Pavement Patching for Flexible Pavement	Delete	
	RC_02	Utility Locations	Delete	
	RC_03	Continuous Shoulder Rumble Strips	Delete	

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
	WD_02	Water Service Installation Detail	Replace	Use the Norfolk Standard Detail for Typical Tap Installatioin, CW 01
	WD-03	Water Meter Box (Type I)	Replace	Use the Norfolk Standard Detail for Water Meter Box & Cover, CW 02
	WD_04	Water Meter Box (Type II)	Delete	
	WD_05	Blow Off Assembly	Replace	Use the Norfolk Standard Detail for Air Vent/ Blow-Off Valve, CWS 03
	WD_06	Fire Hydrant Setting (TypeI)	Replace	Use the Norfolk Standard Detail for Fire Hydrant Installation, CW 04 and Fire Hydrant Connection, CW 05.
	WD _07	Fire Hydrant Setting (Type II)	Delete	
	WD _08	Fire Hydrant Setting (Type II)	Delete	
	WD_09	Temporary Manifold For Test and Chlorination	Delete	
	WD_10	Precast Concrete Vault - Non-Load Bearing	Delete	
	WD_11	Precast Concrete Vault - H20 Loading	Delete	
	WD_12	Metal Meter Vault	Delete	
	WD_13	Water Sampling Station	Delete	
	WS _01	Standard Valve Box Frame and Cover	Delete	Use the Norfolk Standard Detail for Large Valve Box Frame and Cover, CWS 01 and CWS 02 for Small Valve Box Frame and Cover.
	WS _02	Valve Setting Detail	Delete	
	WS _03	Manual Air Vent Assembly	Replace	Use the Norfolk Standard Detail for Air Vent/ Blow-Off Valve, CWS 03
	WS_04	Steel Casing Detail	Replace	Use the Norfolk Standard Detail for Water Line Casing, CWS 07A and CWS 07B
	WS _05	Standard Thrust Blocks	Delete	
	WS _06	Obstruction By-Pass Uniform Offset	Replace	Use the Norfolk Standard Detail For lowering or new construction CW06
	WS _07	Restraining Rod Detail	Delete	
	WS _08	Typical Tracer Wire Box Installation	Delete	
	SS_01	Standard Precast Concrete Manhole w/Extended Monolithic Base	Replace	Use Norfolk Standard Detail for Standard Precast Sewer Manhole, CS 03
	SS_02	Precast Concrete Shallow Manhole	Replace	Use Norfolk Standard Detail for Shallow Precast Sewer Manhole, CS 04
	SS_03	Sanitary Sewer Straddle Manhole	Delete	

THE CITY OF NORFOLK MODIFICATIONS TO HRPDC REGIONAL STANDARDS, 5th Edition

Section	Sub-Section	Name	Add/ Delete	Modification
	SS_04	Sanitary Sewer Interior Drop Manhole	Replace	Use Norfolk Standard Detail for Standard Precast Sewer Drop Manhole, CS 05
	SS_05	Sanitary Sewer Exterior Drop Manhole (For Existing Manhole Only)	Replace	Use the Norfolk Standard Detail for Standard D.I. Drop Connection for Existing Brick Manhole, CS 01
	SS_06	Sanitary Sewer Manhole Adjustment	Delete	
	SS_07	Sanitary Sewer Manhole Invert Shaping	Delete	
	SS_08	Connection into Existing Manhole	Delete	
	SS_09	Sanitary Sewer Manhole Casting (24")	Replace	Use the Norfolk Standard Detail for standard 30" manhole casting and cover C06
	SS_10	Sanitary Sewer Manhole Cover (24")	Replace	Use the Norfolk Standard Detail for standard 30" manhole casting and cover C06
	SS_11	Sanitary Service Lateral Clean Out Frame and Cover	Replace	Use Norfolk Standard Detail for Mainline Cleanout Casting and Cover, CS 10
	SS_12	Sanitary Service Lateral Clean Out Frame and Cover For Heavy Loads	Delete	
	SS_13	Sanitary Sewer Main Line Clean Out Box	Replace	Use Norfolk Standard Detail for Mainline Cleanout Casting and Cover, CS 10
	SS_14	Sanitary Sewer Service Connection	Replace	Use Norfolk Standard Detail for Typical Wye/Lateral Layout and Property Line Cleanout, CS 11
	SS_15	Dual Sanitary Sewer Service Connections	Delete	Dual Service connection not allowed.
	SS_16	Deep Sanitary Sewer Service Connection	Delete	
	SS_17	Force Main Saxophone	Replace	Use the Norfolk Standard Detail for Force Main Saxophone, CS 14
	SS_18	Force Main to HRSD Force Main	Delete	

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX D

Measurement and Payment Items

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



Pump Station 87 Force Main Replacement **Bid Item Descriptions**

Item 1: Horizontal Directional Drill

Payment shall be made as one **LUMP SUM** for the entire 10-inch HDPE force main section installed by horizontal directional drilling (HDD), installed to the limits shown in the Contract Drawings. Payment shall include, but not be limited to, all required submittals, all drilling mud handling, pipe purchase and delivery, pipe fabrication, pilot hole boring, pre-reaming and reaming, pipe pull back and over pull. The cost for all of the Contractor's means and methods to perform the HDD shall be included in this item. No separate payment shall be made for miscellaneous items that are impractical to quantify; but, that may reasonably be considered to be incidental to the HDD.

Also included in the cost will be stakeout, furnishing a HDD Plan, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, saw cutting, removal and proper disposal of pavement, clearing, grubbing, grading, care and protection of existing utilities and structures, placement of temporary pavement patching, thrust protection, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is included. In areas where new force main is placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. With the exception of permanent paving, all easement and right of way restoration and related landscaping shall be incorporated in this item.

No payment, partial or final, will be made for any part of a force main system until that part of the system has been hydrostatically tested and approved by the City. No payment shall be made for any failed crossing. A failed crossing is considered any crossing that is installed outside of the horizontal and vertical tolerances listed in the technical specifications and drawings or any crossing that does not meet all pressure and leakage testing specified.

Item 2: HDPE Force Main (10" DIPS HDPE, DR 9):

By size, pipe shall be measured horizontally along the centerline of the main from the centerline of the point of connection(s). Pipe shall be made based on the **LINEAR FEET** of DIPS HDPE, DR9 installed, complete and in place (direct-bury installation only). There shall be no reduction in linear feet for HDPE fittings, adapters, and electrofusion couplings.

The unit price bid for this item shall be full compensation for furnishing and installing new DIPS HDPE, DR9 sanitary sewer force main, HDPE fittings, adapters, electrofusion couplings, all fittings related to the "saxophone" or similar approved connections at the discharge manhole. Also included in the cost will be all incidental items referenced in Section 109 I.1.1.K, stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and

maintenance of temporary pavement patching, thrust protection, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is also included. Also included are cleaning, flushing, and testing. In areas where new force mains are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. With the exception of permanent paving, all right of way restoration and related landscaping shall be incorporated in this item.

Item 3: Connect to Existing 8-inch Force Main

Payment shall be made as one **LUMP SUM** including full compensation for all labor, equipment, and materials to install all new thickness class 52 ductile iron sanitary sewer main required to re-connect to the existing 8-inch force main at Pump Station 87. Payment shall also include Protecto 401 interior (or other approved lining), polyethylene encasement, gate valves, ductile iron fittings and/or accessories, MEGA LUGS, or other approved restraint methods, and the emergency pump connection. Payment shall also include maintenance of pipeline operations during pipe shutdowns, including pumping, hauling, and disposing of sewage required to complete the work as shown, specified, scheduled and directed.

Also included in the cost will be stakeout, furnishing written cut sheets, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, saw cutting, removal and proper disposal of pavement, clearing, grubbing, grading, care and protection of existing utilities and structures, placement of temporary pavement patching, thrust protection, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is also included. In areas where new force main is placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included.

No payment, partial or final, will be made for any part of a force main system until that part of the system has been hydrostatically tested and approved by the City.

Item 4: Air Vent / Blow-Off Valve:

Payment for this item will be based on the number of **EACH** new blow-off valve installed, complete and in place.

The unit price bid for this item shall be full compensation for the furnishing and installing of blow-off valves complete and in place. Also included in the costs will be the furnishing and placement of a standard blow-off valve box and lid, set to grade.

Included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing,

grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is included. Also included are cleaning, flushing and testing. In areas where new blow-off valves are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All right of way restoration and related landscaping shall be incorporated in this item.

Item 5: Precast Polymer Mortar Concrete Manhole:

Payment for this item will be based on the number of **EACH** new precast polymer mortar concrete manhole that is installed. Unit Cost for manhole will result in a decrease of linear feet of main based on inside manhole diameter.

The unit price bid for this item shall be full compensation for furnishing and installing the precast polymer mortar concrete manhole, complete and in place. This cost shall include an adjustable manhole frame, dust cover, new stainless steel Rainstopper manhole insert as manufactured by Southwestern Packing & Seals or approved equal, outside drops if needed, connections to the main line sewer and service laterals. Also included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, testing, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is also included. In areas where new manholes are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All right of way restoration and related landscaping shall be incorporated in this item. Also included is the by-pass pumping or any other approved method to maintain existing sewer flow, and enclosure of by-pass pump.

The invert elevation of each newly installed sanitary sewer manhole shall be verified in the presence of the City's inspector prior to continuing with the installation of the sewer main. The tolerance shall be based on the current HRPDC standards.

No payment request shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Note: When ordering a precast manhole, an allowance should be made for at least one adjustment ring below the casting.

Item 6: PVC Main (6-inch):

By size, pipe shall be measured horizontally in **LINEAR FEET** along the centerline of the main from manhole to manhole or from manhole to cleanout, excluding inside manhole diameter (s) and two feet for the cleanout.

The unit price bid for this item shall be full compensation for furnishing and installing new PVC (SDR 26) sanitary sewer mains and wyes or other approved connectors, complete and in place. Also included in the cost will be Select Bedding No. 57 stone as per Pipe Bedding Detail, stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally,, the on site properly contained temporary storage and drying of trench soils is also included. In areas where new PVC mains are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. With the exception of permanent paving, all right of way restoration and related landscaping shall be incorporated in this item.

Also included are the by-pass pumping or any other approved method to maintain existing sewer flow, enclosure of by-pass pump, removal of existing pipe (where required), drop connections at existing drop manholes, connections to existing mains and manholes, reconnection of existing and active service laterals, boring or jacking, testing, and post-installation TV inspection and video recording.

As part of the submittal process, the Contractor shall indicate what method is to be used to maintain line and grade on the proposed main. **The invert elevation of each newly installed sanitary sewer manhole shall be verified in the presence of the City's inspector prior to continuing with the installation of the sewer main. The tolerance shall be based on the current HRPDC standards.**

Post TV includes: The camera footage counter shall be set to "0.00" at the centerline of the beginning manhole frame. The recorded video shall be continuous and uninterrupted for the pipe segment being examined. The video (videotape and / or DVD, shall include: official project title, contracting party (i.e. Norfolk Utilities, NRHA, VDOT, developer), contractor's name, street name, manhole ID numbers, direction of video and flow, date and time video was recorded, continuous counter text, pipe size and material, audio and text call outs of laterals. A written log shall be provided that duplicates the information found on the video.

Item 7: PVC Service Lateral (Public):

By size, pipe shall be measured horizontally on the ground along the centerline of the lateral from the centerline of the sewer main (inside edge of manhole for laterals connected to manholes) to the center of the newly installed property line clean out, or to the point of connection to the existing lateral. Payment for laterals shall be measured based on the **LINEAR FEET** of new pipe installed, complete and in place. **The lateral pipe material shall match the material of the main line.**

Included in the cost is furnishing and installing SDR 26 PVC service lateral lines located within the City's right of way. This cost shall include the locating of, and connection to, existing service lateral at new or existing manholes, or mains, including approved saddles or fittings and/or accessories.

Also included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on site properly contained temporary storage and drying of trench soils is also included. In areas where new service laterals are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All right of way restoration and related landscaping shall be incorporated in this item.

No payment request shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Item 8: PVC Service Lateral (Private):

By size, pipe shall be measured horizontally along the centerline of the lateral from the centerline of the newly installed property line clean out to the point of connection to the existing lateral, or to within five feet of the building or house. Payment for lateral pipe shall be measured based on the **LINEAR FEET** of new pipe installed, complete and in place.

The unit price bid for this item shall be full compensation for furnishing and installing SDR-26 PVC service lateral lines located on private property. This cost shall include the locating of, and connection to, the existing service or new lateral with approved fittings and/or accessories and the abandonment or removal of the existing lateral. Also included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, hand digging, root pruning, replacement of brick, faux stone and faux brick, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on site properly contained

temporary storage and drying of trench soils is also included. In areas where new private service laterals are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal and in-kind replacement of fences, decks, vegetation, sidewalk, driveway and driveway apron, in-kind, are also included items. All restoration and related landscaping shall be incorporated in this item.

Additionally,, the joint-to-joint removal, proper disposal and replacement in-kind of concrete, brick or block walkways, patios or other structures are included in the cost of this item.

A licensed plumbing contractor shall perform all plumbing work.

No payment request shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Item 9: Main Line Cleanout:

Payment for this item will be based on the number of **EACH** new main line cleanout that is installed. Unit Cost for cleanout will result in a decrease of two linear feet of main.

The unit price bid for this item shall be full compensation for furnishing and installing the Norfolk standard main line cleanout, complete and in place. This cost shall include connection to the end of the main line sewer with approved fittings and/or accessories, frame and lid. Saw cutting of pavement and concrete, the removal of the existing main line cleanout is included in this cost. Also included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is also included. In areas where new main line cleanouts are placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All right of way restoration and related landscaping shall be incorporated in this item.

No payment request shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Item 10: Property Line Cleanout:

Payment for this item will be based on the number of **EACH** new property line cleanout that is installed.

The unit price bid for this item shall be full compensation for furnishing and installing the Norfolk standard property line cleanout, complete and in place. This cost shall include

connection to the service lateral with approved fittings and/or accessories, riser pipe, frame and lid. The removal of existing property line cleanouts are included in this cost if the property line cleanout being removed is within a five foot radius of the newly installed property line cleanout. Also included in the cost will be stakeout, furnishing of a written cut sheet, dewatering, erosion and sediment control, tree protection, root pruning, traffic control, excavation, hand digging, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching backfilling and compaction. Additionally, the on site properly contained temporary storage and drying of trench soils is also included. In areas where a new property line cleanout is placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All in-kind replacement of fences, decks and vegetation, all restoration and related landscaping shall be incorporated in this item.

Additionally, the joint-to-joint removal, proper disposal and replacement in-kind of concrete, brick or block walkways, patios or other structures are included in the cost of this item.

Item 11: Private Property Cleanout:

Payment for this item will be based on the number of **EACH** new private property cleanout that is installed.

The unit price bid for this item shall be full compensation for furnishing and installing the private property cleanout, complete and in place. These private property cleanouts will be placed at the house, at bends or at any change in direction or as directed by the Plumbing Inspector, in conjunction with the replacement of service laterals on private property. This cost shall include connection to the service lateral with approved fittings and/or accessories, frame and lid. The removal of existing private property cleanouts are included in this cost if the private property cleanout being removed is within a five foot radius of the newly installed private property cleanout.

Also included in the cost will be dewatering, erosion and sediment control, tree protection, root pruning, traffic control, excavation, hand digging, sheeting and/or shoring in accordance with OSHA regulations, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching backfilling and compaction. Additionally, the on site properly contained temporary storage and drying of trench soils is also included. In areas where new private property cleanout is placed in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting, removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. In-kind replacement of fences, decks and vegetation, all restoration and related landscaping shall be incorporated in this item.

Additionally, the joint-to-joint removal, proper disposal and replacement in-kind of concrete, brick or block walkways, patios or other structures are included in the cost of this item.

A licensed plumbing contractor shall perform all plumbing work.

No payment request shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Items 12: Plumbing Permit Allowance:

Payment for this item will be based on the number of **EACH** plumbing permit obtained. The amount of **\$46.92** is the established price. The cost of the permit is \$40.80 plus 15% for overhead and profit.

This pay item shall be full reimbursement for all obtained plumbing permits for the replacement of water or sewer service lines on private property. The Contractor shall be reimbursed for the actual number of permits obtained as evidenced by the permits submitted to and approved by the City's inspector. Permits shall be submitted with monthly invoices.

Item 13: Manhole Abandonment:

Payment for this item will be based on the number of **EACH** manhole that is abandoned.

The manhole abandonment pay item shall include all costs of the removal of the frame, dust cover and lid and the top 3 feet (minimum) of the manhole. Also included is the plugging of the manhole openings and filling the remainder of the manhole with flowable fill, compaction and complete restoration of the area to its' original condition. This pay item includes delivery of the manhole dust cover and lid to the City's inspector on a daily basis.

Also included in the cost will be dewatering, erosion and sediment control, tree protection, traffic control, excavation, sheeting and/or shoring in accordance with OSHA regulations, pavement removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures, placement and maintenance of daily temporary pavement patching, backfilling and compaction. Additionally, the on-site properly contained temporary storage and drying of trench soils is also included. In areas where existing manholes are abandoned in soil, a minimum of 4" of clean pliable topsoil (submittal required) and vegetation that matches original vegetation in size and species are included. Saw cutting of pavement and concrete, the removal, proper disposal and complete joint-to-joint replacement of: granite curb, valley gutter and handicap ramps, in-kind, are also included items. All right of way restoration and related landscaping shall be incorporated in this item.

Item 14: Flowable Fill:

Payment for this item is based on the **CUBIC YARDS** of flowable fill used as determined by delivery tickets received at the job site on a daily basis and as calculated. This pay item shall include costs for plugging sewer pipe (s), furnishing and placing flowable fill material

(EZ Flow # 40, GRT-11, or approved equal) in pipes to be abandoned in the manner described in the specifications, shown on the Construction Drawings or as directed by the City's inspector. Included in the price is excavation, backfilling, pavement removal and proper disposal, temporary and permanent pavement replacement, concrete and/or granite curb / curb and gutter, valley gutter, handicap ramps, sidewalk, driveway, and driveway apron replacement in-kind, area restoration and any other cost not included in any other pay item.

Item 15: Pavement Demolition:

Payment for this item shall be for each **SQUARE YARD-INCH** of asphalt concrete pavement or concrete pavement demolished. Pavement shall be demolished/milled as shown on the Contract Drawings, described in the Specifications, or as directed by the City's inspector. Pavement milling is included in this pay item.

The price shall be full compensation for the demolition/milling operation, saw cutting, removal and proper disposal of existing pavement, and for all materials, tools, equipment, and incidentals required to complete the work in its entirety. All demolished/milled material becomes the property of the contractor.

Item 16: Aggregate Base:

Payment for this item will be based upon measurements of aggregate base compacted in place. Quantities shall be determined by the following calculation: Length of trench multiplied by width of trench multiplied by depth of trench. (L x W x D)

Delivery tickets shall be given to the City's inspector on a daily basis to indicate the source of the material. The costs shall include the furnishing and placement of aggregate base material (VDOT No. 21A), or as directed by the City's inspector, in conformance with lines, grades and thickness shown on the Contract Drawings. Included shall be the cost of sub-grade preparation including excavation, grading and sub-grade compaction as specified 21A Aggregate will be measured and paid for by the **CUBIC YARD**. The City's inspector shall approve in advance 21A Aggregate hauled to the job site for replacement unstable areas of the roadway outside of pipe trenches during the road rebuilding process.

A delivery ticket shall accompany each load of 21A material. Each ticket will be serially numbered, list the company supplying the fill material, truck number of trucks delivering material, date, size of load, and project where delivered. In the event a material delivery ticket and delivery do not correspond, the City's inspector may refuse the delivery of payment until such conditions are corrected to the satisfaction of the City's inspector.

The Contractor shall designate the source of material and provide appropriate data as part of the submittal process.

Item 17: Asphalt Surface Course, SM-9.5:

Payment for this item shall be for each **TON** that is placed as specified, based upon the DAILY presentation of delivery tickets to the City's inspector. **Delivery tickets must be**

given to the City's inspector on a daily basis and will NOT be accepted with monthly invoices. Included in the costs shall be the furnishing and placement of the asphalt surface course SM-9.5 material in conformance to lines, grades and thickness shown on the Contract Drawings, as directed by the City's inspector, or as described in the specifications. Tack coat is included in the cost of this item.

Item 18: Driveway Apron:

Payment for this item will be based on the number of **EACH** driveway apron installed.

Included in the unit cost of driveway aprons are all costs of providing and the accurate placement of concrete (in accordance with Public Works specifications), where directed by the City's inspector. **Without exception**, all driveway aprons will be replaced in-kind from joint-to-joint with at least one expansion joint in each section of replacement work. Also included are, stakeout, saw cutting of pavement and concrete, excavation, bedding, form work installation and removal, erosion and sediment control, traffic control, driveway permits, concrete removal and proper disposal, clearing, grubbing, grading, care and protection of existing utilities and structures. All right of way restoration including associated adjacent paving and related landscaping is also included.

Damages to existing driveway apron that was caused by the contractor and was not expected to be damaged by the construction work shall be replaced at the contractor's expense.

No payment shall be made for this item until all landscape restoration work is complete to the satisfaction of the City's inspector.

Item 19: Select Bedding, No. 57 Stone:

Payment for this item, when properly installed for water main, sewer force main or as directed by the City, will be based upon measurements of select bedding material compacted in place. Quantities shall be determined by the following calculation: Length of trench multiplied by width of trench multiplied by depth of trench. ($L \times W \times D$)

Delivery tickets shall be given to the City's inspector on a daily basis to indicate the source of the material. Select bedding, No. 57 stone, will be measured and paid for by the **CUBIC YARD**.

The Contractor shall designate the source of material and provide appropriate data as part of the submittal process. The City's inspector shall approve select bedding material hauled to the job site for use.

Payment will only be made for select bedding used during the installation of pipe work and will not be paid for when in the sole opinion of the City's inspector, proper dewatering methods have not been used. Select bedding required for the installation of manholes and hydrants and where otherwise shown on the drawings will not be measured for payment as such, its' costs shall be included in the unit prices bid for those items.

A delivery ticket shall accompany each load of select bedding material. Each ticket will be serially numbered, list the company supplying the fill material, truck number of trucks delivering material, date, size of load, and the project where delivered. In the event a material delivery ticket and delivery do not correspond, the City's inspector may refuse the delivery and / or payment until such conditions are corrected to the satisfaction of the City's inspector. Payment shall include the proper removal, replacement and disposal of unsuitable material.

Item 20: Select Backfill:

Payment for this item will be based upon measurements of select backfill material compacted in place. Quantities shall be determined by the following calculation: Length of trench multiplied by width of trench multiplied by depth of trench. (L x W x D)

Delivery tickets shall be given to the City's inspector on a daily basis to indicate the source of the material. Select backfill will be measured and paid for by the **CUBIC YARD**. This item includes placement and compaction.

The City's inspector shall approve select backfill such as borrow sand or other common granular fill hauled to the job site for use.

A delivery ticket shall accompany each load of select backfill material. Each ticket will be serially numbered, list the company supplying the fill material, truck number of trucks delivering material, date, size of load, and the project where delivered. In the event a material delivery ticket and delivery do not correspond, the City's inspector may refuse the delivery and / or payment until such conditions are corrected to the satisfaction of the City's inspector. Payment shall include the proper removal, replacement and disposal of unsuitable material.

The Contractor shall designate the source of material and provide appropriate data as part of the submittal process. In the event borrow sand is stored at the project site, it shall be kept at a completely separate location from native soils which are also stored at the construction site.

-REMAINDER OF THIS PAGE LEFT INTENTIONALLY BLANK-

- THIS PAGE LEFT INTENTIONALLY BLANK-

APPENDIX E

Norfolk Details

(SEE CONTRACT DRAWINGS FOR REFERENCED DETAILS)

**LATEST CITY OF NORFOLK, DEPARTMENT OF UTILITIES DETAILS MAY ALSO BE VIEWED
AND DOWNLOADED AT: <http://www.norfolk.gov/index.aspx?nid=568>**

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



APPENDIX F

Soil Borings

The following information is provided from GET Solutions, Inc in a report dated October 26, 2015

- I. BORING LOCATION PLAN
- II. SOIL CLASSIFICATION SYSTEM
- III. SUMMARY OF LABORATORY RESULTS
- IV. BORING LOGS
- V. SOIL PROFILE
- VI. CBR TEST RESULTS
- VII. CONSOLIDATION RESULTS

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



APPENDICES

- I. BORING LOCATION PLAN
- II. SOIL CLASSIFICATION SYSTEM
- III. SUMMARY OF LABORATORY RESULTS
- IV. BORING LOGS
- V. SOIL PROFILE
- VI. CBR TEST RESULTS
- VII. CONSOLIDATION RESULTS

APPENDIX I

BORING LOCATION PLAN



Tidewater Drive and Naval Base Road

Boring Location Plan

PROJECT: PS 87 Force Main
PROJECT LOCATION: Norfolk, Virginia
PROJECT NO: VB15-156G
CLIENT: Hazen and Sawyer
DATE: 9/6/2015
PLOT BY: E.Setnicky



APPENDIX II

SOIL CLASSIFICATION SYSTEM

CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

Standard Penetration Test (SPT), N-value

Standard Penetration Tests (SPT) were performed in the field in general accordance with ASTM D 1586. The soil samples were obtained with a standard 1.4" I.D., 2" O.D., 30" long split-spoon sampler. The sampler was driven with blows of a 140 lb. hammer falling 30 inches. The number of blows required to drive the sampler each 6-inch increment (4 increments for each soil sample) of penetration was recorded and is shown on the boring logs. The sum of the second and third penetration increments is termed the SPT N-value.

NON COHESIVE SOILS

(SILT, SAND, GRAVEL and Combinations)

Relative Density

Very Loose	4 blows/ft. or less
Loose	5 to 10 blows/ft.
Medium Dense	11 to 30 blows/ft.
Dense	31 to 50 blows/ft.
Very Dense	51 blows/ft. or more

Particle Size Identification

Boulders	8 inch diameter or more
Cobbles	3 to 8 inch diameter
Gravel	Coarse 1 to 3 inch diameter
	Medium 1/2 to 1 inch diameter
	Fine 1/4 to 1/2 inch diameter
Sand	Coarse 2.00 mm to 1/4 inch (diameter of pencil lead)
	Medium 0.42 to 2.00 mm (diameter of broom straw)
	Fine 0.074 to 0.42 mm (diameter of human hair)
Silt	0.002 to 0.074 mm (cannot see particles)

COHESIVE SOILS

(CLAY, SILT and Combinations)

Consistency

Very Soft	2 blows/ft. or less
Soft	3 to 4 blows/ft.
Medium Stiff	5 to 8 blows/ft.
Stiff	9 to 15 blows/ft.
Very Stiff	16 to 30 blows/ft.
Hard	31 blows/ft. or more

Relative Proportions

<u>Descriptive Term</u>	<u>Percent</u>
Trace	0-5
Few	5-10
Little	15-25
Some	30-45
Mostly	50-100

Strata Changes

In the column "Description" on the boring log, the horizontal lines represent approximate strata changes.

Groundwater Readings

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as tidal influences and man-made influences, such as existing swales, drainage ponds, underdrains and areas of covered soil (paved parking lots, side walks, etc.).

CLASSIFICATION SYMBOLS (ASTM D 2487 and D 2488)

Coarse Grained Soils

More than 50% retained on No. 200 sieve

GW - Well-graded Gravel
GP - Poorly graded Gravel
GW-GM - Well-graded Gravel w/Silt
GW-GC - Well-graded Gravel w/Clay
GP-GM - Poorly graded Gravel w/Silt
GP-GC - Poorly graded Gravel w/Clay
GM - Silty Gravel
GC - Clayey Gravel
GC-GM - Silty, Clayey Gravel
SW - Well-graded Sand
SP - Poorly graded Sand
SW-SM - Well-graded Sand w/Silt
SW-SC - Well-graded Sand w/Clay
SP-SM - Poorly graded Sand w/Silt
SP-SC - Poorly graded Sand w/Clay
SM - Silty Sand
SC - Clayey Sand
SC-SM - Silty, Clayey Sand

Fine-Grained Soils

50% or more passes the No. 200 sieve

CL - Lean Clay
CL-ML - Silty Clay
ML - Silt
OL - Organic Clay/Silt
 Liquid Limit 50% or greater
CH - Fat Clay
MH - Elastic Silt
OH - Organic Clay/Silt

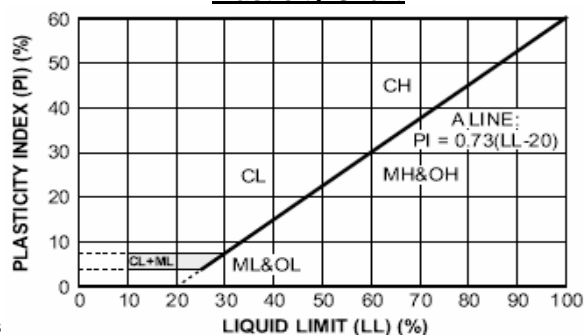
Highly Organic Soils

PT - Peat

Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent	GW, GP, SW, SP
More than 12 percent	GM, GC, SM, SC
5 to 12 percent	Borderline cases requiring dual symbols

Plasticity Chart



APPENDIX III

SUMMARY OF LABORATORY RESULTS



GET Solutions, Inc.

SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

CLIENT Hazen and Sawyer

PROJECT NAME Pump Station 87 Force Main

PROJECT NUMBER VB15-156G

PROJECT LOCATION Norfolk, Virginia

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
B-2	29.0	32	14	18	0.075	35	SC	40.6			
B-3	29.0	50	42	8	0.075	62	MH	50.4			
B-4	14.0	NP	NP	NP	4.75	8	SP-SM	26.0			
B-4	19.0	33	22	11	0.075	37	SC	34.1			
B-5	9.0	NP	NP	NP	4.75	7	SP-SM	26.1			
B-5	11.0	NP	NP	NP	4.75	9	SP-SM	24.7			
B-6	7.0	NP	NP	NP	4.75	4	SP	20.2			

APPENDIX IV

BORING LOGS



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-2

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ▽: **4** AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/15/2015**
DATE COMPLETED: **10/15/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS				
									Plastic Limit	X	Liquid Limit	Water Content	Penetration
	0.4	5-in. Topsoil		1			2-6-10-9 (16)						
				2			6-5-4-4 (9)						
				3			2-2-1-2 (3)						
		Tan, moist to wet, Poorly Graded fine to medium SAND (SP), very loose to medium dense		4			2-2-3-5 (5)						
				5			3-3-4-3 (7)						
				6			2-2-2-2 (4)						
	12.5												
		Mottled Orange-Tan, wet, Silty fine SAND (SM), very loose		7			1-1-1-1 (2)						
	16.5												
		Dark Gray, wet, Clayey fine SAND (SC), very loose		8			0-0-0-0 (0)						
	21.5												
		Dark Gray, wet, Clayey fine SAND (SC), trace wood fragments, very loose		9			1-1-1-1 (2)						
	26.5												
		Dark Gray, wet, Clayey fine SAND (SC), very loose		10			0-0-1-2 (1)	35	X	X			
	31.5												
		Dark Gray, wet, Silty fine SAND (SM), very loose to loose		11			1-1-2-2 (3)						
	35												

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452


Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-2

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ▽: **4** AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/15/2015**
DATE COMPLETED: **10/15/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	%<#200	TEST RESULTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
									Plastic Limit	x	—	x	Liquid Limit	Water Content -	●	Penetration -																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
									10	20	30	40	50	60	70																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-3

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ▽: **3** AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/15/2015**
DATE COMPLETED: **10/15/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS				
									Plastic Limit	X	Liquid Limit	Water Content	Penetration
	0.6	7-in. Topsoil		1	X		2-5-5-5 (10)						
		Tan, moist to wet, Poorly Graded fine to medium SAND (SP), loose		2	X		3-3-4-4 (7)						
	4.0												
	5	Tan-Gray, wet, Poorly Graded fine to medium SAND (SP), loose		3	X		3-4-4-4 (8)						
	6.0												
	8.0	Gray, wet, Poorly Graded fine to medium SAND (SP), very loose		4	X		3-2-2-3 (4)						
	10	Tan, wet, Poorly Graded fine to medium SAND (SP), very loose		5	X		0-1-1-1 (2)						
	12.5												
	15	Dark Gray, wet, Silty fine SAND (SM), very loose		7	X		2-2-2-1 (4)						
	16.5												
	20	Dark Gray, wet, Clayey fine SAND (SC), very loose		8	X		0-0-0-0 (0)						
	25												
	26.5												
	30	Dark Gray, wet, Elastic Silt (MH), trace marine shell fragments, very loose		10	X		1-1-1-1 (2)	62					
	31.5												
	35	Dark Gray, wet, Clayey fine SAND (SC), very loose		11	X		1-1-1-1 (2)						

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452




Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-3

PROJECT NAME: Pump Station 87 Force Main
CLIENT: Hazen and Sawyer
PROJECT LOCATION: Norfolk, Virginia
BORING LOCATION: See boring location plan
DRILLING METHOD(S): Rotary wash "mud"
GROUNDWATER*: INITIAL (ft) ▽: 3 AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) Ⓢ: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: VB15-156G
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: E.Setnicky
DATE STARTED: 10/15/2015
DATE COMPLETED: 10/15/2015
DRILLER: GET Solutions, Inc.

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
									Plastic Limit	X	—	X	Liquid Limit	Water Content -	●	Penetration -		10	20	30	40	50	60	70																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	40	Dark Gray, wet, Clayey fine SAND (SC), very loose (layer continued from previous page)		12	X		1-1-2-2 (3)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

Sample Type(s):

Notes:

SS - Split Spoon



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-4

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ∇ : **4** AFTER _____ HOURS (ft) ∇ : _____ CAVE-IN (ft) \odot : _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/14/2015**
DATE COMPLETED: **10/14/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS			
									Plastic Limit	X	Liquid Limit	Water Content
0.3		4-in. Topsoil		1			1-2-12-8 (14)					
2.0		Brown, moist, Lean CLAY (CL), trace asphalt fragments, stiff, FILL		2			7-11-7-6 (18)					
4.0		Brown, moist, Clayey fine to medium SAND (SC), medium dense		3			5-7-6-8 (13)					
5		Tan, wet, Poorly Graded fine to medium SAND (SP), very loose to medium dense		4			5-4-7-7 (11)					
10.0		Tan, wet, Silty fine to medium SAND (SM), very loose		5			2-2-2-1 (4)					
12.5		Dark Gray, wet, Poorly Graded fine to medium SAND with Silt (SP-SM), very loose		6			2-1-1-1 (2)					
15		Dark Gray, wet, Clayey fine SAND (SC), very loose		7			1-1-2-2 (3)	8 X				
16.5		Dark Gray, wet, Clayey fine SAND (SC), very loose		8			0-0-0-0 (0)	37				
20		Dark Gray, wet, Fat CLAY (CH), very soft		9			1-1-1-1 (2)					
25		Dark Gray, wet, Fat CLAY (CH), very soft		10			1-1-1-1 (2)					
26.5		Dark Gray, wet, Clayey fine SAND (SC), trace marine shell fragments, very loose		11			1-1-1-1 (2)					
30												
31.5												
35												

Sample Type(s):

Notes:

SS - Split Spoon

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID B-4

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ▽: **4** AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/14/2015**
DATE COMPLETED: **10/14/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS									
									Plastic Limit	X	—	X	Liquid Limit	Water Content	●	Penetration	/	/
									10	20	30	40	50	60	70			
		Dark Gray, wet, Clayey fine SAND (SC), trace marine shell fragments, very loose (layer continued from previous page)		12	X		1-1-1-2 (2)											
40	41.5																	
		Dark Gray, wet, Clayey fine SAND (SC), very loose		13	X		1-1-1-1 (2)											
45																		
				14	X		1-1-1-2 (2)											
50	50.0	Boring terminated at 50 feet below existing grade.																

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-5

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ∇ : **4** AFTER _____ HOURS (ft) ∇ : _____ CAVE-IN (ft) \odot : _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/14/2015**
DATE COMPLETED: **10/14/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS			
									Plastic Limit	X	X	Liquid Limit
									Water Content	-	●	
									Penetration	-		
									10	20	30	40 50 60 70
	0.3	4-in. Topsoil		1			2-2-1-2 (3)					
	2.0	Dark Brown, moist, Clayey fine to medium SAND (SC), very loose		2			3-3-3-5 (6)					
	4.0	Gray, moist, Poorly Graded fine to medium SAND (SP), loose		3			5-8-7-6 (15)					
	5	Tan, wet, Poorly Graded fine to medium SAND (SP), loose to medium dense		4			5-3-3-4 (6)					
	8.0			5			2-1-2-1 (3)	7	X			
	10	Gray, wet, Poorly Graded fine to medium SAND with Silt(SP-SM), very loose		6			0-0-2-1 (2)	9	X			
	12.5			7			2-2-1-1 (3)					
	15	Dark Gray, wet, Silty fine SAND (SM), very loose		8			0-0-0-0 (0)					
	16.5			9			0-0-0-1 (0)					
	20	Dark Gray, wet, Clayey fine SAND (SC), very loose		10			0-0-0-2 (0)					
	25			11			1-1-1-1 (2)					
	26.5											
	30	Dark Gray, wet, Clayey fine SAND (SC), trace marine shell fragments, very loose										
	35											

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-5

PROJECT NAME: Pump Station 87 Force Main
CLIENT: Hazen and Sawyer
PROJECT LOCATION: Norfolk, Virginia
BORING LOCATION: See boring location plan
DRILLING METHOD(S): Rotary wash "mud"
GROUNDWATER*: INITIAL (ft) ▽: 4 AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) Ⓢ: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: VB15-156G
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: E.Setnicky
DATE STARTED: 10/14/2015
DATE COMPLETED: 10/14/2015
DRILLER: GET Solutions, Inc.

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS									
									Plastic Limit	X	—	X	Liquid Limit	Water Content	●	Penetration	-	▨
									10	20	30	40	50	60	70			
	36.5																	
	40			12	X		1-1-1-1 (2)											
		Dark Gray, wet, Clayey fine SAND (SC), very loose																
	45			13	X		1-1-1-2 (2)											
	46.5																	
		Dark Gray, wet, Clayey fine SAND (SC), trace marine shell fragments, very loose																
	50			14	X		0-0-1-2 (1)											
	50.0																	
		Boring terminated at 50 feet below existing grade.																

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452


























Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-6

PROJECT NAME: **Pump Station 87 Force Main**
CLIENT: **Hazen and Sawyer**
PROJECT LOCATION: **Norfolk, Virginia**
BORING LOCATION: **See boring location plan**
DRILLING METHOD(S): **Rotary wash "mud"**
GROUNDWATER*: INITIAL (ft) ▽: **4** AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **VB15-156G**
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: **E.Setnicky**
DATE STARTED: **10/15/2015**
DATE COMPLETED: **10/15/2015**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% #200	TEST RESULTS						
									Plastic Limit	X	—	X	Liquid Limit		
									Water Content	-	●				
									Penetration	-					
									10	20	30	40	50	60	70
	0.4	5-in. Topsoil		1	X		2-4-5-6 (9)								
	2.0	Dark Brown, moist, Clayey fine to medium SAND (SC), loose			X										
		Mottled Orange-Tan, moist, Poorly Graded fine to medium SAND (SP), medium dense		2	X		5-6-7-9 (13)								
	4.0				X										
	5			3	X		6-7-7-7 (14)								
		Tan, wet, Poorly Graded fine to medium SAND (SP), very loose to medium dense		4	X		4-3-3-4 (6)	4 X							
				5	X		2-1-2-1 (3)								
	10.0			6	X		1-1-1-1 (2)								
					X										
	15			7	X		1-1-2-1 (3)								
		16.5													
				8	X		1-1-1-1 (2)								
	20				X										
					X										
	25	Dark Gray, wet, Clayey fine SAND (SC), very loose		9	X		1-1-1-1 (2)								
					X										
				10	X		1-1-1-2 (2)								
	30				X										
	31.5				X										
		Dark Gray, wet, Clayey fine SAND (SC), trace marine shell fragments, very loose		11	X		1-1-1-1 (2)								

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.



RECORD OF SUBSURFACE EXPLORATION

Virginia Beach
204 Grayson Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

BORING ID
B-6

PROJECT NAME: Pump Station 87 Force Main
CLIENT: Hazen and Sawyer
PROJECT LOCATION: Norfolk, Virginia
BORING LOCATION: See boring location plan
DRILLING METHOD(S): Rotary wash "mud"
GROUNDWATER*: INITIAL (ft) ▽: 4 AFTER _____ HOURS (ft) ▼: _____ CAVE-IN (ft) ○: _____
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: VB15-156G
SURFACE ELEVATION (MSL) (ft): _____
LOGGED BY: E.Setnicky
DATE STARTED: 10/15/2015
DATE COMPLETED: 10/15/2015
DRILLER: GET Solutions, Inc.

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	Blow Counts (N-Values)	% <#200	TEST RESULTS									
									Plastic Limit	X	—	X	Liquid Limit	Water Content	●	Penetration	-	▨
									10	20	30	40	50	60	70			
	36.5																	
	40			12	X		1-1-2-1 (3)											
		Dark Gray, wet, Clayey fine SAND (SC), very loose																
	45			13	X		1-1-1-2 (2)											
	46.5																	
		Dark Gray, wet, Fat CLAY (CH), very soft																
	50			14	X		1-1-1-2 (2)											
	50.0	Boring terminated at 50 feet below existing grade.																

Sample Type(s):

SS - Split Spoon

Notes:

This information pertains only to this boring and should not be interpreted as being indicative of the site.

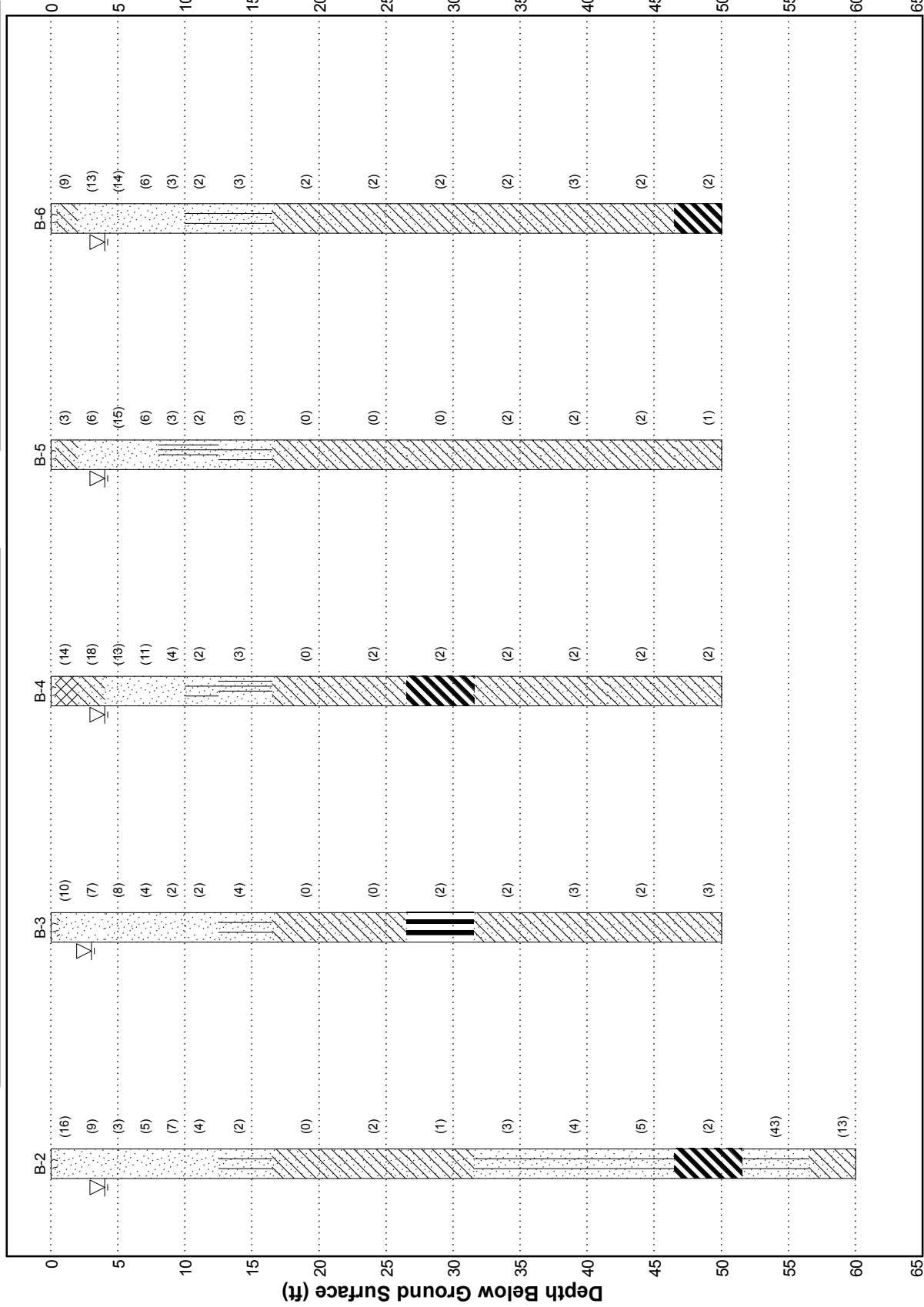
APPENDIX V

SOIL PROFILE



GENERALIZED SOIL PROFILE

PROJECT NAME: Pump Station 87 Force Main PROJECT NUMBER: VB15-156G
PROJECT LOCATION: Norfolk, Virginia CLIENT: Hazen and Sawyer

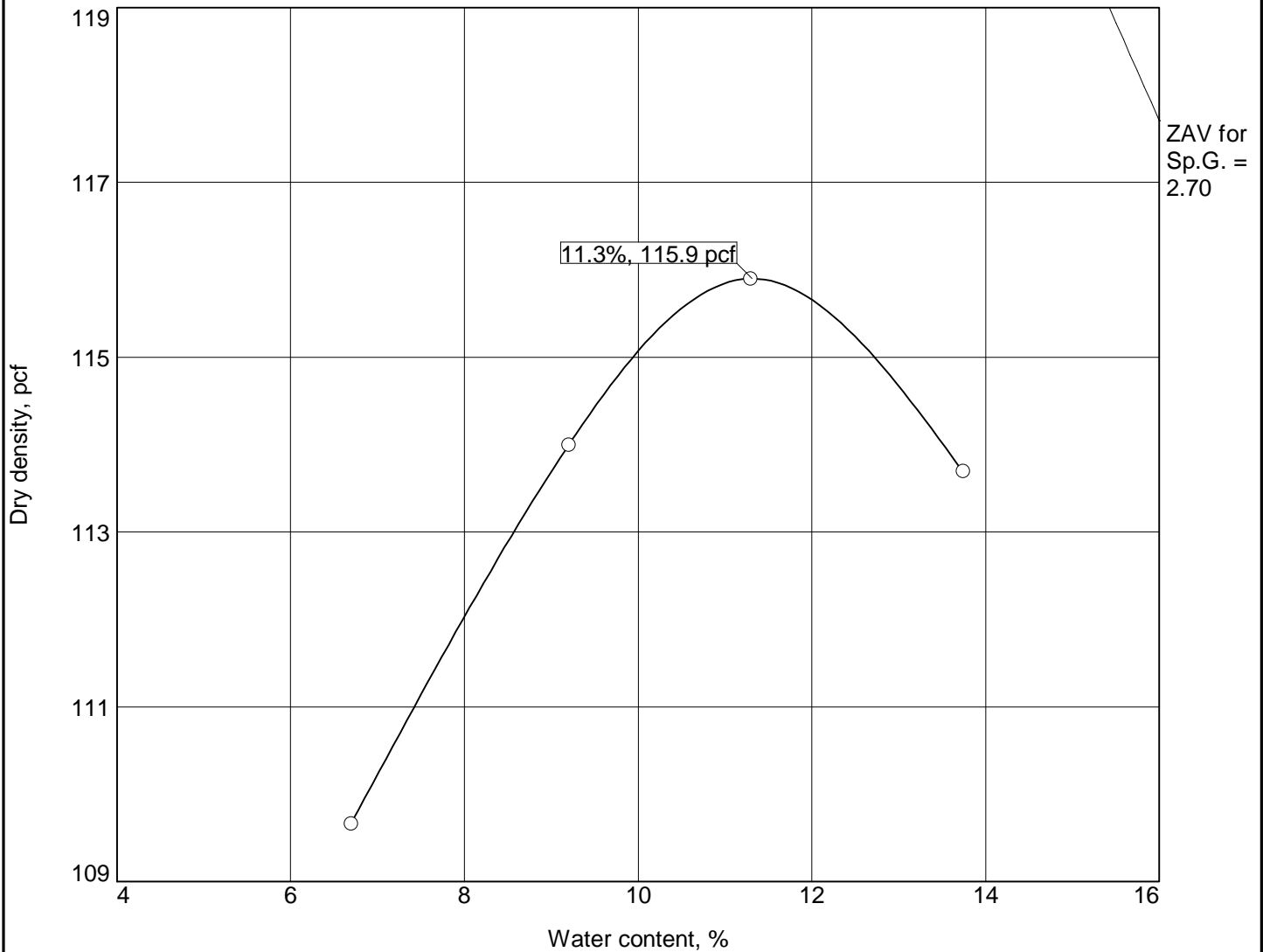


(Numerical Value) = Sample N-Value

APPENDIX VI

CBR TEST RESULTS

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



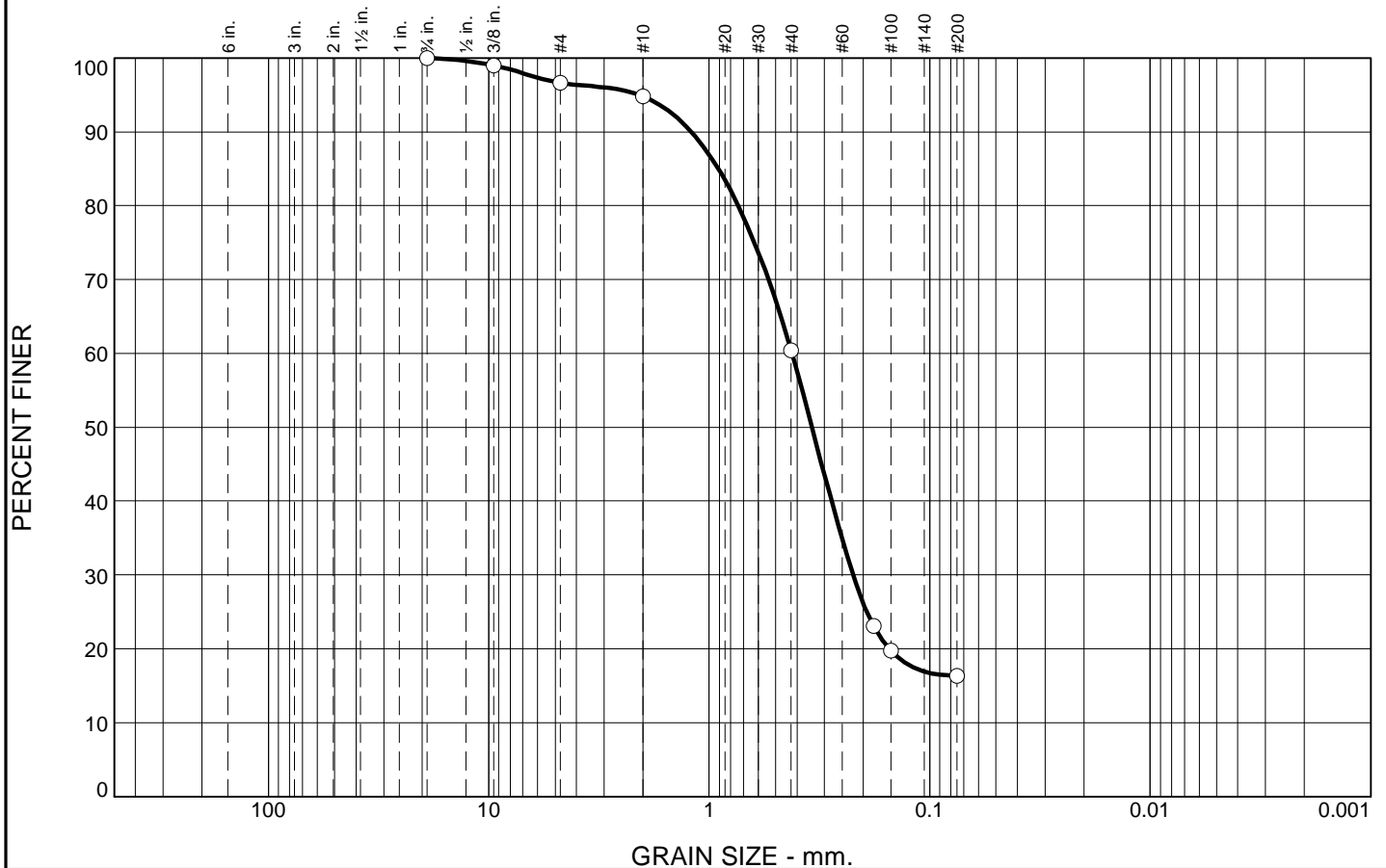
Test specification: VTM-1 Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1-2 ft.	SM	A-2-4(0)	9		NP	NP	3.3	16.3

TEST RESULTS		MATERIAL DESCRIPTION	
Maximum dry density = 115.9 pcf Optimum moisture = 11.3 %		Grayish-Brown, Silty SAND	
Project No. VB15-156G Client: Hazen and Sawyer Project: Pump Station 87 Force Main <input type="radio"/> Location: CBR-1 Sample Number: CBR-1		Remarks: Sample Obtained 10/14/15 CBR-1	
GET SOLUTIONS, INC.			

Figure 1

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.3	1.9	34.4	44.1	16.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	99.0		
#4	96.7		
#10	94.8		
#40	60.4		
#80	23.1		
#100	19.8		
#200	16.3		

* (no specification provided)

Material Description

Grayish-Brown, Silty SAND

Atterberg Limits

PL= NP

LL= NP

PI= NP

Coefficients

D₉₀= 1.2069

D₈₅= 0.9102

D₆₀= 0.4215

D₅₀= 0.3420

D₃₀= 0.2224

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Sample Obtained 10/14/15

CBR-1

Location: CBR-1

Sample Number: CBR-1

Depth: 1-2 ft.

Date: 10/14/15

**GET
SOLUTIONS, INC.**

Client: Hazen and Sawyer

Project: Pump Station 87 Force Main

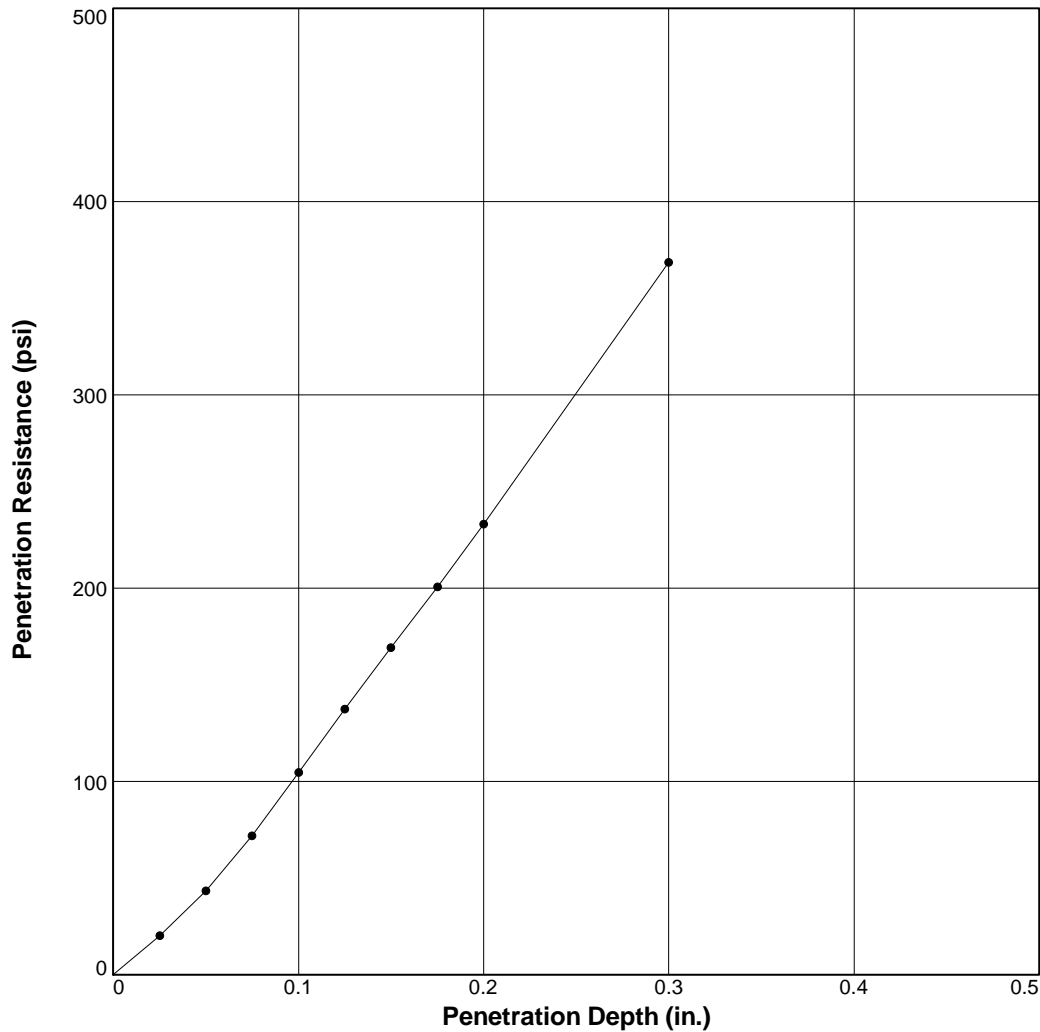
Project No: VB15-156G

Figure

1A

BEARING RATIO TEST REPORT

VTM-008 (2005)



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	116.8	100.8	11.0	116.8	100.7	12.7	10.5	15.5	0.000	10	0
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Grayish-Brown, Silty SAND							SM	115.9	11.3	NP	NP

Project No: VB15-156G

Project: Pump Station 87 Force Main

Location: CBR-1

Sample Number: CBR-1 **Depth:** 1-2 ft.

Date: 10/14/15

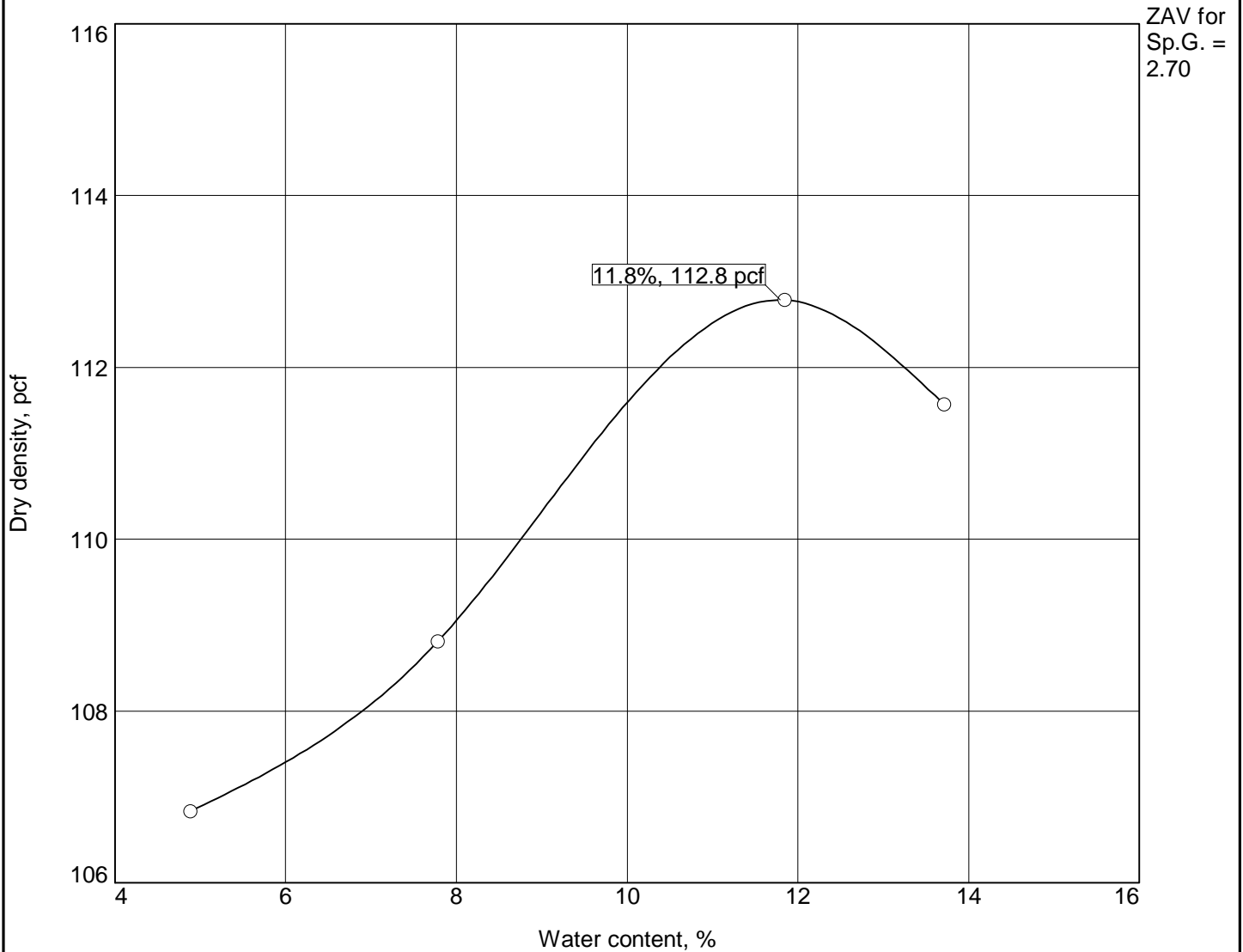
Test Description/Remarks:

CBR-1
Resiliency Factor = 3.0

BEARING RATIO TEST REPORT
GET SOLUTIONS, INC.

Figure 1B

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



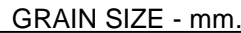
Test specification: VTM-1 Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1-2 ft.	SM	A-2-4(0)	10		NP	NP	4.8	15.0

TEST RESULTS		MATERIAL DESCRIPTION	
Maximum dry density = 112.8 pcf		Brown, Silty SAND	
Optimum moisture = 11.8 %			
Project No. VB15-156G Client: Hazen and Sawyer Project: Pump Station 87 Force Main ○ Location: CBR-2 Sample Number: CBR-2		Remarks: Sample Obtained 10/14/15 CBR-2	
GET SOLUTIONS, INC.			

Figure 2

PERCENT FINER

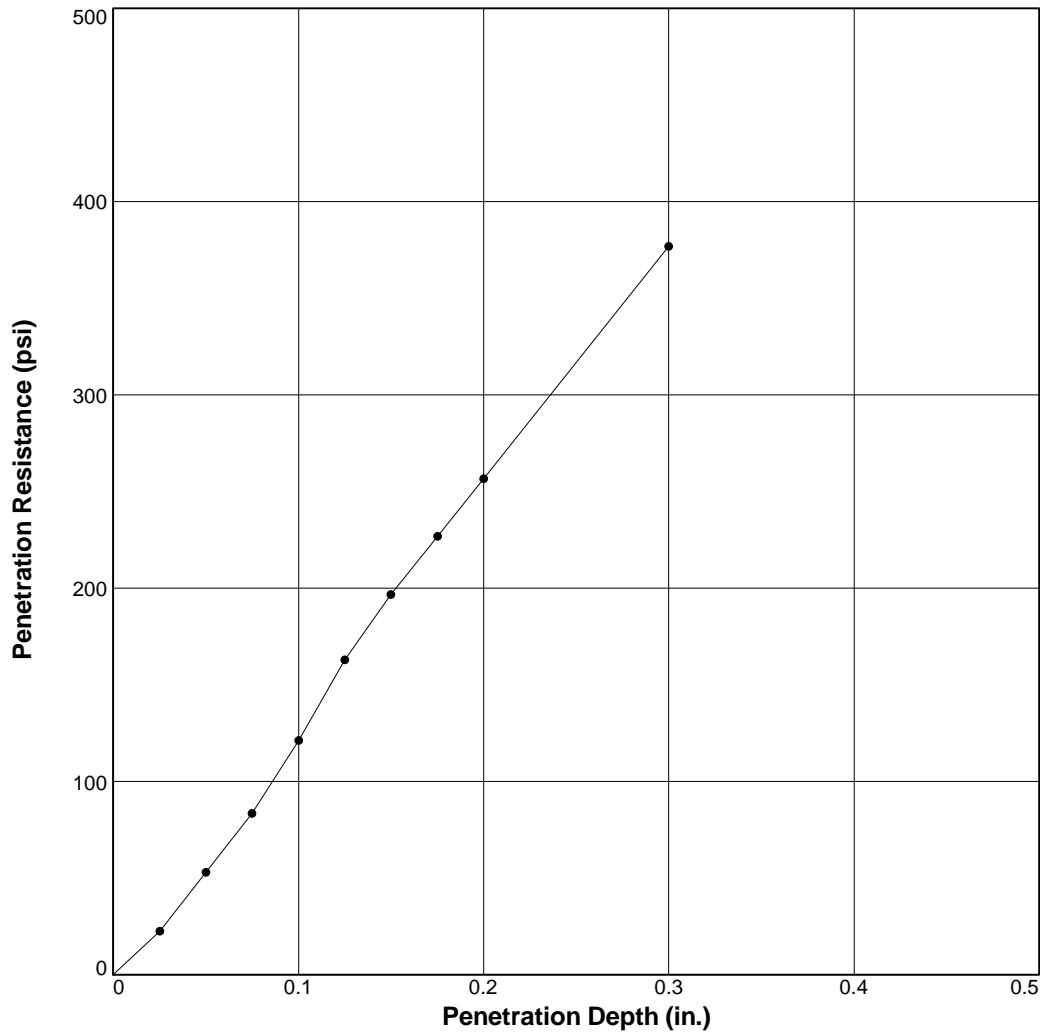


<u>Material Description</u>	
Brown, Silty SAND	
<u>Atterberg Limits</u>	
PL= NP	PI= NP
<u>Coefficients</u>	
D ₉₀ = 2.0750	D ₈₅ = 1.3686
D ₅₀ = 0.3807	D ₃₀ = 0.2366
D ₁₀ =	D ₆₀ = 0.4900
	D ₁₅ = 0.0755
	C _u =
	C _c =
<u>Classification</u>	
USCS=	AASHTO=
<u>Remarks</u>	
Sample Obtained 10/14/15	
CBR-2	

Figure 2A

BEARING RATIO TEST REPORT

VTM-008 (2005)



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)	
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.				
1 ○	113.0	100.2	11.3	113.0	100.1	13.5	12.1	17.1	0.000	10	0	
2 △												
3 □												
Material Description							USCS		Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown, Silty SAND												
									112.8	11.8	NP	NP

Project No: VB15-156G

Project: Pump Station 87 Force Main

Location: CBR-2

Sample Number: CBR-2 **Depth:** 1-2 ft.

Date: 10/14/15

Test Description/Remarks:

CBR-2
Resiliency Factor = 3.0

BEARING RATIO TEST REPORT
GET SOLUTIONS, INC.

Figure 2B

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX G
Tree Protection Notes

December 2010

Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



CITY OF NORFOLK - TREE PROTECTION NOTES

1. PROTECTED TREE:

With exception of those trees specifically shown to be removed, all existing trees on public and private property shall be actively preserved and protected by the Contractor, and any subcontractors, from damage to the crown area, trunk, root system, or rooting environment (soil system) during construction.

2. CRITICAL ROOT ZONE:

GENERAL: The critical root zone (CRZ) is defined as the surface area of the ground directly beneath the limits of the crown (branch) spread of a tree. The CRZ is also commonly referred to as the dripline. (see Tree Protection Fencing detail). It is within this zone that the majority of larger roots that provide support for the tree, and transport water and nutrients, exist. A relatively high percentage of absorptive roots also typically occur within the CRZ. In urban areas rooting depths within the CRZ rarely occur below 30 inches, with most roots found within the upper 18 inches of the soil profile. Paved street surfaces (curb face to curb face) are not included in the CRZ.

CONSTRUCTION PROCEDURES: No construction vehicles, equipment, materials, supplies, or temporary facilities (trailers, portable toilets) may be placed within the CRZ of protected trees, paved streets (curb to curb) excepted. The following types of items are restricted from the CRZ: Vehicles (construction or personal), construction equipment not specifically approved and incidental to the work, concrete washout, fuel or chemical storage, temporary stockpile of soil, piping and other construction materials and supplies. Parks & Forestry may grant exemptions for work within the CRZ where suitable tree protection measures are implemented, i.e. hand digging, installation of mulch construction mat, etc.

3. HAND DIG ZONE:

GENERAL: The Hand Dig Zone (HDZ) is the area of the root system that is likely to contain the majority of support and transport roots 2 inches and larger in diameter. Hand dig zones vary based on tree size and species characteristics, soil conditions, and other site factors that affect rooting patterns.

CONSTRUCTION PROCEDURES: The City Forester will determine the extent of all hand dig zones within the CRZ once the proposed location of

the sewer/water service lateral has been determined following a joint preconstruction field review with the Contractor, Engineer or Project Inspector, and City Forester. All roots 2 inches and larger in diameter (any dimension) encountered to a 30" depth in the HDZ, outside the actual space occupied by pipes or other elements being constructed, shall be preserved and protected from abrasions, cuts or other significant wounds. Excavation shall be tunneled beneath these roots. It is strongly recommended that an air spade powered by an air compressor (AIR-SPADE 150/90 manufactured by CEG, INC. Verona, PA, or approved equal) be utilized to expose protected roots without injury. Protected roots bridging any open excavation for more than 24 hours shall be loosely wrapped in wet burlap to prevent excessive dehydration of the exposed root surface. Roots less than 2 inches in diameter in any dimension may be cut, where necessary, with a sharp ax, sharpened flat spade or hand pruning saw at the edge of the excavation. Once excavation reaches 30 inches, and larger roots do not prohibit access, mechanical equipment may be used to deepen the excavation. In areas where roots are encountered, work shall be performed and scheduled to close excavations as quickly as possible over exposed roots.

4. PRECONSTRUCTION FORESTRY REVIEW - LAYOUT OF
SANITARY SEWER/WATER LATERALS AND OTHER UTILITY
EXCAVATION, AND EQUIPMENT CLEARANCE PRUNING
REVIEW:

- A. *SEWER/WATER LATERAL LAYOUT - GENERAL:* The location of existing/proposed sewer and water piping, private clean-outs, property line clean-outs, water meter boxes, and points of discharge from private/commercial dwellings shown on the construction plans are approximate based on current records and some preliminary field investigation.

LATERAL LAYOUT - CONSTRUCTION PROCEDURES: The Contractor shall be responsible for locating all existing and proposed sewer/water connections at the main, clean-out/meter, and within five feet of the residence or building serviced (where applicable). The Contractor shall also determine and field verify all service connections along all utility lines scheduled for replacement, including all point repairs.

For the purposes of identifying and resolving any conflicts with existing trees, once all existing and active service connections have been determined, and prior to beginning any utility improvements, the Contractor shall tour the job-site with the Engineer, Plumber (where applicable), and City Forester to determine the location/relocation of sewer and water taps, sewer clean-out and

water meter box locations, alignment of sewer and water piping on public and private property, water valves, point repairs, insertion and receiving pit locations, dewatering pit locations, utility location pits, and pruning requirements for equipment clearance. Where in the sole opinion of the City Forester, excavation with a trencher, back-hoe, or other mechanical equipment for the installation of service piping or sewer clean-outs/water meter boxes would likely result in extensive root damage to existing trees, hand digging will be required. Where feasible, new service piping will be placed in a location that will least impact tree roots and facilitate utility installation. There shall be no utility main replacement work, lateral replacements, or utility tap work performed at any location where utility tap locations and lateral alignments have not been jointly reviewed by the Engineer, Contractor, Plumber (where applicable), and City Forester, and approved by the Engineer.

- B. *TREE PRUNING – GENERAL*: Existing tree limbs indicated to remain might obstruct construction operations.

TREE PRUNING – CONSTRUCTION PROCEDURES: All clearance pruning requirements not specifically indicated on the plans shall require the issuance of a separate Tree Work Permit. Equipment clearance and pruning requirements, including any special conditions, will be determined during a required preconstruction review between the Contractor, Equipment Operator, Project Engineer, and City Forester.

5. ROOT PRUNE:

GENERAL: The purpose for root pruning of existing trees adjacent to construction is to provide a cleaner, more controlled cut than is normally accomplished by conventional excavating machines.

CONSTRUCTION PROCEDURES: Root pruning, where indicated, within the critical root zone shall be accomplished by hand with sharpened spades or hand pruners, or with approved root-pruning machinery. Approved root-pruning machinery includes a rock saw or a vibratory plow (cable puller) with a 30" (min.) blade. In certain applications a sharpened trencher (Ditch-witch) may be permitted. Blades must be sharpened prior to each project start. The location of the cut is at the edge of the proposed excavation, on the side closest to the protected tree(s). Large roots encountered that cannot be severed with root pruning machinery are to be hand cut with a sharpened pruning saw (see detail this sheet). Prior to root pruning, the Contractor shall layout in the field the alignment of the cut for

approval by a Parks & Forestry Inspector. All root prune areas require an open trench forestry inspection prior to backfilling.

6. CONCRETE DEMOLITION AND REMOVAL WITHIN THE CRZ:

All concrete and asphalt removal completed within the CRZ must be completed by a method that prevents any severance or damage to roots located directly beneath or adjacent to the hardscape surface. Equipment working from a hard surface (paved street, sidewalk, driveway, etc.) may be utilized to pick up concrete and asphalt sections.

7. EXCAVATION PROCEDURES WITHIN THE CRZ

GENERAL: Protection of trees adjacent to excavation involves three areas of operations: Placement of excavated materials (dirt, pipe, etc.) root pruning/hand digging, and protection of trunk and limbs.

CONSTRUCTION PROCEDURES: Excavated fill dirt must be placed outside of the critical root zone of adjacent trees where there is sufficient room. If no room exists due to the location of adjacent structures or trees and the fill cannot be placed on a hardscape surface, the fill must be placed on plywood or other suitable decking to contain the fill and minimize point source soil compaction within the critical root zone (see detail this sheet). Additionally, where it is necessary to operate equipment within the critical root zone (paved streets excepted), a six-inch layer of wood chips shall be placed and maintained within the construction access-way to minimize soil compaction and root damaged caused by the equipment. Following construction the wood chips must be removed with hand tools and the site restored to preexisting conditions.

Hand digging or root pruning will be required where noted on the drawings or otherwise indicated during the preconstruction forestry review. (See Hand Dig Zone, and Root Prune for specific procedures).

Extreme care must be taken to avoid injury (scarring, breakage, etc.) to the trunk and crown area (branches) of protected trees. Wherever possible, construction equipment shall be maneuvered as needed to avoid unnecessary pruning or contact with protected trees. Where there is a high probability of equipment contact with the trunk of protected trees, wooden armoring may be required to be installed on protected trees, as specified by the City Forester, prior to conducting any construction adjacent to protected trees.

8. OPEN TRENCH FORESTRY INSPECTIONS:

All excavation within the hand dig zone as noted or otherwise designated by the City Forester require inspection by a Norfolk Parks & Forestry inspector prior to backfilling. The purpose of the inspection is to verify that structural roots 2" and larger in diameter have been protected, and to assess the tree for structural impacts (wind-throw potential). The City Forester may also require inspection of certain areas approved for excavation with mechanical equipment. It is not necessary for all piping to be installed prior to this inspection, provided that excavation within the area designated for hand digging has been dug to the proposed depth of pipe, or a minimum 30-inch depth. Should the Contractor backfill any of these locations prior to inspection by a Parks & Forestry inspector, the City Forester may require the Contractor to remove the backfill material within the hand-dig zone (or mechanically excavated area requiring forestry inspection), at the Contractor's expense, as necessary to complete the inspection. Where in the City Forester's opinion, no immediate hazard is apparent, the Contractor shall be given a maximum period of 72 hours to remove the backfill.

Open trench forestry inspections will not be completed on weekends or City-observed holidays. The Contractor must provide the Bureau of Parks & Forestry with a minimum 24-hour working day notice for all open trench forestry inspections. Open trench forestry inspections will be conducted between the hours of 9:00 a.m. – 3:00 p.m., Monday – Friday, and may be scheduled by calling the Bureau of Parks & Forestry at 823-4023 between the hours of 7:00 a.m. – 4:00 p.m., Monday – Friday.

9. TREE PRUNING:

A. Preconstruction Pruning:

PRECONSTRUCTION PRUNING - GENERAL: The purpose of clearance pruning is to provide construction equipment access beneath and adjacent to the crown (branch area) of protected trees to prevent unnecessary breakage or scarring of limbs.

Clearance pruning requirements will be determined during the Preconstruction Forestry Review (see notes, this sheet).

PRECONSTRUCTION PRUNING - CONSTRUCTION

PROCEDURES: All authorized pruning work shall be completed by an approved, licensed, insured Arborist holding current Arborist Certification with the International Society of Arboriculture. The Contractor shall not prune or cause to have pruned any tree located on City property without first securing a separate Tree Work

Permit from the Bureau of Parks & Forestry. The Contractor must seek and receive permission from the property owner prior to pruning any tree on private property. All pruning work shall be completed at the Contractor's expense. The City of Norfolk may elect, at its option, to complete any equipment clearance pruning on public street rights of way.

B Selective Pruning Of Construction-Damaged Trees:

GENERAL: The purpose of selective pruning is to remove broken or otherwise wounded branches from protected trees that are damaged through construction related activities. The City Forester will direct selective pruning and therapeutic requirements needed to restore tree health or structure. All work must be completed by a professional, ISA Certified Arborist, at the Contractor's expense.

CONSTRUCTION PROCEDURES: The City Forester will assess all construction-damaged trees and order the appropriate selective pruning requirements. Damages may also be assessed to the Contractor for the value loss of any protected tree damaged through careless or negligent equipment operations, or contractual violations including nonconformance to contract tree protection requirements detailed in the project specifications or drawings, or otherwise directed. Trees that are damaged beyond reasonable aesthetic, structural or physiological recovery will be appraised to determine the value of the tree, and the Contractor will be held liable for the value loss and any associated removal or site restoration costs.

10. DAMAGE TO PROTECTED TREES:

The Contractor shall be responsible for any damage to protected trees resulting from negligent or careless operations, including but not limited to limb breakage, trunk wounds or abrasions, excessive root damage, soil compaction, etc. Upon such occurrence the City Forester will evaluate the extent of damage and determine the appropriate remedial action to be taken at the Contractor's expense, including but not limited to corrective pruning, bark tracing, cabling and bracing, hazard evaluation, removal and soil/site restoration. If in the sole opinion of the City Forester, the amount of damage to any City-owned tree has resulted in a significant loss of functional, aesthetic, architectural, or economic value, the Contractor will also be required to reimburse the City for the full loss in tree value.

Value loss will be determined through an appraisal completed by the City Forester following established procedures published in the "Guide for Plant Appraisal", authored by the Council of Tree and Landscape

Appraisers. In the event of any dispute between the Contractor and City over the value loss of any tree so damaged or destroyed, the City Forester will take into consideration an independent tree appraisal completed by an experienced consulting Arborist holding current membership in good standing with the American Society of Consulting Arborists (ASCA), in establishing the actual value loss. All costs associated with an independent appraisal shall be the Contractor's responsibility.

11. TREE PROTECTION SIGNAGE:

GENERAL: The purpose of tree protection signage is to alert Contractors and construction trades as to the importance placed upon tree protection within the project area. Two types of tree protection signs are required, Area Signs, and a Concrete Washout Signs.

CONSTRUCTION PROCEDURES: Area Signs shall be 11"x 15" heavy duty cardboard, blaze orange colored background with black block letters, 1" high, with the inscription "Keep Out – Tree Protection Area". The area signs shall be attached to the tree protection fence every 50' on center.

Concrete Wash-Out Signs shall be large enough to be clearly seen by truck drivers and posted at all locations approved for disposal of concrete rinse. The disposal of any concrete rinse within the critical root zone of any tree, or any area where the rinse could move or leach to the CRZ of a protected tree is strictly prohibited

12. TREE PROTECTION FENCING:

GENERAL: The purpose of tree protection fencing is to prevent unauthorized encroachment of equipment and vehicles, or storage/temporary placement of construction materials, spoils, or debris within the critical root zone of protected trees.

CONSTRUCTION PROCEDURES: Tree Protection Fencing shall be blaze-orange in color, heavy-duty plastic mesh fence, 4 feet tall, securely attached to metal 2" U-channel post, set a maximum of 8' on center.

Tree protection fencing shall be installed prior to commencing with any proposed construction activity within 10 feet of any protected tree, paved streets (curb to curb) excepted. The City Forester may waive the requirement for tree protection fencing adjacent to street trees where the placement of such would adversely affect traffic flow or safety, or when the Contractor has clearly demonstrated a capability to manage construction operations adjacent to street trees without undo risk of tree damage. The Contractor shall be responsible for maintaining tree

protection fencing erect and in good repair throughout the duration of construction activities for which the fencing was required.

13. TREE ORDINANCE AND TREE WORK PERMIT:

The Contractor shall conform to all requirements of the City of Norfolk Tree Ordinance (Chapter 45, Norfolk City Code). A Tree Work Permit authorizing the completion of work as shown or described will be issued directly to the City of Norfolk Department of Utilities. The Contractor will be provided with a copy of the Tree Work Permit at the preconstruction meeting. The Tree Work Permit must be retained on the job-site for the duration of the project. Any work not specifically shown or described including but not limited to tree pruning, tree removal, or any change orders for which a Tree Work Permit would be required in accordance with the Tree Ordinance, will require a separate Tree Work Permit. It is the Contractor's responsibility to secure all necessary Tree Work Permits prior to proceeding with any activity regulated by the Tree Ordinance.

APPENDIX H

Contractor's Use of Temporary Facilities and Staging Areas

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



Appendix H

Contractor's Use of Temporary Facilities and Staging Areas

1. The Contractor shall provide at its own expense and without liability to the City any additional land and access thereto that the Contractor may desire for temporary construction facilities, staging areas, or storage of materials. The Contractor shall not use private property in connection with the Work unless prior written permission is obtained from the property owner.
2. The Contractor's use of the staging area will have the same requirements as the construction activity area in the Contract Documents.
3. The Contractor's use of the staging area shall be in compliance with all City ordinances to include:
 - A. Vector Control – the contractor shall be responsible for keeping the grass mowed and keeping the area in a clean and orderly condition.
 - B. Erosion Control – erosion control such as silt fence, inlet protection, etc. shall be provided at the site in accordance with City code and shall comply with the same requirements included in the contract documents.
 - C. Noise Control – the Contractor shall be responsible for complying with City noise ordinances and shall comply with the same requirements included in the contract documents.
 - D. Graffiti Control – the contractor shall remove/erase all graffiti and or other defilement of facilities on the staging area within two working days.
4. The Contractor shall be responsible for the security and safety of all staging area facilities including, but not limited to, all equipment, materials, site structures, and construction thereon. All security measures deemed necessary by the Contractor to comply with this requirement shall be at the Contractor's expense and at no additional cost to the City. The Contractor shall be responsible for all site security until final acceptance of the Work by the City.
5. The Contractor shall maintain the staging area in an orderly and clean condition and shall at intervals of no more than three (3) days and at its expense, remove and legally dispose of accumulations of rubbish or refuse materials, surplus concrete, mortar and excavated materials not required on the project. Washings from concrete mixers or mixing boxes shall not be deposited directly or indirectly in the drainage or sewer system or on paved streets.
6. The Contractor shall keep the site, inclusive of vehicular and pedestrian traffic routes through the site, free of dirt and dust by periodic blading, power brooming, watering or other approved means. Road surfaces adjacent to the area shall be cleaned of soil with mechanical brooms or other approved methods at the end of each working day.
7. The Contractor shall confine all equipment, the storage of materials and equipment, and the operations of workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents.

8. Upon completion of the use of the staging area, the Contractor shall remove and legally dispose of all rubbish, surplus or discarded materials, false work, forms, temporary structures, field offices, signs, temporary erosion and siltation control measures, and equipment and machinery, and shall leave the site in the conditions existing before the Work was started, to the satisfaction of the City.
9. The Contractor shall, during the progress of the Work and as directed by the City, remove from the City's property and from all public and private property and rights-of-way, at its own expense, all temporary structures, rubbish, debris, piles of earth, foreign matter, and waste materials resulting from his operations. The site of the Work shall be restored to the conditions existing before the Work was started, to the satisfaction of the Owner. Lawns, pavements, sidewalks, and other surfaces shall be preserved where practicable, but if damaged, shall be fully restored.
10. The Contractor shall be responsible for the safe storage of material furnished by him or to him, and accepted by him and intended for the work.
11. Above ground fuel storage tanks, lubricants, oil, grease and other petroleum products shall be stored in a fashion to prevent spills. The contractor shall be responsible for cleaning up any spills and shall comply with all applicable regulations pertaining to storage and use of hazardous products.
12. Construction staging areas shall not have more than 2 points of ingress/egress to the site.
13. Construction staging areas shall have a 6 foot high chain link fence around the perimeter and all activities associated with the staging shall be contained within the fenced area. The fence shall have a green and black 8mil woven geotextile screening fabric 6 feet high securely attached to the fence every 24 inches at the top and bottom of the fence.

APPENDIX I
Test Hole Data Sheets

December 2010

Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities

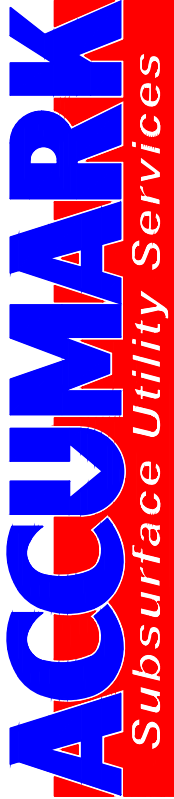


- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



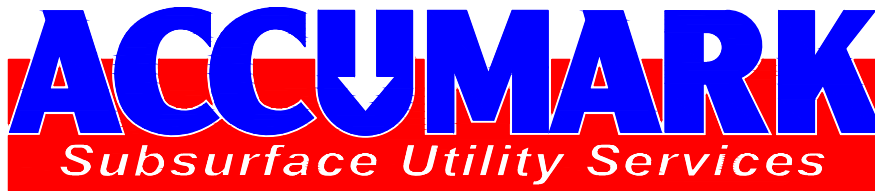


Proud - Professional - Precise

TEST HOLE INVENTORY REPORT - QUALITY LEVEL "A"

PS 87 Test Holes								
Hazen & Sawyer								
				Existing Grade Depth	Material Type	Utility Elevation	Pavement Thickness	Utility Owner
Date	TH#	Utility Requested	Utility Found					
02/02/16	1	Sanitary	Sanitary	12.57'	Cast Iron	N/A	N/A	NFK
02/03/16	2	Water	16" Water	3.09'	Ductile Iron	N/A	0.7' Asphalt	NFK
02/03/16	3	Fiber Optic	3" FO Conduit	3.42'	Plastic	N/A	N/A	VDOT
02/03/16	4	Gas	6" Gas	2.37'	Steel	N/A	N/A	VNG
01/29/16	5	Water	4" Water	2.81'	Plastic	N/A	0.5' Asphalt	NFK
01/29/16	6	Gas	2" Gas	2.35'	Plastic	N/A	N/A	VNG
01/29/16	7	Telephone	1" Telephone Cable	2.91'	Direct Buried	N/A	N/A	VZN

H&S - Point of Contact: Jason Stegemann, PE (757) 785-9498
Accumark - Point of Contact: Mike Schwartz (757) 301-0592



Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

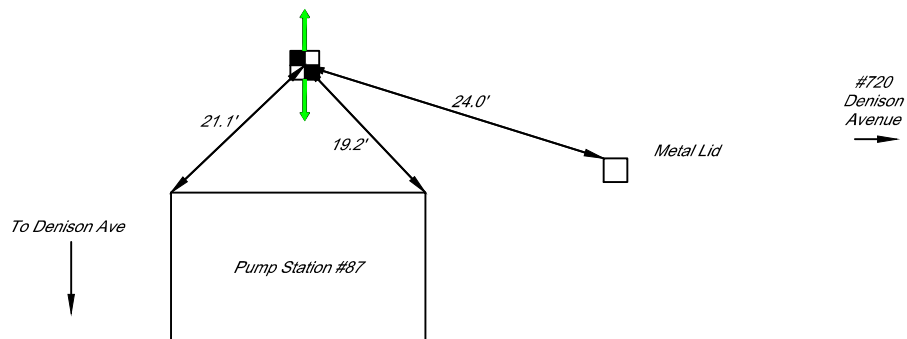
Test Hole #:	1	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Denison Ave.
Requested By:	Hazen & Sawyer	Utility Owner:	NFK
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Sanitary	Test Hole Date:	02/02/16
Utility Found:	Sanitary	Soil Conditions:	Moist Sand
Material Makeup:	Cast Iron	Utility Condition:	See Notes
Size Utility Found:	8" Per Plan	Pavement Cond:	N/A (Grass)

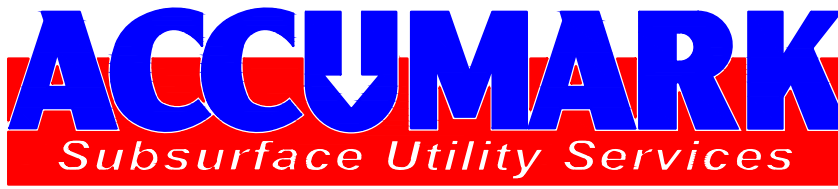
Test Hole Information: Elevation at hub & tack / Pk: N/A Existing grade depth @ top of utility: 12.57' Elevation at top of utility: N/A Elevation at bottom of utility: N/A		Elevation / Survey Information: Located By: Accumark, Inc. Benchmark Elevation: N/A Northing: N/A Easting: N/A Elevation: N/A Station: N/A Offset: N/A	
Cover (Top): 12.57' Cover (Bottom): N/A Drawn Facing: North		Notes: Hub & Tac set over crown of utility. Crew unable to verify utility size due to cave-ins.	



Site Diagram / Location Details:

Scale: (NTS)





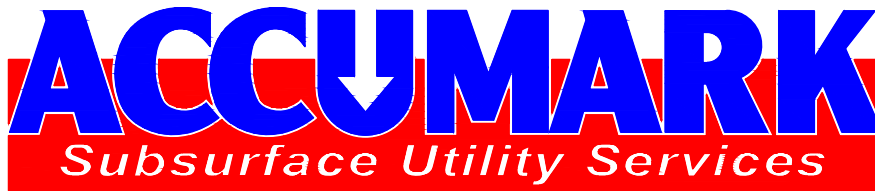
Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>1</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



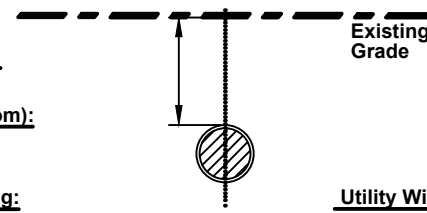
LMB 02/05/16

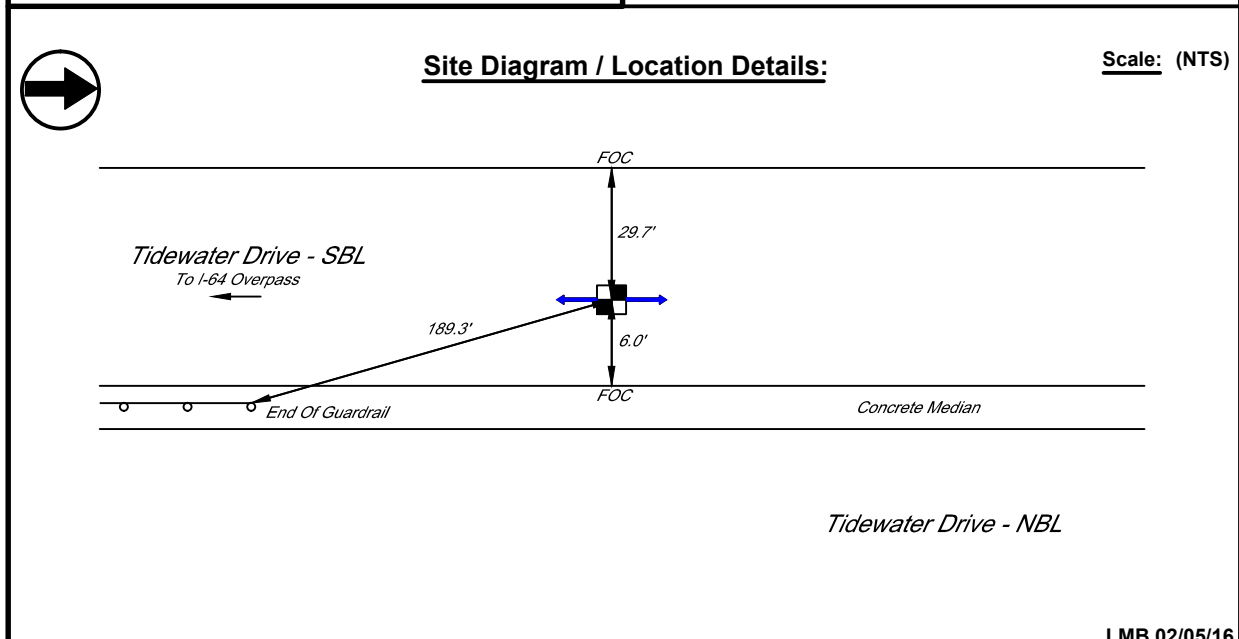


Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	2	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Tidewater Ave. Norfolk, Virginia
Requested By:	Hazen & Sawyer	Utility Owner:	NFK
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Water	Test Hole Date:	02/03/16
Utility Found:	Water	Soil Conditions:	Moist Sand
Material Makeup:	Ductile Iron	Utility Condition:	Good
Size Utility Found:	16"	Pavement Cond:	Good 0.7' Asphalt

Test Hole Information: Elevation at hub & tack / Pk: N/A Existing grade depth @ top of utility: 3.09' Elevation at top of utility: N/A Elevation at bottom of utility: N/A 		Elevation / Survey Information: Located By: Accumark, Inc. Benchmark Elevation: N/A Northing: N/A Easting: N/A Elevation: N/A Station: N/A Offset: N/A Notes: PK set over crown of utility.	
Cover (Top): 3.09' Cover (Bottom): N/A Drawn Facing: North	Utility Width: 17"±		



ACCUMARK

Subsurface Utility Services

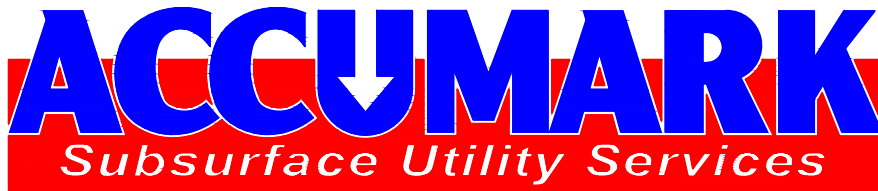
Proud • Professional • Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>2</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



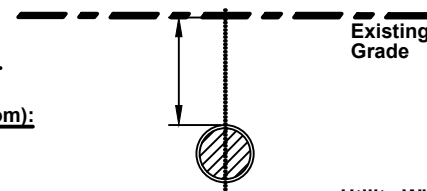
LMB 02/05/16

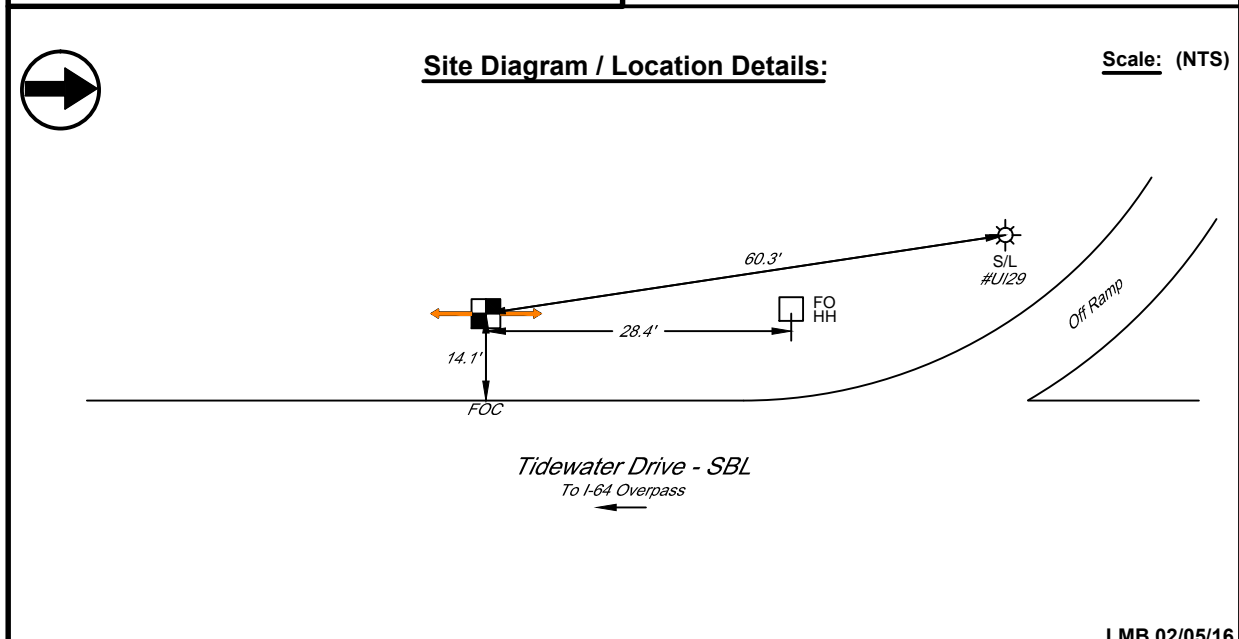


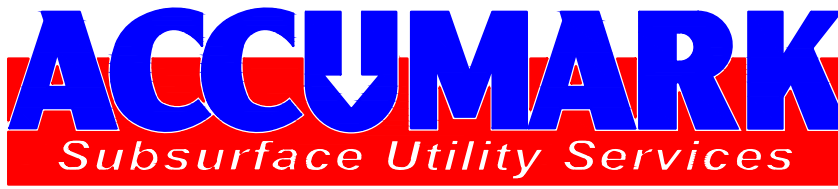
Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	3	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Tidewater Ave. Norfolk, Virginia
Requested By:	Hazen & Sawyer	Utility Owner:	VDOT
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Fiber Optic	Test Hole Date:	02/03/16
Utility Found:	Fiber Optic Conduit	Soil Conditions:	Sandy Clay
Material Makeup:	Plastic	Utility Condition:	Good
Size Utility Found:	3"	Pavement Cond:	N/A (Grass)

Test Hole Information: Elevation at hub & tack / Pk: N/A Existing grade depth @ top of utility: 3.42' Elevation at top of utility: N/A Elevation at bottom of utility: N/A 		Elevation / Survey Information: Located By: Accumark, Inc. Benchmark Elevation: N/A Northing: N/A Easting: N/A Elevation: N/A Station: N/A Offset: N/A Notes: Hub & Tac set over crown of utility.	
Cover (Top): 3.42' Cover (Bottom): N/A Drawn Facing: North	Utility Width: 3.5"±		





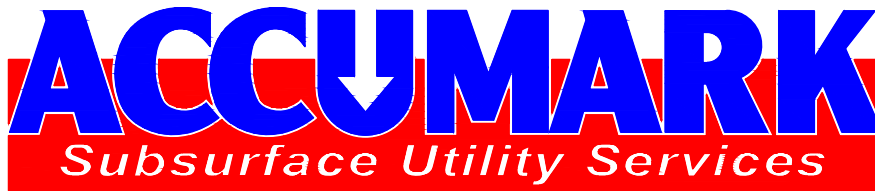
Proud • Professional • Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>3</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



LMB 02/05/16

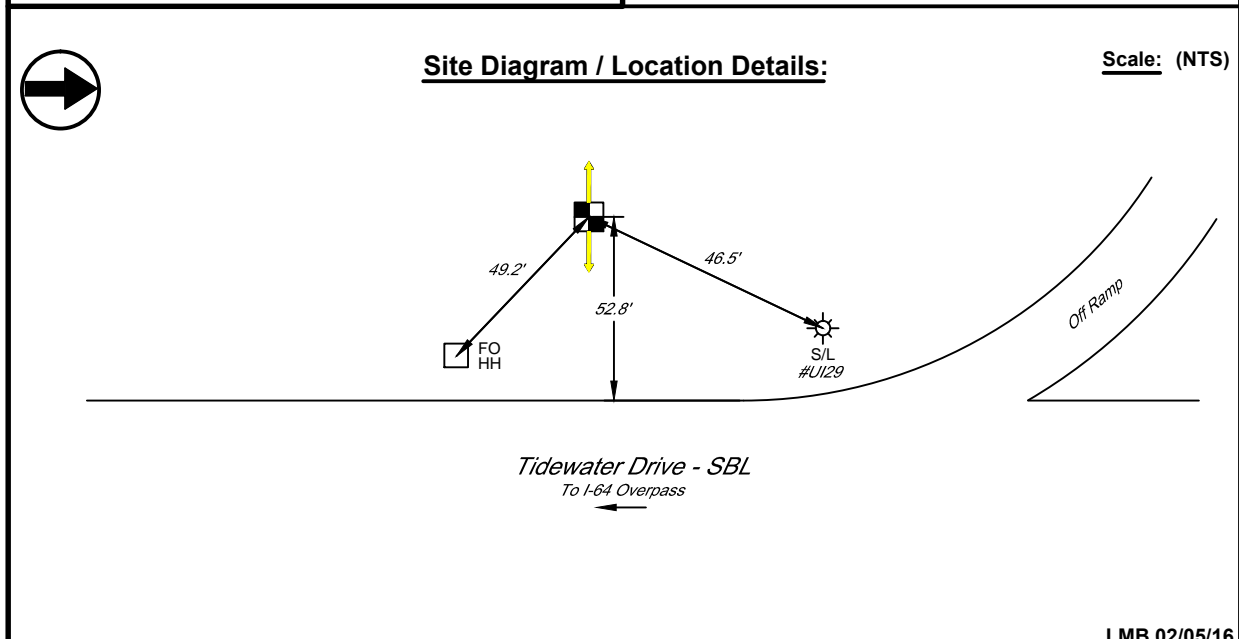


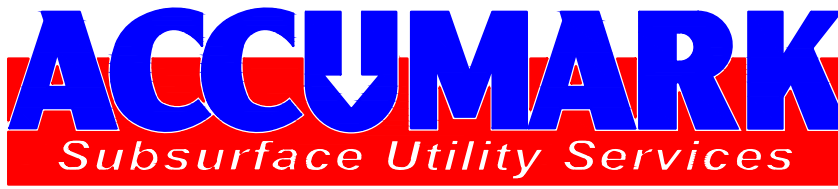
Proud • Professional • Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #: <u>4</u> Project Name: <u>PS 87 Test Holes</u> Requested By: <u>Hazen & Sawyer</u> Point of Contact: <u>Jason Stegemann, PE</u> <u>(757) 785-9498</u> Utility Requested: <u>Gas</u> Utility Found: <u>Gas</u> Material Makeup: <u>Steel</u> Size Utility Found: <u>6"</u>	Project Numbers: <u>VB16-029</u> Project Location: <u>Tidewater Ave.</u> <u>Norfolk, Virginia</u> Utility Owner: <u>VNG</u> Work Type: <u>Infrastructure</u> <u>Improvements</u> Test Hole Date: <u>02/03/16</u> Soil Conditions: <u>Sandy Clay</u> Utility Condition: <u>Good</u> Pavement Cond: <u>N/A</u> <u>(Grass)</u>
--	---

<p style="text-align: center;"><u>Test Hole Information:</u></p> <p>Elevation at hub & tack / Pk: <u>N/A</u> Existing grade depth @ top of utility: <u>2.37'</u> Elevation at top of utility: <u>N/A</u> Elevation at bottom of utility: <u>N/A</u></p> <div style="display: flex; align-items: center;"> <div style="margin-left: 10px;"> <p>Existing Grade</p> <p>Cover (Top): <u>2.37'</u></p> <p>Cover (Bottom): <u>N/A</u></p> <p>Drawn Facing: <u>East</u></p> <p>Utility Width: <u>7"±</u></p> </div> </div>	<p style="text-align: center;"><u>Elevation / Survey Information:</u></p> <p>Located By: <u>Accumark, Inc.</u> Benchmark Elevation: <u>N/A</u> Northing: <u>N/A</u> Easting: <u>N/A</u> Elevation: <u>N/A</u> Station: <u>N/A</u> Offset: <u>N/A</u></p> <p><u>Notes:</u></p> <p><u>Hub & Tac set over crown of utility.</u></p>
---	--





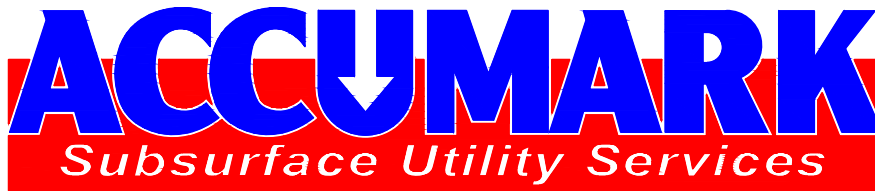
Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>4</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



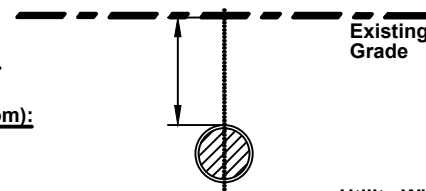
LMB 02/05/16

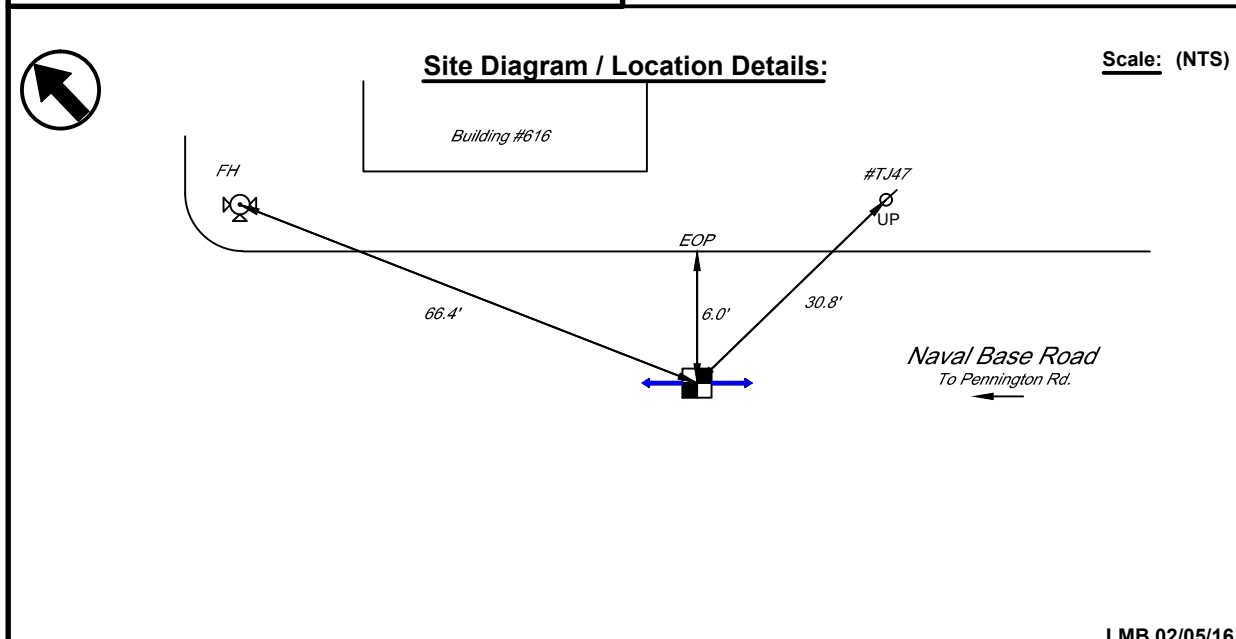


Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	5	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Naval Base Road Norfolk, Virginia
Requested By:	Hazen & Sawyer	Utility Owner:	NFK
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Water	Test Hole Date:	01/29/16
Utility Found:	Water	Soil Conditions:	Sandy Clay
Material Makeup:	Plastic	Utility Condition:	Good
Size Utility Found:	4"	Pavement Cond:	Good 0.5' Asphalt

Test Hole Information: Elevation at hub & tack / Pk: N/A Existing grade depth @ top of utility: 2.81' Elevation at top of utility: N/A Elevation at bottom of utility: N/A  Cover (Top): 2.81' Cover (Bottom): N/A Drawn Facing: Northwest Utility Width: 4.5"±		Elevation / Survey Information: Located By: Accumark, Inc. Benchmark Elevation: N/A Northing: N/A Easting: N/A Elevation: N/A Station: N/A Offset: N/A Notes: PK set over crown of utility.	
---	--	--	--



ACCUMARK

Subsurface Utility Services

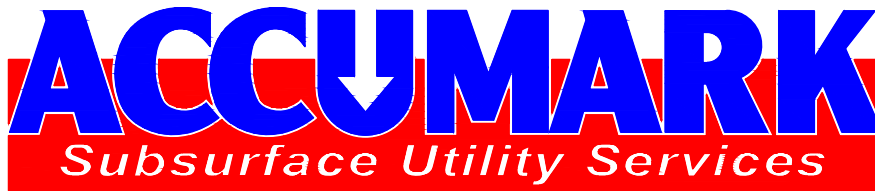
Proud • Professional • Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>5</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



LMB 02/05/16

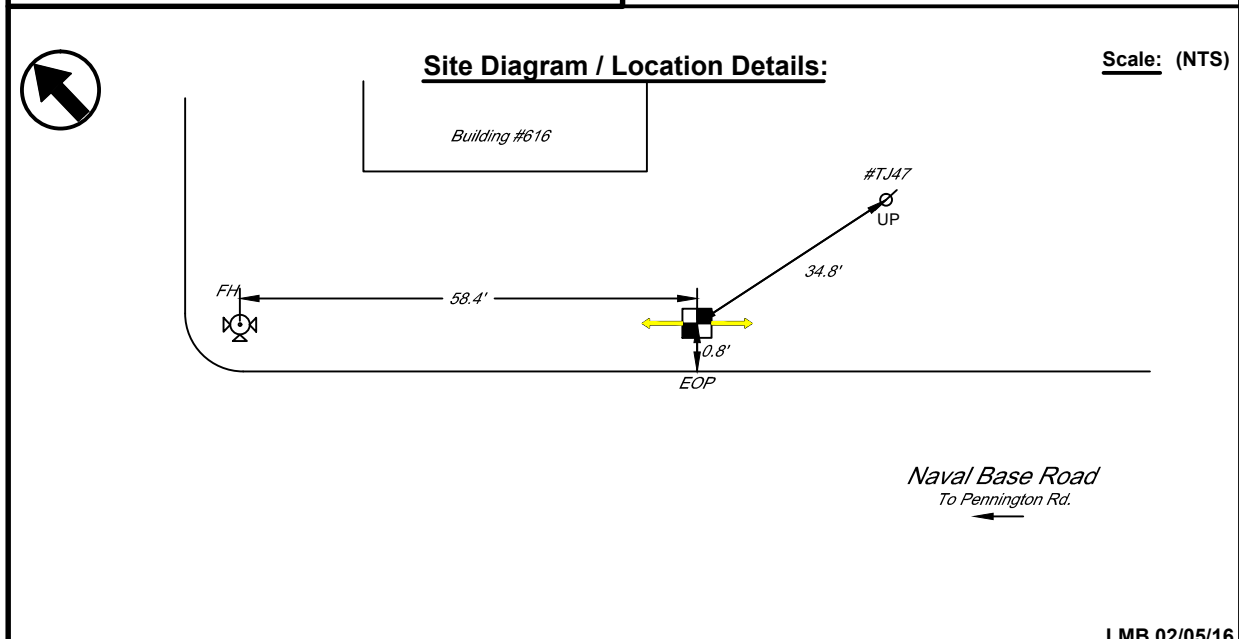


Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	6	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Naval Base Road Norfolk, Virginia
Requested By:	Hazen & Sawyer	Utility Owner:	VNG
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Gas	Test Hole Date:	01/29/16
Utility Found:	Gas	Soil Conditions:	Sandy Clay
Material Makeup:	Plastic	Utility Condition:	Good
Size Utility Found:	2"	Pavement Cond:	N/A (Grass)

Test Hole Information:		Elevation / Survey Information:	
Elevation at hub & tack / Pk:	N/A	Located By:	Benchmark Elevation
Existing grade depth @ top of utility:	2.35'	Accumark, Inc.	N/A
Elevation at top of utility:	N/A	Northing:	Easting:
Elevation at bottom of utility:	N/A	N/A	N/A
<p>Cover (Top): 2.35'</p> <p>Cover (Bottom): N/A</p> <p>Drawn Facing: Northwest</p> <p>Utility Width: 2.5"±</p>		Station:	Offset:
		N/A	N/A
		Notes:	
		Hub & Tac set over crown of utility.	



ACCUMARK

Subsurface Utility Services

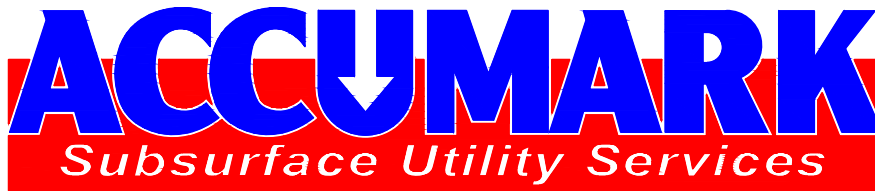
Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>6</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



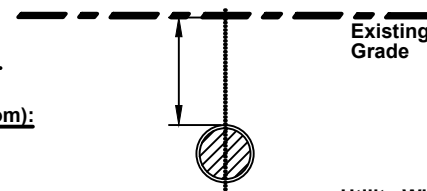
LMB 02/05/16

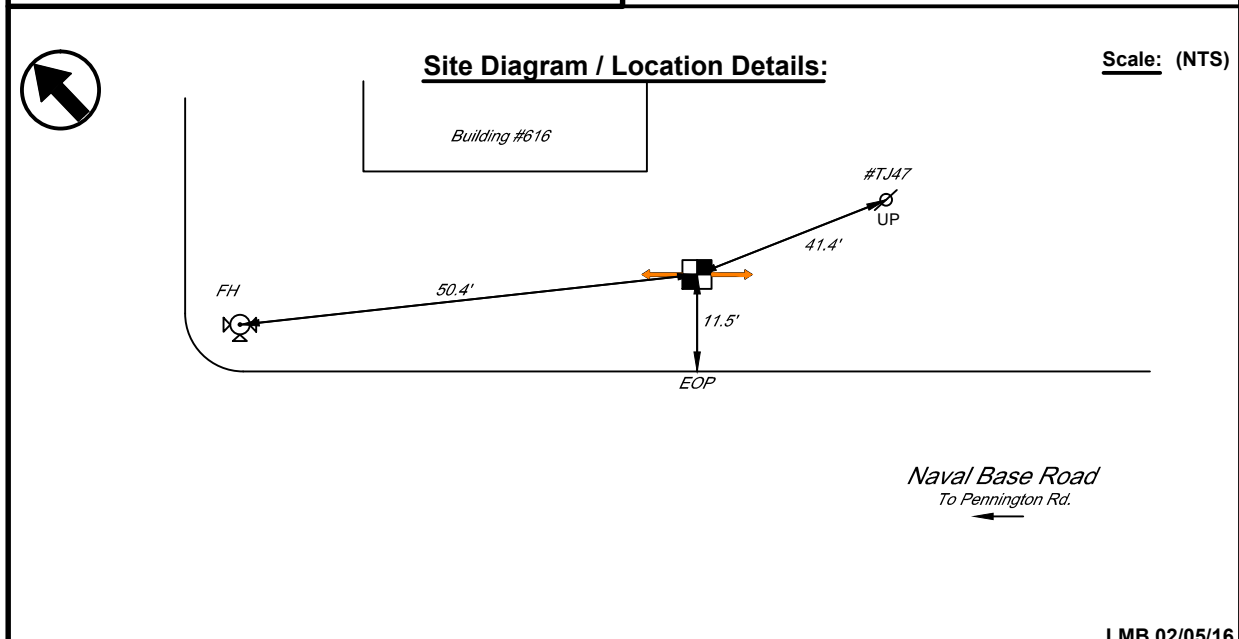


Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	7	Project Numbers:	VB16-029
Project Name:	PS 87 Test Holes	Project Location:	Naval Base Road Norfolk, Virginia
Requested By:	Hazen & Sawyer	Utility Owner:	VZN
Point of Contact:	Jason Stegemann, PE (757) 785-9498	Work Type:	Infrastructure Improvements
Utility Requested:	Telephone	Test Hole Date:	01/29/16
Utility Found:	Telephone Cable	Soil Conditions:	Sandy Clay
Material Makeup:	Direct Buried	Utility Condition:	Good
Size Utility Found:	1"	Pavement Cond:	N/A (Grass)

Test Hole Information: Elevation at hub & tack / Pk: N/A Existing grade depth @ top of utility: 2.91' Elevation at top of utility: N/A Elevation at bottom of utility: N/A  Cover (Top): 2.91' Cover (Bottom): N/A Drawn Facing: Northwest Utility Width: 2.5"±		Elevation / Survey Information: Located By: Accumark, Inc. Benchmark Elevation: N/A Northing: N/A Easting: N/A Elevation: N/A Station: N/A Offset: N/A Notes: Hub & Tac set over crown of utility.	
---	--	---	--





Proud - Professional - Precise

Utility Test Hole Report - Quality Level "A"

Test Hole #:	<u>7</u>	Project Numbers:	<u>VB16-029</u>
Project Name:	<u>PS 87 Test Holes</u>	Project Location:	<u>Norfolk,</u>
Client:	<u>Hazen & Sawyer</u>		<u>Virginia.</u>



LMB 02/05/16

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX J

USACE Concurrence Letter

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**





Reply to
Attention of

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1096

November 10, 2015

PRELIMINARY JURISDICTIONAL DETERMINATION

Eastern Virginia Regulatory Section
NAO-2015-01137 (Wayne's Creek)

Hazen and Sawyer P.C.
4011 West Chase Blvd. Suite 500
Raleigh, NC 27607
Attn: Keven Arrance

Dear Ms. Arrance:

This letter is in regard to your request for a preliminary jurisdictional determination for waters of the U.S. (including wetlands) on property known as Pump Station 87 and Wayne Creek in Norfolk, Virginia.

The map entitled "Wetland Map Pump Station 87, City of Norfolk Virginia", by Hazen and Sawyer PC, undated, and Corps date stamped as received July 7, 2015 (copy enclosed) provides the location(s) of waters and/or wetlands on the property listed above. The basis for this delineation includes application of the Corps' 1987 Wetland Delineation Manual and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* and the positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation and the presence of a high tide water mark.

Discharges of dredged or fill material, including those associated with mechanized land clearing, into waters and/or wetlands on this site may require a Department of the Army permit and authorization by state and local authorities including a Virginia Water Protection Permit from the Virginia Department of Environmental Quality (DEQ), a permit from the Virginia Marine Resources Commission (VMRC) and/or a permit from your local wetlands board. This letter is a confirmation of the Corps preliminary jurisdiction for the waters and/or wetlands on the subject property and does not authorize any work in these areas. Please obtain all required permits before starting work in the delineated waters/wetland areas.

This is a preliminary jurisdictional determination and is therefore not a legally binding determination regarding whether Corps jurisdiction applies to the waters or wetlands in question. Accordingly, you may either consent to jurisdiction as set out in this preliminary jurisdictional determination and the attachments hereto if you agree with the determination, or you may request and obtain an approved jurisdictional determination.

This preliminary jurisdictional determination and associated wetland delineation map may be submitted with a permit application.

Enclosed is a copy of the "Preliminary Jurisdictional Determination Form". Please review the document, sign, and return one copy to Ms. Traycie West, of my staff, either via email (traycie.l.west@usace.army.mil) or via standard mail to US Army Corps of Engineers, Regulatory Office, and ATTN: Traycie West, 803 Front Street Norfolk, Virginia 23510 within 30 days of receipt and keep one for your records. This delineation of waters and/or wetlands is valid for a period of five years from the date of this letter unless new information warrants revision prior to the expiration date.

If you have any questions, please contact Traycie West, of my staff, either via telephone at (757) 201-7179 or via email at traycie.l.west@usace.army.mil.

Sincerely,

A handwritten signature in dark ink, appearing to read 'P. Kube', with a long horizontal flourish extending to the right.

Peter Kube
Chief, Eastern Virginia
Regulatory Section

Enclosure(s)

Cc: Agent
Virginia Department of Environmental Quality
Locality
Property owner

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION:

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): November 10, 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Ms. Keven Arrance
Hazen and Sawyer, PC
4011 West Chase Blvd, Suite 500
Raleigh, NC 27607

C. DISTRICT OFFICE: Norfolk District (CENAO-REG)

FILE NAME: Pumphouse 87 City of Norfolk Wayne Creek

FILE NUMBER: NAO-2015-01137

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: **VIRGINIA** County/parish/borough: City: **Norfolk**

Center coordinates of site (lat/long in degree decimal format):

Latitude: 36.906251 ° N Longitude: -76.254616 ° W

Universal Transverse Mercator:

Name of nearest waterbody: Wayne Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 25 linear feet; width (ft); and/or 0.1 acres.

Cowardin Class: E1

Stream Flow:

Wetlands: 0.36 acres

Cowardin Class: E2

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: Wayne Creek

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): July 21, 2015 and August 5, 2015

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.
3. This preliminary JD finds that there "*may be*" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA:

Data reviewed for preliminary JD (check all that apply) - checked items should be included in case file and, where checked and requested, appropriately reference sources below.

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

Figure 1 and 2 : Wetlands Map, Pump Station 87, City of Norfolk, Virginia

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☒ Office concurs with data sheets/delineation report. April 1, 2015

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☒ USGS NHD data. wetlands and stream

☒ USGS 8 and 12 digit HUC maps. 020802080206

☐ U.S. Geological Survey map(s). Cite scale & quad name:

☐ USDA Natural Resources Conservation Service Soil Survey.

Citation:

☒ National wetlands inventory map(s). Cite name: topo Norfolk North

☐ State/Local wetland inventory map(s):

☒ FEMA/FIRM maps: Flood Zone AE

☐ 100-year Floodplain Elevation: 7.6 feet (National Geodetic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date):

or ☐ Other (Name & Date):

☐ Previous determination(s):

File no. and date of response letter:

☒ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.



Signature
Regulatory Project Manager
(REQUIRED)

11/10/2015
Date

Signature of person requesting
Preliminary JD
(REQUIRED, unless obtaining the signature is
impracticable)

Date

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION:

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): November 10, 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Ms. Keven Arrance
Hazen and Sawyer, PC
4011 West Chase Blvd, Suite 500
Raleigh, NC 27607

C. DISTRICT OFFICE: Norfolk District (CENAO-REG)

FILE NAME: Pumphouse 87 City of Norfolk Wayne Creek

FILE NUMBER: NAO-2015-01137

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: **VIRGINIA** County/parish/borough: City: **Norfolk**

Center coordinates of site (lat/long in degree decimal format):

Latitude: 36.906251 ° N Longitude: -76.254616 ° W

Universal Transverse Mercator:

Name of nearest waterbody: **Wayne Creek**

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 25 linear feet; width (ft); and/or 0.1 acres.

Cowardin Class: E1

Stream Flow:

Wetlands: 0.36 acres

Cowardin Class: E2

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: **Wayne Creek**

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): **July 21, 2015 and August 5, 2015**

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.
3. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA:

Data reviewed for preliminary JD (check all that apply) - checked items should be included in case file and, where checked and requested, appropriately reference sources below.

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

Figure 1 and 2 : Wetlands Map, Pump Station 87, City of Norfolk, Virginia

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☒ Office concurs with data sheets/delineation report. April 1, 2015

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☒ USGS NHD data, wetlands and stream

☒ USGS 8 and 12 digit HUC maps. 020802080206

☐ U.S. Geological Survey map(s). Cite scale & quad name:

☐ USDA Natural Resources Conservation Service Soil Survey.

Citation:

☒ National wetlands inventory map(s). Cite name: topo Norfolk North

☐ State/Local wetland inventory map(s):

☒ FEMA/FIRM maps: Flood Zone AE

☐ 100-year Floodplain Elevation: 7.6 feet (National Geodetic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date):

or ☐ Other (Name & Date):

☐ Previous determination(s):

File no. and date of response letter:

☒ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.



Signature
Regulatory Project Manager
(REQUIRED)

11/10/2015
Date

Signature of person requesting
Preliminary JD
(REQUIRED, unless obtaining the signature is impracticable)

Date

0 1,000 2,000 3,000 4,000 Feet

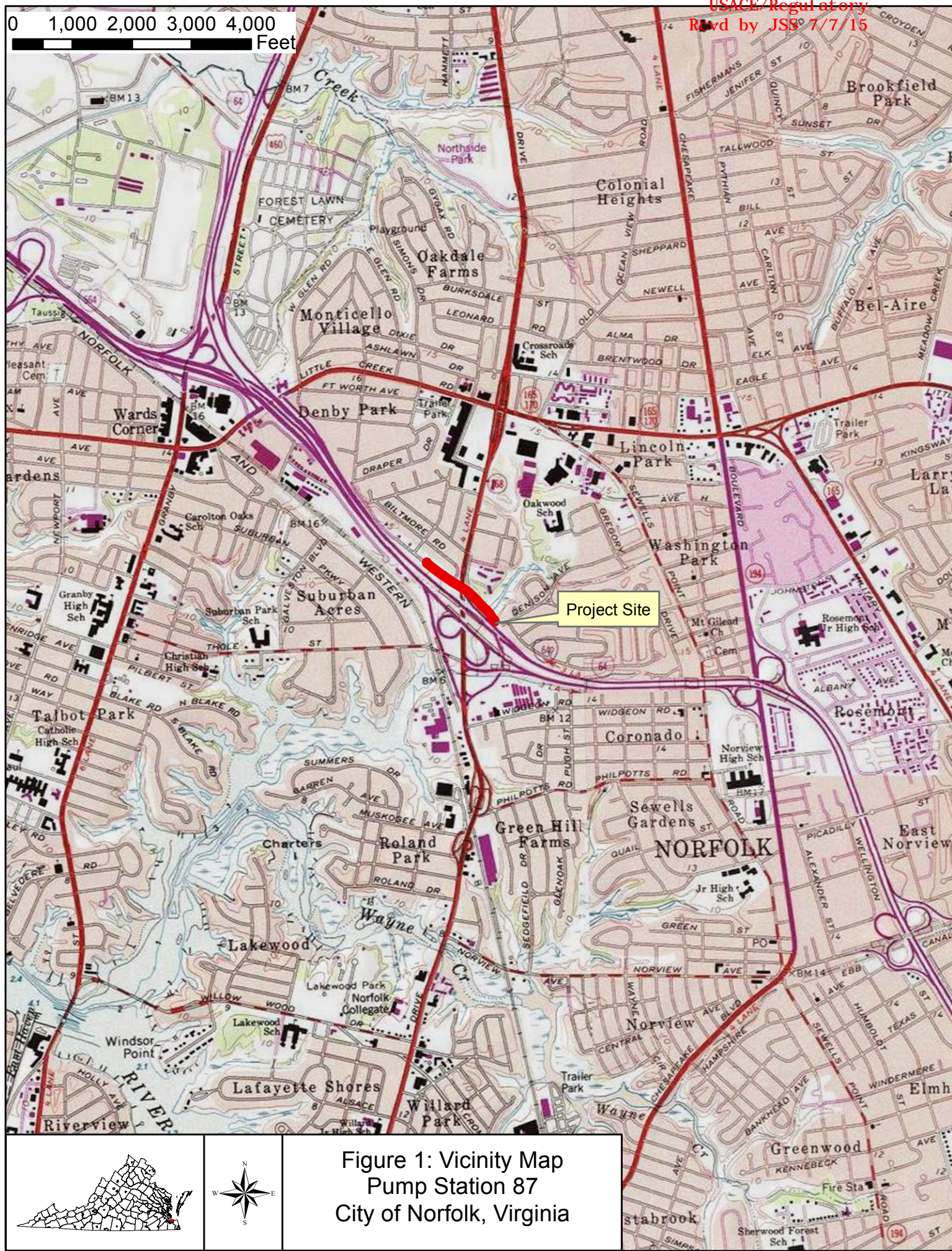
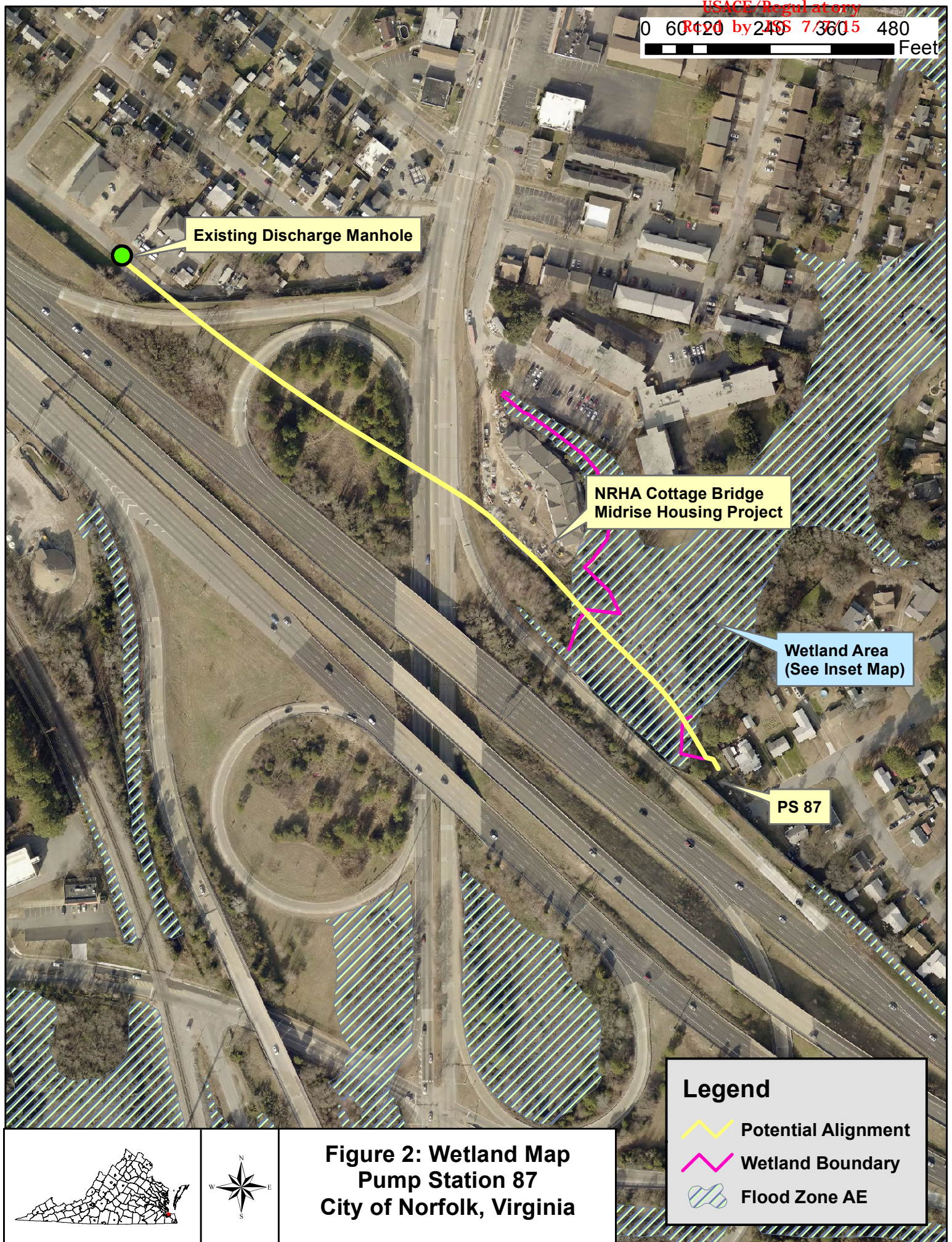


Figure 1: Vicinity Map
Pump Station 87
City of Norfolk, Virginia



NRHA Cottage Bridge
Midrise Housing Project

Wetland Area




PS 87

0 15 30 60 90 120 Feet



Figure 3: Wetland Map
Pump Station 87
City of Norfolk, Virginia

Legend

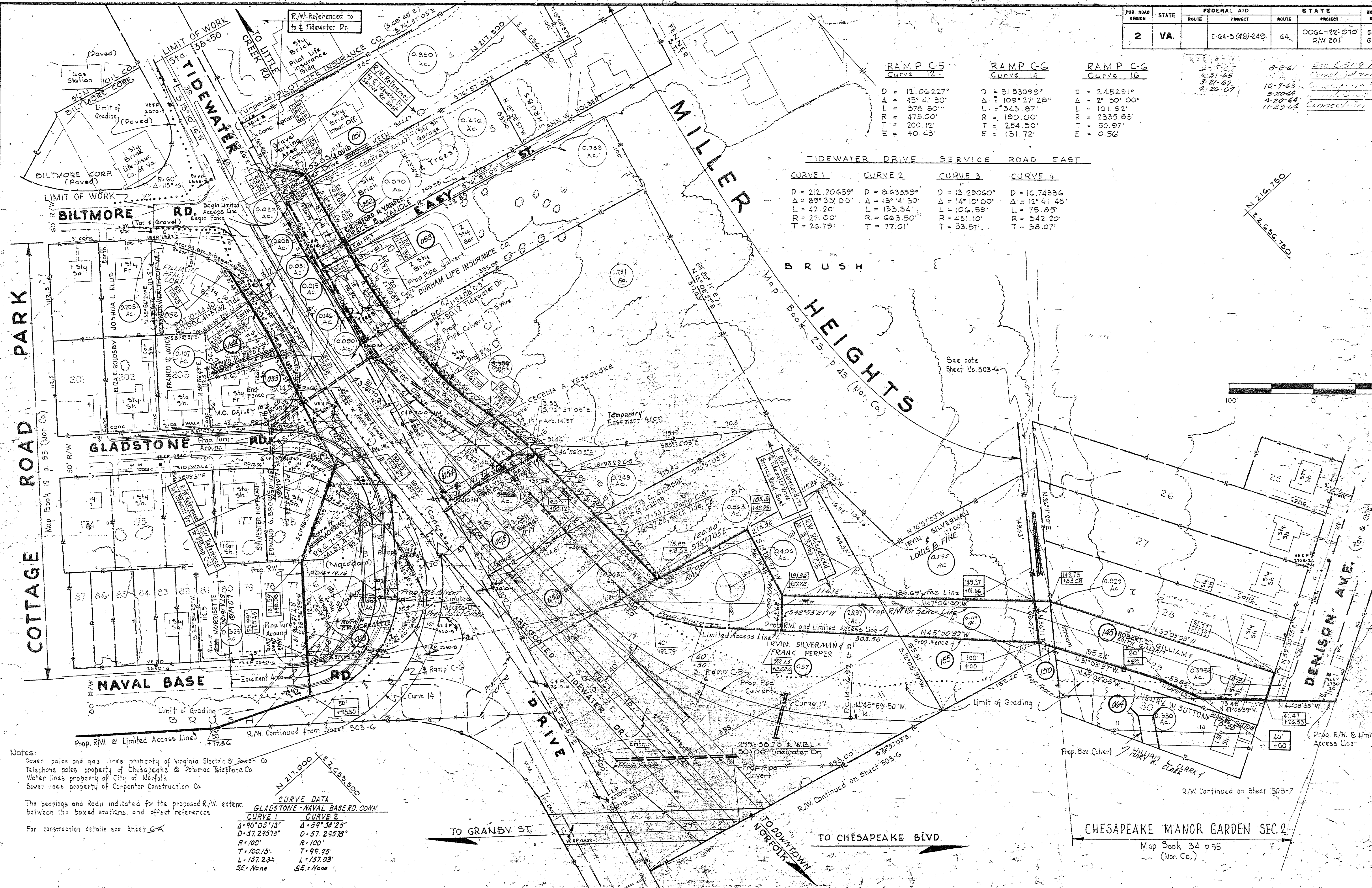
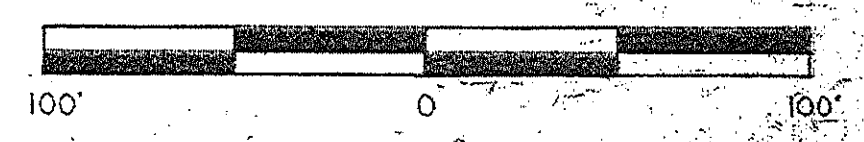
-  Potential Alignment
-  Wetland Boundary
-  Flood Zone AE

PUB. ROAD REGION	STATE	FEDERAL AID		STATE		SHEET NO.	TOTAL SHEETS
		ROUTE	PROJECT	ROUTE	PROJECT		
2	VA.		I-64-3 (48)-243	64	0064-122-070 R/W 201	503 6A	

RAMP C-5 Curve 12	RAMP C-6 Curve 14	RAMP C-6 Curve 16
D = 12.06227° Δ = 45° 41' 30" L = 378.80' R = 475.00' T = 200.12' E = 40.43'	D = 31.83099° Δ = 109° 27' 28" L = 343.67' R = 100.00' T = 254.50' E = 131.72'	D = 2.45291° Δ = 2° 30' 00" L = 101.92' R = 2335.63' T = 50.97' E = 0.56'

TIDEWATER DRIVE SERVICE ROAD EAST			
CURVE 1	CURVE 2	CURVE 3	CURVE 4
D = 212.20659° Δ = 89° 33' 00" L = 42.20' R = 27.00' T = 26.79'	D = 8.63539° Δ = 13° 14' 30" L = 153.34' R = 663.50' T = 77.01'	D = 13.29060° Δ = 14° 10' 00" L = 106.59' R = 431.10' T = 53.57'	D = 16.74336° Δ = 12° 41' 45" L = 75.85' R = 342.20' T = 38.07'

8-261
4-31-65
3-21-67
4-20-67
10-9-64
5-20-64
4-20-64
11-25-64
See C-509 for
Proposed
Connection



Notes:
Power poles and gas lines property of Virginia Electric & Power Co.
Telephone poles property of Chesapeake & Potomac Telephone Co.
Water lines property of City of Norfolk.
Sewer lines property of Carpenter Construction Co.

The bearings and Radii indicated for the proposed R/W. extend between the boxed stations, and offset references

For construction details see Sheet 503-6

CURVE DATA GLADSTONE-NAVAL BASE RD. CONN.	
CURVE 1	CURVE 2
Δ = 90° 05' 13" D = 57.24578° R = 100' T = 100.15' L = 157.234' SE = None	Δ = 89° 38' 25" D = 57.24578° R = 100' T = 99.95' L = 157.03' SE = None

Site Photographs – From City of Norfolk Pump Station 87



Looking northwest from upland side of wetland boundary. Existing force main and failing pile bents are shown. Structure in background is the Norfolk Housing Redevelopment Authority (NRHA) housing project (Cottage Bridge Midrise) that is currently under construction.



Looking northwest along force main alignment within wetland area.



Looking northwest along existing force main alignment. Photo taken from within the wetland and also shows the upland in the background. Note the structure in the background is the NRHA Cottage Bridge Midrise housing project.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: PS 87 City/County: Norfolk Sampling Date: 4/1/15
 Applicant/Owner: City of Norfolk State: VA Sampling Point: WA-5
 Investigator(s): K. Arance Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): top of slope Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: <u>herbaceous wetland</u>			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0-3+</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0-4</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>n/a</u>			
Remarks: <u>soil is saturated to the surface with areas of standing water that is at least 3 inches deep</u> <u>very soft substrate in places due to water level</u>			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA-5

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)

1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 10' x 10')

1.	<u>Phragmites australis</u>	<u>98</u>	<u>yes</u>	<u>FACW</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

95 = Total Cover

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: 10' x 10')

1.	<u>Lonicera japonica</u>	<u>100</u>	<u>yes</u>	<u>FACU</u>
2.				
3.				
4.				
5.				

5 = Total Cover

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

 Total Number of Dominant Species Across All Strata: 2 (B)

 Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

 FACW species 93 x 2 = 186

FAC species _____ x 3 = _____

 FACU species 5 x 4 = 20

UPL species _____ x 5 = _____

 Column Totals: 98 (A) 206 (B)

 Prevalence Index = B/A = 2.1
Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:
Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

 Yes ☒ No _____

Remarks: (If observed, list morphological adaptations below).

near monoculture of Phragmites australis

SOIL

Sampling Point: WA-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10 YR 2/1	100	—	—	—	—	sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> (MLRA 153B) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

soil saturated and very soft to surface
 very few, if any, mottles present - none were ~~of~~ sufficient
 size to describe

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: PS 87 City/County: Norfolk Sampling Date: 4/1/15
 Applicant/Owner: City of Norfolk State: VA Sampling Point: WA-5
 Investigator(s): K Arrance Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: <u>maintained area associated with pump station and associated pipe corridor</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>12"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>n/a</u>		
Remarks: <u>soil dry to 12-inch assessment depth</u>		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA-5

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Prunus serotina</u>	<u>80</u>	<u>yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>10</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Celtis laevigata</u>	<u>75</u>	<u>yes</u>	<u>FACW</u>																	
2. <u>Rosa multiflora</u>	<u>10</u>	<u>no</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>25</u> = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Woody Vine Stratum (Plot size: _____)																				
1. <u>Hedera helix</u>	<u>60</u>	<u>yes</u>	<u>FACU</u>																	
2. <u>Toxicodendron radicans</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																	
3. <u>Lonicera japonica</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>60</u> = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (If observed, list morphological adaptations below). <div style="text-align: center; font-size: 1.2em;"> <u>maintained lawn with wooded edge adjacent to wetland</u> </div>																				

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ☒

SOIL

Sampling Point: WA-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	2.5Y 4/2	85	2.5Y 5/4	15	RM	M	loamy clay	
8-12	10YR 4/3	95	—	—	—	—	loamy fine sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> (MLRA 153B) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

soil dry at depth of 12 inches

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: PS 87 City/County: Norfolk Sampling Date: 4/1/15
 Applicant/Owner: City of Norfolk State: VA Sampling Point: WB-2
 Investigator(s): K Arrance Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>herbaceous wetland</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0-1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0-5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: <u>Saturated to surface with pockets of standing water</u>		

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WB-2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>99</u> x 2 = <u>198</u> FAC species _____ x 3 = _____ FACU species <u>1</u> x 4 = <u>4</u> UPL species _____ x 5 = _____ Column Totals: <u>100</u> (A) <u>202</u> (B) Prevalence Index = B/A = <u>2.02</u>
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
Sapling/Shrub Stratum (Plot size: _____)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____				Herb Stratum (Plot size: <u>10'x10'</u>)
1. <u>Phragmites australis</u>	<u>100</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Woody Vine Stratum (Plot size: _____)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____				Remarks: (If observed, list morphological adaptations below). <div style="font-size: 1.2em; margin-top: 20px;">near monoculture of <u>Phragmites australis</u></div>

SOIL

Sampling Point: WB-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	95	10YR 4/6	5	RM	M	fine sandy loam	
6-12	10YR 2/1	50	10YR 2/2	45	RM	M	loamy sand	with muck

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|--|--|--|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

saturated and soft to surface

B horizon contains small percentage of muck present (less than 5%)

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: PS87 City/County: Norfolk Sampling Date: 4/1/15
 Applicant/Owner: City of Norfolk State: VA Sampling Point: WB-2
 Investigator(s): K. Arvance Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>12"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: <div style="text-align: center;"> <p>saturation not observed in the assessed 12-inch depth</p> </div>		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WB-2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Liquidambar styraciflua</u>	<u>75</u>	<u>yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)
2. <u>Acer rubrum</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>8</u> (B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
8. _____	_____	_____	_____	
<u>25</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Liquidambar styraciflua</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Acer rubrum</u>	<u>60</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Liriodendron tulipifera</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>40</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. <u>Phragmites australis</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Rubus argutus</u>	<u>60</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>3</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. <u>Lonicera japonica</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Hedera helix</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>	
3. <u>Smilax glauca</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>30</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.				
Remarks: (If observed, list morphological adaptations below). <div style="font-size: 1.2em; margin-top: 20px;"> ground cover transitions from <u>Phragmites australis</u> to <u>Hedera helix</u> open canopy </div>				

SOIL

Sampling Point: WB-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/4	80	10YR 2/1	10	MS	M	loamy fine sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|--|--|--|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

soil dry to 12-inch evaluation depth

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX K
Project Sign Details

December 2010

Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities



- THIS PAGE INTENTIONALLY LEFT BLANK -

December 2010

**Pump Station 87 Force Main Replacement
November 2016
City of Norfolk, Department of Utilities**



16.75"

4"

6"

Project Name

Colors=
Black and
30% screen of PMS 570

18.5"

6"

Description Description Description Description Description Description Description
Description Description Description Description Description Description Description
Description Description

18.5"

6"

DESIGN ENGINEER
NAME
PHONE NUMBER

5"

27.5"

54.5"

2.5"

CONSTRUCTION CONTRACTOR
NAME
PHONE NUMBER

FOR INFORMATION CALL
FIELD ENGINEERING OFFICE
823-1001

CONSTRUCTION INSPECTOR
NAME
NUMBER

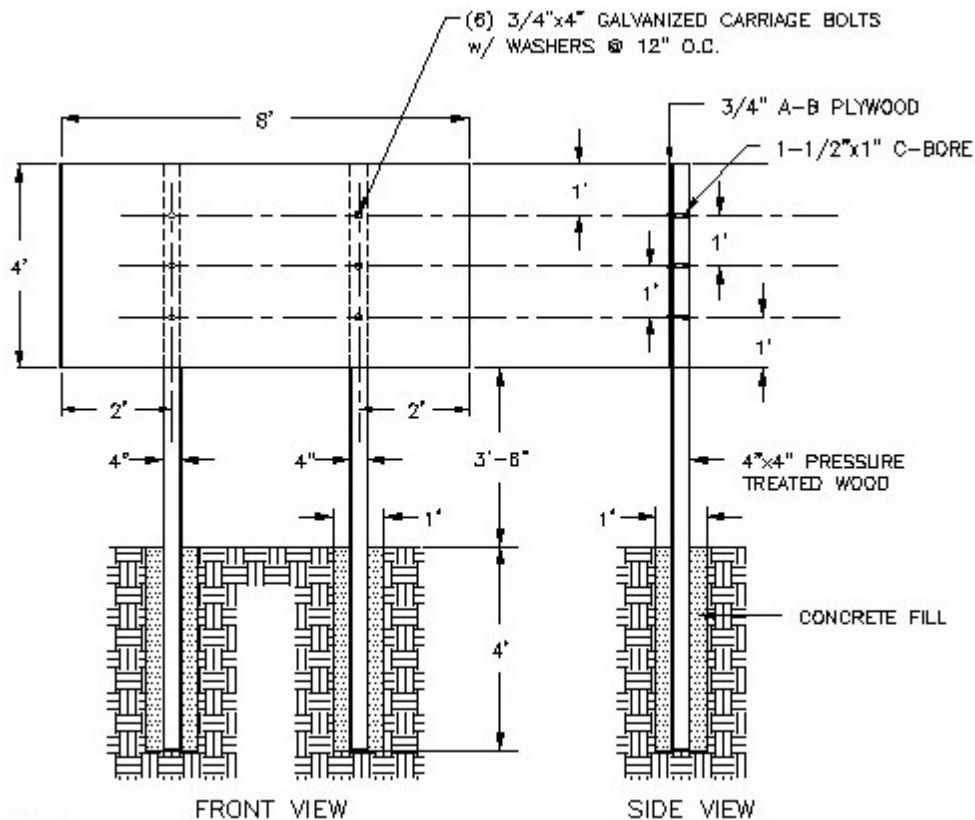
Pardon Our Dust While We Make Things Better



N O R F O L K

Life. Celebrated Daily.

- THIS PAGE INTENTIONALLY LEFT BLANK -



- THIS PAGE INTENTIONALLY LEFT BLANK -